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THE ENCYCLOPÆDIA BRITANNICA

A DICTIONARY OF ARTS, SCIENCES, LITERATURE AND GENERAL INFORMATION

ELEVENTH EDITION

VOLUME III SLICE VI

Bent, James to Bibirine

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BENT, JAMES THEODORE (1852-1897), English traveller, was the son of James Bent of Baildon House, near Leeds, Yorkshire, where he was born on the 30th of March 1852. He was educated at Repton school and Wadham College, Oxford, where he graduated in 1875. In 1877 he married Mabel, daughter of R.W. Hall-Dare of Newtownbarry, Co. Wexford, and she became his companion in all his travels. He went abroad every year and became thoroughly acquainted with Italy and Greece. In 1879 he published a book on the republic of San Marino, entitled *A Freak of Freedom*, and was made a citizen of San Marino; in the following year appeared *Genoa: How the Republic Rose and Fell*, and in 1881 a *Life of Giuseppe Garibaldi*. He spent considerable time in the Aegean archipelago, of which he wrote in *The Cyclades: or Life among the Insular Greeks* (1885). From this period Bent devoted himself particularly to archaeological research. The years 1885-1888 were given up to investigations in Asia Minor, his discoveries and conclusions being communicated to the *Journal of Hellenic Studies* and other magazines and reviews. In 1889 he undertook excavations in the Bahrein Islands of the Persian Gulf, and found evidence that they had been a primitive home of the Phoenician race. After an expedition in 1890 to Cilicia Trachea, where he obtained a valuable collection of inscriptions, Bent spent a year in South Africa, with the object, by investigation of some of the ruins in Mashonaland, of throwing light on the vexed question of their origin and on the early history of East Africa. He made the first detailed examination of the Great Zimbabwe. Bent described his work in *The Ruined Cities of Mashonaland* (1892). In 1893 he investigated the ruins of Axum and other places in the north of Abyssinia, partially made known before by the researches of Henry Salt and others, and *The Sacred City of the Ethiopians* (1893) gave an account of this expedition. Bent now visited at considerable risk the almost unknown Hadramut country (1893-1894), and during this and later journeys in southern Arabia he studied the ancient history of the country, its physical features and actual condition. On the Dhafar coast in 1894-1895 he visited ruins which he identified with the Abyssapolis of the frankincense merchants. In 1895-1896 he examined part of the African coast of the Red Sea, finding there the ruins of a very ancient gold-mine and traces of what he considered Sabean influence. While on another journey in South Arabia (1896-1897), Bent was seized with malarial fever, and died in London on the 5th of May 1897, a few days after his return. Mrs Bent, who had contributed by her skill as a photographer

and in other ways to the success of her husband's journeys, published in 1900 *Southern Arabia, Soudan and Sakotra*, in which were given the results of their last expedition into that region. The conclusions at which Bent arrived as to the Semitic origin of the ruins in Mashonaland have not been accepted by archaeologists, but the value of his pioneer work is undeniable (see ZIMBABWE).

BENT. 1. (From "to bend"), primarily the result of bending; hence any inclination from the straight, as in curved objects like a hook or a bow; this survives in the modern phrase "to follow one's own bent," *i.e.* to pursue a certain course in a direction deviating from the normal, as also in such phrases as Chaucer's "Downward on a hill under a bent," indicating a hollow or declivity in the general configuration of the land. From the bending of a bow comes the idea of tension, as in Hamlet, "they fool me to the top of my bent," *i.e.* to the utmost of my capacity. 2. (From the O. Eng. *beonet*, a coarse, rushy grass growing in wet places; cf. the Ger. *Binse*, a reed), the name ("bent" or "bennet") popularly applied to several kinds of grass and surviving in the form "bent-grass."

BENTHAM, GEORGE (1800-1884), English botanist, was born at Stoke near Portsmouth on the 22nd of September 1800. His father, Sir Samuel Bentham (1757-1831), was the only brother of Jeremy Bentham, the publicist, and of scarcely inferior ability though in a different direction. Devoting himself in early life to the study of naval architecture, Sir Samuel went to Russia to visit the naval establishments in the Baltic and Black Seas. He was induced to enter the service of the empress Catherine II., built a flotilla of gunboats and defeated the Turkish fleet. For this he was made, in addition to other honours, colonel of a cavalry regiment. On the death of the empress he returned to England to be employed by the admiralty, and was sent (1805-1807) again to Russia to superintend the building of some ships for the British navy. He attained the rank, under the admiralty, of inspector-general of naval works. He introduced a multitude of improvements in naval organization, and it was largely through his recommendation that M.I. Brunel's block-making machinery was installed at Portsmouth.

George Bentham had neither a school nor a college education, but early acquired the power of giving sustained and concentrated attention to any subject that occupied him—one essential condition of the success he attained as perhaps the greatest systematic botanist of the 19th century. Another was his remarkable linguistic aptitude. At the age of six to seven he could converse in French, German and Russian, and he learnt Swedish during a short residence in Sweden when little older. At the close of the war with France, the Benthams made a long tour through that country, staying two years at Montauban, where Bentham studied Hebrew and mathematics in the Protestant Theological School. They eventually settled in the neighbourhood of Montpellier where Sir Samuel purchased a large estate.

The mode in which George Bentham was attracted to the botanical studies which became the occupation of his life is noteworthy; it was through the applicability to them of the logical methods which he had imbibed from his uncle's writings, and not from any special attraction to natural history pursuits. While studying at Angoulême a copy of A.P. de Candolle's *Flore française* fell into his hands and he was struck with the analytical tables for identifying plants. He immediately proceeded to test their use on the first that presented itself. The result was successful and he continued to apply it to every plant he came across. A visit to London in 1823 brought him into contact with the brilliant circle of English botanists. In 1826, at the pressing invitation of his uncle, he agreed to act as his secretary, at the same time entering at Lincoln's Inn and reading for the bar. He was called in due time and in 1832 held his first and last brief. The same year Jeremy Bentham died, leaving his property to his nephew. His father's inheritance had fallen to him the previous year. He was now in a position of modest independence, and able to pursue undistractedly his favourite studies. For a time these were divided between botany, jurisprudence and logic, in addition to editing his father's professional papers. Bentham's first publication was his *Catalogue des plantes indigènes des Pyrénées et du Bas Languedoc* (Paris, 1826), the result of a careful exploration of the Pyrenees in company with G.A. Walker Arnott (1799-1868), afterwards professor of botany in the university of Glasgow. It is interesting to notice that in it Bentham adopted the principle from which he never deviated, of citing nothing at second-hand. This was followed by articles on various legal subjects: on

codification, in which he disagreed with his uncle, on the laws affecting larceny and on the law of real property. But the most remarkable production of this period was the *Outline of a New System of Logic, with a Critical Examination of Dr Whately's Elements of Logic* (1827). In this the principle of the quantification of the predicate was first explicitly stated. This Stanley Jevons declared to be "undoubtedly the most fruitful discovery made in abstract logical science since the time of Aristotle." Before sixty copies had been sold the publisher became bankrupt and the stock went for wastepaper. The book passed into oblivion, and it was not till 1873 that Bentham's claims to priority were finally vindicated against those of Sir William Hamilton by Herbert Spencer. In 1836 he published his *Labiatarum genera et species*. In preparing this work he visited, between 1830-1834, every European herbarium, several more than once. The following winter was passed in Vienna, where he produced his *Commentationes de Leguminosarum generibus*, published in the annals of the Vienna Museum. In 1842 he removed to Pontrilas in Herefordshire. His chief occupation for some succeeding years was his contributions to the *Prodromus Systematis Naturalis Regni Vegetabilis*, which was being carried on by his friend, A.P. deCandolle. In all these dealt with some 4730 species.

In 1854 he found the maintenance of a herbarium and library too great a tax on his means. He therefore offered them to the government on the understanding that they should form the foundation of such necessary aids to research in the Royal Botanic Gardens at Kew. At the same time he contemplated the abandonment of botanical work. Fortunately, he yielded to the persuasion of Sir William Hooker, John Lindley and other scientific friends. In 1855 he took up his residence in London, and worked at Kew for five days a week, with a brief summer holiday, from this time onwards till the end of his life. As his friend Asa Gray wrote: "With such methodical habits, with freedom from professional or administrative functions, which consume the time of most botanists, with steady devotion to his chosen work, and with nearly all authentic material and needful appliances at hand or within reach, it is not so surprising that he should have undertaken and have so well accomplished such a vast amount of work, and he has the crowning merit and happy fortune of having completed all that he undertook." The government, in 1857, sanctioned a scheme for the preparation of a series of Floras or descriptions in the English language of the indigenous plants of British colonies and possessions. Bentham began with the *Flora Hongkongensis* in 1861, which was the first comprehensive work on any part of the little-known flora of China. This was followed by the *Flora Australiensis*, in seven volumes (1863-1878), the first flora of any large continental area that had ever been finished. His greatest work was the *Genera Plantarum*, begun in 1862, and concluded in 1883 in collaboration with Sir Joseph Hooker, "the greater portion being," as Sir Joseph Hooker tells us, "the product of Bentham's indefatigable industry." As age gradually impaired his bodily powers, he seemed at last only to live for the completion of this monumental work.

When the last revise of the last sheet was returned to the printer, the stimulus was withdrawn, and his powers seemed suddenly to fail him. He began a brief autobiography, but the pen with which he had written his two greatest works broke in his hand in the middle of a page. He accepted the omen, laid aside the unfinished manuscript and patiently awaited the not distant end. He died on the both of September 1884, within a fortnight of his 84th birthday.

The scientific world received the *Genera Plantarum* with as unanimous an assent as was accorded to the *Species Plantarum* of Linnaeus. Bentham possessed, as Professor Daniel Oliver remarked, "an insight of so special a character as to deserve the name of genius, into the relative value of characters for practical systematic work, and as a consequence of this, a sure sifting of essentials from non-essentials in each respective grade." His preparation for his crowning work had been practically lifelong. There are few parts of the world upon the botany of which he did not touch. In the sequence and arrangement of the great families of flowering plants, different views from those of Bentham may be adopted. But Bentham paved the way by an intimate and exact statement of the structural facts and their accurate relationship, which is not likely to be improved. In method and style, in descriptive work, Bentham was a supreme master. This, to quote Professor Oliver again, is "manifest not only in its terseness, aptness and precision, but especially in the judicious selection of diagnostic marks, and in the instinctive estimate of probable range in variation, which long experience and innate genius for such work could alone inspire."

(W. T. T.-D.)

BENTHAM, JEREMY (1748-1832), English philosopher and jurist, was born on the 15th of February 1748 in Red Lion Street, Houndsditch, London, in which neighbourhood his grandfather and father successively carried on business as attorneys. His father, who was a wealthy man and possessed at any rate a smattering of Greek, Latin and French, was thought to

have demeaned himself by marrying the daughter of an Andover tradesman, who afterwards retired to a country house near Reading, where young Jeremy spent many happy days. The boy’s talents justified the ambitious hopes which his parents entertained of his future. When three years old he read eagerly such works as Rapin’s *History* and began the study of Latin. A year or two later he learnt to play the violin and to speak French. At Westminster school he obtained a reputation for Greek and Latin verse writing; and he was only thirteen when he was matriculated at Queen’s College, Oxford, where his most important acquisition seems to have been a thorough acquaintance with Sanderson’s logic. He became a B.A. in 1763, and in the same year entered at Lincoln’s Inn, and took his seat as a student in the queen’s bench, where he listened with rapture to the judgments of Lord Mansfield. He managed also to hear Blackstone’s lectures at Oxford, but says that he immediately detected the fallacies which underlay the rounded periods of the future judge.

Bentham’s family connexions would naturally have given him a fair start at the bar, but this was not the career for which he was preparing himself. He spent his time in making chemical experiments and in speculating upon legal abuses, rather than in reading Coke upon Littleton and the Reports. On being called to the bar he “found a cause or two at nurse for him, which he did his best to put to death,” to the bitter disappointment of his father, who had confidently looked forward to seeing him upon the woolsack. The first fruits of Bentham’s studies, the *Fragment on Government*, appeared in 1776. This masterly attack upon Blackstone’s praises of the English constitution was variously attributed to Lord Mansfield, Lord Camden and Lord Ashburton. One important result of its publication was that, in 1781, Lord Shelburne (afterwards first marquess of Lansdowne) called upon its author in his chambers at Lincoln’s Inn. Henceforth Bentham was a frequent guest at Bowood, where he saw the best society and where he met Miss Caroline Fox (daughter of the second Lord Holland), to whom he afterwards made a proposal of marriage. In 1785 Bentham started, by way of Italy and Constantinople, on a visit to his brother, Samuel Bentham, a naval engineer, holding the rank of colonel in the Russian service; and it was in Russia that he wrote his *Defence of Usury*. Disappointed after his return to England in 1788 in the hope which he had entertained, through a misapprehension of something said by Lord Lansdowne, of taking a personal part in the legislation of his country, he settled down to the yet higher task of discovering and teaching the principles upon which all sound legislation must proceed. The great work, upon which he had been engaged for many years, the *Principles of Morals and Legislation*, was published in 1789. His fame spread widely and rapidly. He was made a French citizen in 1792; and his advice was respectfully received in most of the states of Europe and America, with many of the leading men of which he maintained an active correspondence. In 1817 he became a bencher of Lincoln’s Inn. His ambition was to be allowed to prepare a code of laws for his own or some foreign country. During nearly a quarter of a century he was engaged in negotiations with the government for the erection of a “Panopticon,” for the central inspection of convicts; a plan suggested to him by a building designed by his brother Samuel, for the better supervision of his Russian shipwrights. This scheme, which it was alleged would render transportation unnecessary, was eventually abandoned, and Bentham received in 1813, in pursuance of an act of parliament, £23,000 by way of compensation. It was at a later period of his life that he propounded schemes for cutting canals through the isthmus of Suez and the isthmus of Panama. In 1823 he established the *Westminster Review*. Emboldened perhaps by the windfall of 1813, Bentham in the following year took a lease of Ford Abbey, a fine mansion with a deer-park, in Dorsetshire; but in 1818 returned to the house in Queen’s Square Place which he had occupied since the death of his father in 1792. It was there that he died on the 6th of June 1832 in his eighty-fifth year. In accordance with his directions, his body was dissected in the presence of his friends, and the skeleton is still preserved in University College, London.

Bentham’s life was a happy one of its kind. His constitution, weakly in childhood, strengthened with advancing years so as to allow him to get through an incredible amount of sedentary labour, while he retained to the last the fresh and cheerful temperament of a boy. An ample inherited fortune permitted him to pursue his studies undistracted by the necessity for earning a livelihood, and to maximize the results of his time and labour by the employment of amanuenses and secretaries. He was able to gather around him a group of congenial friends and pupils, such as the Mills, the Austins and Bowring, with whom he could discuss the problems upon which he was engaged, and by whom several of his books were practically rewritten from the mass of rough though orderly memoranda which the master had himself prepared. Thus, for instance, was the *Rationale of Judicial Evidence* written out by J.S. Mill and the *Book of Fallacies* by Bingham. The services which Dumont rendered in recasting as well as translating the works of Bentham were still more important.

The popular notion that Bentham was a morose visionary is far removed from fact. It is true that he looked upon general society as a waste of time and that he disliked poetry as “misrepresentation”; but he intensely enjoyed conversation, gave good dinners and delighted in music, in country sights and in making others happy. These features of Bentham’s character are illustrated in the graphic account given by the American minister, Richard Rush, of an evening

spent at his London house in the summer of the year 1818. “If Mr Bentham’s character is peculiar,” he says, “so is his place of residence. It was a kind of blind-alley, the end of which widened into a small, neat courtyard. There by itself stands Mr Bentham’s house. Shrubbery graced its area and flowers its window-sills. It was like an oasis in the desert. Its name is the Hermitage. Mr Bentham received me with the simplicity of a philosopher. I should have taken him for seventy or upwards. Everything inside the house was orderly. The furniture seemed to have been unmoved since the days of his fathers, for I learned that it was a patrimony. A parlour, library and dining-room made up the suite of apartments. In each was a piano, the eccentric master of the whole being fond of music as the recreation of his literary hours. It is a unique, romantic-like homestead. Walking with him into the garden, I found it dark with the shade of ancient trees. They formed a barrier against all intrusion. The company was small but choice. Mr Brougham; Sir Samuel Romilly; Mr Mill, author of the well-known work on India; M. Dumont, the learned Genevan, once the associate of Mirabeau, were all who sat down to table. Mr Bentham did not talk much. He had a benevolence of manner suited to the philanthropy of his mind. He seemed to be thinking only of the convenience and pleasure of his guests, not as a rule of artificial breeding as from Chesterfield or Madame Genlis, but from innate feeling. Bold as are his opinions in his works, here he was wholly unobtrusive of theories that might not have commended the assent of all present. When he did converse it was in simple language, a contrast to his later writings, where an involved style and the use of new or universal words are drawbacks upon the speculations of a genius original and profound, but with the faults of solitude. Yet some of his earlier productions are distinguished by classical terseness.”—(*Residence at the Court of London*, p. 286.) Bentham’s love of flowers and music, of green foliage and shaded walks, comes clearly out in this pleasant picture of his home life and social surroundings.

Whether or no he can be said to have founded a school, his doctrines have become so far part of the common thought of the time, that there is hardly an educated man who does not accept as too clear for argument truths which were invisible till Bentham pointed them out. His sensitively honourable nature, which in early life had caused him to shrink from asserting his belief in Thirty-nine articles of faith which he had not examined, was shocked by the enormous abuses which confronted him on commencing the study of the law. He rebelled at hearing the system under which they flourished described as the perfection of human reason. But he was no merely destructive critic. He was determined to find a solid foundation for both morality and law, and to raise upon it an edifice, no stone of which should be laid except in accordance with the deductions of the severest logic. This foundation is “the greatest happiness of the greatest number,” a formula adopted from Priestly or perhaps first from Beccaria. The phrase may, however, be found in writers of an earlier date than these, *e.g.* in Hutcheson’s *Enquiry*, published in 1725. The pursuit of such happiness is taught by the “utilitarian” philosophy, an expression used by Bentham himself in 1802, and therefore not invented by J.S. Mill, as he supposed, in 1823. In order to ascertain what modes of action are most conducive to the end in view, and what motives are best fitted to produce them, Bentham was led to construct marvellously exhaustive, though somewhat mechanical, tables of motives. With all their elaboration, these tables are, however, defective, as omitting some of the highest and most influential springs of action. But most of Bentham’s conclusions may be accepted without any formal profession of the utilitarian theory of morals. They are, indeed, merely the application of a rigorous common sense to the facts of society. That the proximate ends at which Bentham aimed are desirable hardly any one would deny, though the feasibility of the means by which he proposes to attain them may often be questioned, and much of the new nomenclature in which he thought fit to clothe his doctrines may be rejected as unnecessary. To be judged fairly, Bentham must be judged as a teacher of the principles of legislation. With the principles of private morals he really deals only so far as is necessary to enable the reader to appreciate the impulses which have to be controlled by law.

As a teacher of legislation he inquires of all institutions whether their utility justifies their existence. If not, he is prepared to suggest a new form of institution by which the needful service may be rendered. While thus engaged no topic is too large for his mental grasp, none too small for his notice; and, what is still rarer, every topic is seen in its due relation to the rest. English institutions had never before been thus comprehensively and dispassionately surveyed. Such improvements as had been necessitated were mere makeshifts, often made by stealth. The rude symmetry of the feudal system had been long ago destroyed by partial and unskilful adaptations to modern commercial life, effected at various dates and in accordance with various theories. The time had come for deliberate reconstruction, for inquiring whether the existence of many admitted evils was, as it was said to be, unavoidable; for proving that the needs of society may be classified and provided for by contrivances which shall not clash with one another because all shall be parts of a consistent whole. This task Bentham undertook, and he brought to it a mind absolutely free from professional or class feeling, or any other species of prejudice. He mapped out the whole subject, dividing and subdividing it in accordance with the principle of “dichotomy.” Having reached his ultimate subdivisions he subjects each to the most thorough

and ingenious discussion. His earlier writings exhibit a lively and easy style, which gives place in his later treatises to sentences which are awkward from their effort after unattainable accuracy, and from the newly-invented technical nomenclature in which they are expressed. Many of Bentham’s phrases, such as “international,” “utilitarian,” “codification,” are valuable additions to our language; but the majority of them, especially those of Greek derivation, have taken no root in it. His neology is one among many instances of his contempt for the past and his wish to be clear of all association with it. His was, indeed, a typically logical, as opposed to a historical, mind. For the history of institutions which, thanks largely to the writings of Sir Henry Maine, has become a new and interesting branch of science, Bentham cared nothing. Had he possessed such a knowledge of Roman law as is now not uncommon in England, he must doubtless have taken a different view of many subjects. The logical and historical methods can, however, seldom be combined without confusion; and it is perhaps fortunate that Bentham devoted his long life to showing how much may be done by pursuing the former method exclusively. His writings have been and remain a storehouse of instruction for statesmen, an armoury for legal reformers. “Pillé par tout le monde,” as Talleyrand said of him, “il est toujours riche.” To trace the results of his teaching in England alone would be to write a history of the legislation of half a century. Upon the whole administrative machinery of government, upon criminal law and upon procedure, both criminal and civil, his influence has been most salutary; and the great legal revolution which in 1873 purported to accomplish the fusion of law and equity is not obscurely traceable to the same source. Those of Bentham’s suggestions which have hitherto been carried out have affected the matter or contents of the law. The hopes which have been from time to time entertained, that his suggestions for the improvement of its form and expression were about to receive the attention which they deserved, have hitherto been disappointed. The services rendered by Bentham to the world would not, however, be exhausted even by the practical adoption of every one of his recommendations. There are no limits to the good results of his introduction of a true method of reasoning into the moral and political sciences.

Bentham’s *Works*, together with an Introduction by J. Hill Burton, selections from his correspondence and a biography, were published by Dr Bowring, in eleven closely printed volumes (1838-1843). This edition does not include the *Deontology*, which, much rewritten, had been published by Bowring in 1834. Translations of the *Works* or of separate treatises have appeared in most European languages. Large masses of Bentham’s MSS., mostly unpublished, are preserved at University College, London (see T. Whittaker’s *Report*, 1892, on these MSS., as newly catalogued and reclassified by him in 155 parcels); also in the British Museum (see E. Nys, *Études de droit international et de droit politique*, 1901, pp. 291-333). See farther on the life and writings of Bentham: J.H. Burton, *Benthamiana* (1843); R. von Mohl, *Geschichte und Literatur der Staatswissenschaften*, bk. iii. (1858), pp. 595-635; R.K. Wilson, *History of Modern English Law* (1875), pp. 133-170; J.S. Mill, *Dissertations* (1859), vol. i. pp. 330-392; L. Stephen, *The English Utilitarians* (1900), vol. i.; *A Fragment on Government*, edited by F.C. Montague (1891); *The Law Quarterly Review* (1895), two articles on Bentham’s influence in Spain; A.V. Dicey, *Law and Opinion in England* (1905), pp. 125-209; C.M. Atkinson, *Jeremy Bentham* (1905).

(T. E. H.)

BENTINCK, LORD WILLIAM (1774-1839), governor-general of India, was the second son of the 3rd duke of Portland and was born on the 14th of September 1774. He entered the army, rose to the rank of lieutenant-colonel and was present at Marengo. In 1803 he was nominated governor of Madras, where he quarrelled with the chief justice, Sir Henry Gwillim, and several members of his council. The sepoy mutiny at Vellore in 1807 led to his recall. His name was considered at this time for the post of governor-general, but Lord Minto was selected instead; and it was not until twenty years later that he succeeded Lord Amherst in that office. His governor-generalship (1827-1835) was notable for many reforms, chief among which were the suppression of the Thugs (*q.v.*), the abolition of suttee, and the making of the English language the basis of education in India. It was on this last subject that Lord Macaulay’s famous minute was written. Lord William’s administration was essentially peaceful, but progressive and successful. He died at Paris on the 17th of June 1839.

See Demetrius C. Boulger, *Lord William Bentinck*, in the “Rulers of India” series (1892).

BENTINCK, LORD WILLIAM GEORGE FREDERICK CAVENDISH, better known as Lord

George Bentinck (1802-1848), British politician, was the second surviving son of the fourth duke of Portland, by Henrietta, sister of Viscountess Canning, and was born on the 27th of February 1802. He was educated at home until he obtained his commission as cornet in the 10th hussars at the age of seventeen. He practically retired from the army in 1822 and acted for some time as private secretary to his uncle George Canning. In 1828 he succeeded his uncle Lord William Bentinck as member for Lynn-Regis, and continued to represent that constituency during the remaining twenty years of his life. His failures as a speaker in parliament seem to have discouraged him from the attempt to acquire reputation as a politician, and till within three years of his death he was little known out of the sporting world. As one of the leaders on "the turf," however, he was distinguished by that integrity, judgment and indomitable determination which, when brought to bear upon weightier matters, quickly gave him a position of first-rate importance in the political world. On his first entrance into parliament he belonged to the moderate Whig party, and voted in favour of Catholic emancipation, as also for the Reform Bill, though he opposed some of its principal details. Soon after, however, he joined the ranks of the opposition, with whom he sided up to the important era of 1846. When, in that year, Sir Robert Peel openly declared in favour of free trade, the advocates of the corn-laws, then without a leader, after several ineffectual attempts at organization, discovered that Lord George Bentinck was the only man of position and family (for Disraeli's time was not yet come) around whom the several sections of the opposition could be brought to rally. His sudden elevation took the public by surprise; but he soon gave convincing evidence of powers so formidable that the Protectionist party under his leadership was at once stiffened into real importance. Towards Peel, in particular, his hostility was uncompromising. Believing, as he himself expressed it, that that statesman and his colleagues had "hounded to the death his illustrious relative" Canning, he combined with his political opposition a degree of personal animosity that gave additional force to his invective. On entering on his new position, he at once abandoned his connexion with the turf, disposed of his magnificent stud and devoted his whole energies to the laborious duties of a parliamentary leader. Apart from the question of the corn-laws, however, his politics were decidedly independent. In opposition to the rest of his party, he supported the bill for removing the Jewish disabilities, and was favourable to the scheme for the payment of the Roman Catholic clergy in Ireland by the landowners. The result was that on December 23rd, 1847, he wrote a letter resigning the Protectionist leadership, though he still remained active in politics. But his positive abilities as a constructive statesman were not to be tested, for he died suddenly at Welbeck on the 21st of September 1848. It was to be left to Disraeli to bring the Conservative party into power, with Protection outside its programme.

See *Lord George Bentinck: a Political Biography* (1851), by B. Disraeli (Lord Beaconsfield).

BENTIVOGLIO, GIOVANNI (1443-1508), tyrant of Bologna, descended from a powerful family which exercised great influence in Bologna during the 15th century, was born after the murder of his father, then chief magistrate of the commune. In 1462 Giovanni contrived to make himself master of the city, although it was nominally a fief of the church under a papal legate. He ruled with a stern sway for nearly half a century, but the brilliance of his court, his encouragement of the fine arts and his decoration of the city with sumptuous edifices, to some extent compensated the Bolognese for the loss of their liberty. Cesare Borgia (*q.v.*) contemplated the subjugation of Bologna in 1500, when he was crushing the various despots of Romagna, but Bentivoglio was saved for the moment by French intervention. In 1502 he took part in the conspiracy against Cesare, but, when the latter obtained French assistance, he abandoned his fellow-conspirators and helped Borgia to overcome them. During the brief pontificate of Pius III., who succeeded Alexander VI. in 1503, Bentivoglio enjoyed a respite, but the new pope, Julius II., was determined to reduce all the former papal states to obedience. Having won Louis XII. of France to his side, he led an army against Bologna, excommunicated Bentivoglio and forced him to abandon the city (November 1506). The deposed tyrant took refuge with the French, whom he trusted more than the pope, and died at Milan in 1508.

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BENTIVOGLIO, GUIDO (1579-1644), Italian cardinal, statesman and historian, was born at Ferrara in 1579. After studying at Padua, he went to reside at Rome, and was received with great favour by Pope Clement VIII., who made him his private chamberlain. The next pope, Paul V., created him archbishop of Rhodes in 1607, and appointed him as nuncio to Flanders and afterwards to France; on his return to Rome in 1621 he was created cardinal and entrusted by Louis XIII. with the management of French affairs at the papal court. He became the intimate friend of Pope Urban VIII., who appointed him to the suburban see of Palestrina in 1691. An able writer and skilful diplomatist, Bentivoglio was marked out as Urban's successor, but he died suddenly on the 7th of September 1644 at the opening of the conclave. Bentivoglio's principal works are:—*Della Guerra di Fiandria* (best edition, Cologne, 1633-1639), translated into English by Henry, earl of Monmouth (London, 1654); *Relazioni di G. Bentivoglio in tempo delle sue Nunziature di Fiandria e di Francia* (Cologne, 1630); *Lettere diplomatiche di Guido Bentivoglio* (Brussels, 1631, frequently reprinted, best edition by L. Scarabelli, 2 vols., Turin, 1852). The complete edition of his works was published at Venice in 1668 in 4to. A selection of his letters has been adopted as a classic in the Italian schools.

BENTLEY, RICHARD (1662-1742), English scholar and critic, was born at Oulton near Wakefield, Yorkshire, on the 27th of January 1662. His grandfather had suffered in person and estate in the royalist cause, and the family were in consequence in reduced circumstances. Bentley's mother, the daughter of a stonemason in Oulton, was a woman of excellent understanding and some education, as she was able to give her son his first lessons in Latin. From the grammar school of Wakefield Richard Bentley passed to St John's College, Cambridge, being admitted subsizar in 1676. He afterwards obtained a scholarship and took the degree of B.A. in 1680 (M.A. 1683). He never succeeded to a fellowship, being appointed by his college, before he was twenty-one, headmaster of Spalding grammar school. In this post he did not remain long, being selected by Dr Edward Stillingfleet, dean of St Paul's, to be domestic tutor to his son. This appointment introduced Bentley at once to the society of the most eminent men of the day, threw open to him the best private library in England, and brought him into familiar intercourse with Dean Stillingfleet, a man of sound understanding, who had not shrunk from exploring some of the more solid and abstruse parts of ancient learning. The six years which he passed in Stillingfleet's family were employed, with the restless energy characteristic of the man, in exhausting the remains of the Greek and Latin writers, and laying up those stores of knowledge upon which he afterwards drew as circumstances required.

In 1689 Stillingfleet became bishop of Worcester, and Bentley's pupil went to reside at Oxford in Wadham College, accompanied by his tutor. Bentley's introductions and his own merits placed him at once on a footing of intimacy with the most distinguished scholars in the university, Dr John Mill, Humphrey Hody, Edward Bernard. Here he revelled in the MS. treasures of the Bodleian, Corpus and other college libraries. He projected and occupied himself with collections for vast literary schemes. Among these are specially mentioned a *corpus* of the fragments of the Greek poets and an edition of the Greek lexicographers. But his first publication was in connexion with a writer of much inferior note. The Oxford (Sheldonian) press was about to bring out an edition (the *editio princeps*) from the unique MS. in the Bodleian of the Greek *Chronicle* (a universal history down to A.D. 560) of John of Antioch (date uncertain, between 600 and 1000), called John Malalas or "John the Rhetor"; and the editor, Dr John Mill, principal of St Edmund Hall, had requested Bentley to look through the sheets and make any remarks on the text. This originated Bentley's *Epistola ad Millium*, which occupies less than one hundred pages at the end of the Oxford *Malalas* (1691). This short tractate at once placed Bentley at the head of all living English scholars. The ease with which, by a stroke of the pen, he restores passages which had been left in hopeless corruption by the editors of the *Chronicle*, the certainty of the emendation and the command over the relevant material, are in a style totally different from the careful and laborious learning of Hody, Mill or E. Chilmead. To the small circle of classical students (lacking the great critical dictionaries of modern times) it was at once apparent that there had arisen in England a critic whose attainments were not to be measured by the ordinary academical standard, but whom these few pages had sufficed to place by the side of the great Grecians of a former age. Unfortunately this mastery over critical science was accompanied by a tone of self-assertion and presumptuous confidence which not only checked admiration, but was calculated to rouse enmity. Dr Monk, indeed, Bentley's biographer, charged him (in his first edition, 1830) with an indecorum of which he was not guilty. "In one place," writes Dr Monk, "he accosts Dr Mill as ὦ Ἰωαννιδίον (Johnny), an indecorum which neither the familiarity of friendship, nor the licence of a dead language, can justify towards the dignified head of a house." But the object of Bentley's apostrophe was not his correspondent Dr Mill, but his author John Malalas, whom in

another place he playfully appeals to as “Syrisce.” From this publication, however, dates the origin of those mixed feelings of admiration and repugnance which Bentley throughout his career continued to excite among his contemporaries.

In 1690 Bentley had taken deacon’s orders in the Church. In 1692 he was nominated first Boyle lecturer, a nomination which was repeated in 1694. He was offered the appointment a third time in 1695 but declined it, being by that time involved in too many other undertakings. In the first series of lectures (“A Confutation of Atheism”) he endeavours to present the Newtonian physics in a popular form, and to frame them (especially in opposition to Hobbes) into a proof of the existence of an intelligent Creator. He had some correspondence with Newton, then living in Trinity College, on the subject. The second series, preached in 1694, has not been published and is believed to be lost. Andrew Kippis, the editor of the *Biographia Britannica*, mentions MS. copies of them as in existence. Scarcely was Bentley in priest’s orders before he was preferred to a prebendal stall in Worcester cathedral. In 1693 the keepership of the royal library becoming vacant, great efforts were made by his friends to obtain the place for Bentley, but through court interest the post was given to Mr Thynne. An arrangement, however, was made, by which the new librarian resigned in favour of Bentley, on condition that he received an annuity of £130 for life out of the salary, which only amounted to £200. To these preferments were added in 1695 a royal chaplaincy and the living of Hartlebury. In the same year Bentley was elected a fellow of the Royal Society, and in 1696 proceeded to the degree of D.D. The recognition of continental scholars came in the shape of a dedication, by Graevius, prefixed to a dissertation of Albert Rubens, *De Vita Flavii Mallii Theodori*, published at Utrecht in 1694.

While these distinctions were being accumulated upon Bentley, his energy was making itself felt in many and various directions. He had official apartments in St James’s Palace, and his first care was the royal library. He made great efforts to retrieve this collection from the dilapidated condition into which it had been allowed to fall. He employed the mediation of the earl of Marlborough to beg the grant of some additional rooms in the palace for the books. The rooms were granted, but Marlborough characteristically kept them for himself. Bentley enforced the law against the publishers, and thus added to the library nearly 1000 volumes which they had neglected to deliver. He was commissioned by the university of Cambridge to obtain Greek and Latin founts for their classical books, and accordingly he had cast in Holland those beautiful types which appear in the Cambridge books of that date. He assisted Evelyn in his *Numismata*. All Bentley’s literary appearances at this time were of this accidental character. We do not find him settling down to the steady execution of any of the great projects with which he had started. He designed, indeed, in 1694 an edition of Philostratus, but readily abandoned it to G. Olearius, (Öhlschläger), “to the joy,” says F.A. Wolf, “of Olearius and of no one else.” He supplied Graevius with collations of Cicero, and Joshua Barnes with a warning as to the spuriousness of the *Epistles of Euripides*, which was thrown away upon that blunderer, who printed the epistles and declared that no one could doubt their genuineness but a man *perfrictae frontis aut judicii imminuti*. Bentley supplied to Graevius’s *Callimachus* a masterly collection of the fragments with notes, published at Utrecht in 1697.

The *Dissertation on the Epistles of Phalaris*, the work on which Bentley’s fame in great part rests, originated in the same casual way. William Wotton, being about to bring out in 1697 a second edition of his book on *Ancient and Modern Learning*, claimed of Bentley the fulfilment of an old promise to write a paper exposing the spuriousness of the *Epistles of Phalaris*. This paper was resented as an insult by the Christ Church editor of Phalaris, Charles Boyle, afterwards earl of Orrery, who in getting the MS. in the royal library collated for his edition (1695) had had a little quarrel with Bentley. Assisted by his college friends, particularly Atterbury, Boyle wrote a reply, “a tissue,” says Dr Alexander Dyce (in his edition of Bentley’s Works, 1836-1838), “of superficial learning, ingenious sophistry, dexterous malice and happy raillery.” The reply was hailed by the public as crushing and went immediately into a second edition. It was incumbent on Bentley to rejoin. This he did (1699) in what Porson styles “that immortal dissertation,” to which no answer was or could be given, although the truth of its conclusions was not immediately recognized. (See Phalaris.)

In the year 1700 Bentley received that main preferment which, says De Quincey, “was at once his reward and his scourge for the rest of his life.” The six commissioners of ecclesiastical patronage unanimously recommended Bentley to the crown for the mastership of Trinity College, Cambridge. This college, the most splendid foundation in the university of Cambridge, and in the scientific and literary reputation of its fellows the most eminent society in either university, had in 1700 greatly fallen from its high estate. It was not that it was more degraded than the other colleges, but its former lustre made the abuse of endowments in its case more conspicuous. The eclipse had taken place during the reaction which followed 1660, and was owing to causes which were not peculiar to Trinity, but which influenced the nation at large. The names of John Pearson and Isaac Barrow, and, greater than either, that of Newton, adorn the college annals of this period. But these were quite exceptional men. They had not inspired the rank and file of fellows of Trinity with any of their own love for learning or science. Indolent and

easy-going clerics, without duties, without a pursuit or any consciousness of the obligation of endowments, they haunted the college for the pleasant life and the good things they found there, creating sinecure offices in each other's favour, jobbing the scholarships and making the audits mutually pleasant. Any excuse served for a banquet at the cost of "the house," and the celibacy imposed by the statutes was made as tolerable as the decorum of a respectable position permitted. To such a society Bentley came, obnoxious as a St John's man and an intruder, unwelcome as a man of learning whose interests lay outside the walls of the college. Bentley replied to their concealed dislike with open contempt, and proceeded to ride roughshod over their little arrangements. He inaugurated many beneficial reforms in college usages and discipline, executed extensive improvements in the buildings, and generally used his eminent station for the promotion of the interests of learning both in the college and in the university. But this energy was accompanied by a domineering temper, an overweening contempt for the feelings and even for the rights of others, and an unscrupulous use of means when a good end could be obtained. Bentley, at the summit of classical learning, disdained to associate with men whom he regarded as illiterate priests. He treated them with contumely, while he was diverting their income to public purposes. The continued drain upon their purses—on one occasion the whole dividend of the year was absorbed by the rebuilding of the chapel—was the grievance which at last roused the fellows to make a resolute stand. After ten years of stubborn but ineffectual resistance within the college, they had recourse in 1710 to the last remedy—an appeal to the visitor, the bishop of Ely (Dr Moore). Their petition is an ill-drawn invective, full of general complaints and not alleging any special delinquency. Bentley's reply (*The Present State of Trinity College, &c.*, 1710) is in his most crushing style. The fellows amended their petition and put in a fresh charge, in which they articled fifty-four separate breaches of the statutes as having been committed by the master. Bentley, called upon to answer, demurred to the bishop of Ely's jurisdiction, alleging that the crown was visitor. He backed his application by a dedication of his *Horace* to the lord treasurer (Harley). The crown lawyers decided the point against him; the case was heard (1714) and a sentence of ejection from the mastership ordered to be drawn up, but before it was executed the bishop of Ely died and the process lapsed. The feud, however, still went on in various forms. In 1718 Bentley was deprived by the university of his degrees, as a punishment for failing to appear in the vice-chancellor's court in a civil suit; and it was not till 1724 that the law compelled the university to restore them. In 1733 he was again brought to trial before the bishop of Ely (Dr Greene) by the fellows of Trinity and was sentenced to deprivation, but the college statutes required the sentence to be exercised by the vice-master (Dr Walker), who was Bentley's friend and refused to act. In vain were attempts made to compel the execution of the sentence, and though the feud was kept up till 1738 or 1740 (about thirty years in all) Bentley remained undisturbed.

During the period of his mastership, with the exception of the first two years, Bentley pursued his studies uninterruptedly, although the results in the shape of published works seem incommensurable. In 1709 he contributed a critical appendix to John Davies's edition of Cicero's *Tusculan Disputations*. In the following year he published his emendations on the *Plutus* and *Nubes* of Aristophanes, and on the fragments of Menander and Philemon. The last came out under the name of "Phileleutherus Lipsiensis," which he made use of two years later in his *Remarks on a late Discourse of Freethinking*, a reply to Anthony Collins the deist. For this he received the thanks of the university, in recognition of the service thereby rendered to the church and clergy. His *Horace*, long contemplated and in the end written in very great haste and brought out to propitiate public opinion at a critical period of the Trinity quarrel, appeared in 1711. In the preface he declared his intention of confining his attention to criticism and correction of the text, and ignoring exegesis. Some of his 700 or 800 emendations have been accepted, but the majority of them are now rejected as unnecessary and prosaic, although the learning and ingenuity shown in their support are remarkable. In 1716, in a letter to Dr Wake, archbishop of Canterbury, he announced his design of preparing a critical edition of the New Testament. During the next four years, assisted by J.J. Wetstein, an eminent biblical critic, who claimed to have been the first to suggest the idea to Bentley, he collected materials for the work, and in 1720 published *Proposals for a New Edition of the Greek Testament*, with specimens of the manner in which he intended to carry it out. He proposed, by comparing the text of the Vulgate with that of the oldest Greek MSS., to restore the Greek text as received by the church at the time of the council of Nice. A large number of subscribers to the work was obtained, but it was never completed. His *Terence* (1726) is more important than his *Horace*, and it is upon this, next to the *Phalaris*, that his reputation mainly rests. Its chief value consists in the novel treatment of the metrical questions and their bearing on the emendation of the text. To the same year belong the *Fables* of Phaedrus and the *Sententiae* of Publius Syrus. The *Paradise Lost* (1732), undertaken at the suggestion of Queen Caroline, is generally regarded as the most unsatisfactory of all his writings. It is marred by the same rashness in emendation and lack of poetical feeling as his Horace; but there is less excuse for him in this case, since the English text could not offer the same field for conjecture. He put forward the idea that Milton employed both an amanuensis and an editor, who were to be held responsible for the clerical errors, alterations and interpolations which Bentley professed to detect. It is uncertain whether this was a device

on the part of Bentley to excuse his own numerous corrections, or whether he really believed in the existence of this editor. Of the contemplated edition of Homer nothing was published; all that remains of it consists of some manuscript and marginal notes in the possession of Trinity College. Their chief importance lies in the attempt to restore the metre by the insertion of the lost digamma. Among his minor works may be mentioned: the *Astronomica* of Manilius (1739), for which he had been collecting materials since 1691; a letter on the Sigean inscription on a marble slab found in the Troad, now in the British Museum; notes on the *Theriaca* of Nicander and on Lucan, published after his death by Cumberland; emendations of Plautus (in his copies of the editions by Pareus, Camerarius and Gronovius, edited by Schröder, 1880, and Sonnenschein, 1883). *Bentleii Critica Sacra* (1862), edited by A.A. Ellis, contains the epistle to the Galatians (and excerpts), printed from an interleaved folio copy of the Greek and Latin Vulgate in Trinity College. A collection of his *Opuscula Philologica* was published at Leipzig in 1781. The edition of his works by Dyce (1836-1838) is incomplete.

He had married in 1701 Joanna, daughter of Sir John Bernard of Brampton in Huntingdonshire. Their union lasted forty years. Mrs Bentley died in 1740, leaving a son, Richard, and two daughters, one of whom married in 1728 Mr Denison Cumberland, grandson of Richard Cumberland, bishop of Peterborough. Their son was Richard Cumberland, the dramatist. Surrounded by his grandchildren, Dr Bentley experienced the joint pressure of age and infirmity as lightly as is consistent with the lot of humanity. He continued to amuse himself with reading; and though nearly confined to his arm-chair, was able to enjoy the society of his friends and several rising scholars, J. Markland, John Taylor, his nephews Richard and Thomas Bentley, with whom he discussed classical subjects. He was accustomed to say that he should live to be eighty, adding that a life of that duration was long enough to read everything worth reading. He fulfilled his own prediction, dying of pleurisy on the 14th of July 1742. Though accused by his enemies of being grasping, he left not more than £5000 behind him. A few Greek MSS., brought from Mount Athos, he left to the college library; his books and papers to his nephew, Richard Bentley. Richard, who was a fellow of Trinity, at his death in 1786 left the papers to the college library. The books, containing in many cases valuable manuscript notes, were purchased by the British Museum.

Of his personal habits some anecdotes are related by his grandson, Richard Cumberland, in vol. i. of his *Memoirs* (1807). The hat of formidable dimensions, which he always wore during reading to shade his eyes, and his preference of port to claret (which he said “would be port if it could”) are traits embodied in Pope’s caricature (*Dunciad*, b. 4), which bears in other respects little resemblance to the original. He did not take up the habit of smoking till he was seventy. He held the archdeaconry of Ely with two livings, but never obtained higher preference in the church. He was offered the (then poor) bishopric of Bristol but refused it, and being asked what preferment he would consider worth his acceptance, replied, “That which would leave him no reason to wish for a removal.”

Bentley was the first, perhaps the only, Englishman who can be ranked with the great heroes of classical learning, although perhaps not a great classical scholar. Before him there were only John Selden, and, in a more restricted field, Thomas Gataker and Pearson. But Selden, a man of stupendous learning, wanted the freshness of original genius and confident mastery over the whole region of his knowledge. “Bentley inaugurated a new era of the art of criticism. He opened a new path. With him criticism attained its majority. Where scholars had hitherto offered suggestions and conjectures, Bentley, with unlimited control over the whole material of learning, gave decisions” (Mähly). The modern German school of philology does ungrudging homage to his genius. Bentley, says Bunsen, “was the founder of historical philology.” And Jakob Bernays says of his corrections of the *Tristia*, “corruptions which had hitherto defied every attempt even of the mightiest, were removed by a touch of the fingers of this British Samson.” The English school of Hellenists, by which the 18th century was distinguished, and which contains the names of R. Dawes, J. Markland, J. Taylor, J. Toup, T. Tyrwhitt, Richard Porson, P.P. Dobree, Thomas Kidd and J.H. Monk, was the creation of Bentley. And even the Dutch school of the same period, though the outcome of a native tradition, was in no small degree stimulated and directed by the example of Bentley, whose letters to the young Hemsterhuis on his edition of Julius Pollux produced so powerful an effect on him, that he became one of Bentley’s most devoted admirers.

Bentley was a source of inspiration to a following generation of scholars. Himself, he sprang from the earth without forerunners, without antecedents. Self-taught, he created his own science. It was his misfortune that there was no contemporary gild of learning in England by which his power could be measured, and his eccentricities checked. In the *Phalaris* controversy his academical adversaries had not sufficient knowledge to know how absolute their defeat was. Garth’s couplet—

“So diamonds take a lustre from their foil,
And to a Bentley ’tis we owe a Boyle”—

expressed the belief of the wits or literary world of the time. The attacks upon him by Pope, John Arbuthnot and others are evidence of their inability to appreciate his work. To them, textual criticism seemed mere pedantry and useless labour. It was not only that he had to live with inferiors, and to waste his energy in a struggle forced upon him by the necessities of his official position, but the wholesome stimulus of competition and the encouragement of a sympathetic circle were wanting. In a university where the instruction of youth or the religious controversy of the day were the only known occupations, Bentley was an isolated phenomenon, and we can hardly wonder that he should have flagged in his literary exertions after his appointment to the mastership of Trinity. All his vast acquisitions and all his original views seem to have been obtained before 1700. After this period he acquired little and made only spasmodic efforts—the *Horace*, the *Terence* and the *Milton*. The prolonged mental concentration and mature meditation, which alone can produce a great work, were wanting to him.

F.A. Wolf, *Literarische Analekten*, i. (1816); Monk, *Life of Bentley* (1830); J. Mähly, *Richard Bentley, eine Biographie* (1868); R.C. Jebb, *Bentley* (“English Men of Letters” series, 1882), where a list of authorities bearing on Bentley’s life and work is given. For his letters see *Bentlei et doctorum virorum ad eum Epistolae* (1807); *The Correspondence of Richard Bentley*, edited by C. Wordsworth (1842). See also J.E. Sandys, *History of Classical Scholarship*, ii. 401-410 (1908); and the *Bibliography of Bentley*, by A.T. Bartholomew and J.W. Clark (Cambridge, 1908).

BENTLEY, RICHARD (1794-1871), British publisher, was born in London in 1794. His father owned the *General Evening Post* in conjunction with John Nichols, to whom Richard Bentley, on leaving St Paul’s school, was apprenticed to learn the printing trade. With his brother Samuel (1785-1868), an antiquarian of some repute, he set up a printing establishment, but in 1829 he began business as a publisher in partnership with Henry Colburn in New Burlington Street. Colburn retired in 1832 and Bentley continued business on his own account. In 1837 he began *Bentley’s Miscellany*, edited for the first three years of its existence by Charles Dickens, whose *Oliver Twist*, with Cruikshank’s illustrations, appeared in its pages. Bentley and his son George (1828-1895), as Richard Bentley & Son, published works by R.H. Barham, Theodore Hook, Isaac D’Israeli, Judge Haliburton and others; also the “Library of Standard Novels” and the “Favourite Novel Library.” In the latter series Mrs Henry Wood’s *East Lynne* appeared. In 1866 the firm took over the publication of *Temple Bar*, with which *Bentley’s Miscellany* was afterwards incorporated. Richard Bentley died on the 10th of September 1871. His son, George Bentley, and his grandson, Richard Bentley, junior, continued the business until it was absorbed (1898) by Macmillan & Co.

See also *R. Bentley & Son* (Edinburgh, 1886), a history of the firm reprinted from *Le Livre* (October, 1885).

BENTON, THOMAS HART (1782-1858), American statesman, was born at Hillsborough, Orange county, North Carolina, on the 14th of March 1782. His father, an Englishman of refinement and scholarship, died in 1790, leaving the boy under the influence of a very superior mother, from whom he received lessons in book learning, piety and temperance quite unusual in the frontier country. His home studies, facilitated by his father’s fine library, were supplemented by a brief stay at the university of North Carolina (Chapel Hill) in 1799. The family removed, probably in this year, to a large tract of land which had been acquired by the father on the outskirts of the Indian country (at Benton Town, now Leipers Fork) near Franklin, Tennessee. The following years, during which Benton was at various times school teacher, farmer, lawyer and politician, were the distinctively formative period of his life. His intense democracy and many features of his boldly cast personality were perfectly representative of the border people among whom he lived; although his education, social standing and force of character placed him above his fellows. In 1809 he served a term as state senator. Between 1815 and 1817 he transferred his interests to St Louis, Missouri, and in 1820 was elected United States senator from the new state. His senatorial career of thirty years (1821-1851) was one of extreme prominence. A friendship early formed in Tennessee for Andrew Jackson was broken in 1813 by an armed fracas between the principals and their friends, but after the presidential election of 1824 Benton became a Jacksonian Democrat and Jackson’s close friend, and as such was long the Democratic leader in the Senate, his power being greatest during Jackson’s second term. He

continued to be the administration’s right-hand man under Van Buren, but gradually lost influence under Polk, with whom he finally broke both personally and politically.

The events of Benton’s political life are associated primarily with three things: the second United States Bank, westward expansion and slavery. In the long struggles over the bank, the deposits and the “expunging resolution” (*i.e.* the resolution to expunge from the records of the Senate the vote of censure of President Jackson for his removal of the government deposits from the bank), Benton led the Jackson Democrats. His opposition to a national bank and insistence on the peculiar virtues of “hard money,” whence his sobriquet of “Old Bullion,” went back to his Tennessee days. In all that concerned the expansion of the country and the fortunes of the West no public man was more consistent or more influential than Benton, and none so clear of vision. Reared on the border, and representing a state long the farthermost outpost across the Mississippi in the Indian country, he held the ultra-American views of his section as regarded foreign relations generally, and the “manifest destiny” of expansion westward especially. It was quite natural that he should advocate the removal westward of the Indian tribes, should urge the encouragement of trade with Sante Fé (New Mexico), and should oppose the abandonment in the Spanish treaty of 1819 of American claims to Texas. He once thought the Rocky Mountains the proper western limit of the United States (1824), but this view he soon outgrew. He was the originator of the policy of homestead laws by which the public lands were used to promote the settlement of the west by home-seekers. No other man was so early and so long active for transcontinental railways. But Benton was not a land-grabber, whether in the interest of slavery or of mere jingoism. In the case of Oregon, for instance, he was firmly against joint occupation with Great Britain, but he was always for the boundary of 49° and never joined in the campaign-jingo cry of “Fifty-four Forty or Fight.” It was he who chiefly aided Polk in withdrawing from that untenable position. He despised pretexts and intrigues. Both in the case of Oregon and in that of Texas, though one of the earliest and most insistent of those who favoured their acquisition, yet in the face of southern and western sentiment he denounced the sordid and devious intrigues and politics connected with their acquisition, and kept clear of these. For the same reason he opposed the Mexican War, though not its prosecution once begun. In the Texas question slavery was prominent. Toward slavery Benton held a peculiarly creditable attitude. A southerner, he was a slaveholder; but he seems to have gradually learned that slavery was a curse to the South, for in 1844 he declared that he would not introduce it into Texas lands “where it was never known,” and in 1849 proclaimed that his personal sentiments were “against the institution of slavery.” In the long struggle over slavery in the territories, following 1845, he was for the extreme demands of neither section; not because he was timorous or a compromiser,—no man was less of either,—but because he stood unwaveringly for justice to both sections, never adopting exaggerated views that must or even could be compromised. The truth is that he was always a westerner before he was a southerner and a union man before all things else; he was no whit less national than Webster. Hence his distrust and finally hatred of Calhoun, dating from the nullification episode of 1832-1833. As the South under Calhoun’s lead became increasingly sectional and aggressive, Benton increasingly lost sympathy with her. Though he despised political inaction Abolitionists, and hated their propaganda as inimical to the Union, he would not therefore close the national mails to Abolition literature, nor abridge the right of petition. No statesman was more prescient of the disunion tendencies of Calhoun’s policies, and as early as 1844 he prophetically denounced the treason to the Union toward which the South was drifting. He would not drift with her for the sake of slavery, and this was his political undoing. In 1851 Missouri rejected him in his sixth candidacy for the Senate, after he had been an autocrat in her politics for thirty years. In 1852 he was elected to the House of Representatives, but his opposition to the repeal of the Missouri Compromise caused his defeat in 1854. An unsuccessful campaign for the governorship of Missouri in 1856 ended his political career. He died at Washington on the 10th of April 1858.

Benton’s entire career was eminently creditable, and he is, besides, one of the most picturesque figures in American political history. His political principles—whether as regarded lobbying, congressional jobbing, civil service or great issues of legislation and foreign affairs—were of the highest. He was so independent that he had great dislike for caucuses, and despised party platforms—although he never voted any but the Democratic ticket, even when his son-in-law, J.C. Frémont, was the Republican presidential candidate in 1856; nor would he accept instructions from the Missouri legislature. His career shows no truckling to self-interest, and on large issues he outgrew partisanship. Although palpably inferior to each of his great senatorial colleagues, Webster, Clay and Calhoun, in some gifts, yet if character, qualities and career be taken in the whole his were possibly the most creditable of all. Benton was austere, aggressive and vain; besides, he had a fatal deficiency of humour. Nevertheless he had great influence, which was a deserved tribute to his ability and high character. An indefatigable student, he treated all subjects capably, and especially in questions of his country’s history and the exploration of the West had few equals—in the latter none. He acted always with uncalculating boldness, and defended his acts with extraordinary courage and persistence. Benton wrote a *Thirty Years’ View ... of the American Government* (2 vols., 1854-1856), characteristic of the

author’s personality; it is of great value for the history of his time. He also compiled an *Abridgment of the Debates of Congress*, 1789-1850 (16 vols., 1857-1861), likewise of great usefulness; and published a bitter review of the Dred Scott decision full of extremely valuable historical details—*Historical and Legal Examination of ... the Dred Scott Case* (1857). All were written in the last eight years of his life and mostly in the last three.

The best biography is that by W.M. Meigs, *Life of Thomas Hart Benton* (Philadelphia and London, 1904). See also Theodore Roosevelt’s *Thomas Hart Benton* (Boston, 1887), in the “American Statesmen” series, which admirably brings out Benton’s significance as a western man; and Joseph M. Rogers’s *Thomas Hart Benton* (Philadelphia, 1905) in the “American Crisis” series.

BENTON HARBOR, a city of Berrien county, Michigan, U.S.A., on the Saint Joseph river, about 1 m. from Lake Michigan (with which it is connected by a ship canal), near the S.W. corner of the state, and 1 m. N.E. of St Joseph. Pop. (1890) 3692; (1900) 6562, of whom 795 were foreign-born; (1904) 6702; (1910) 9185. It is served by the Père Marquette, the Michigan Central, and the Cleveland, Cincinnati, Chicago & St Louis railways, by electric railways to St Joseph and Niles, Mich., and South Bend, Indiana, and for a part of the year by steamboat lines to Chicago and Milwaukee. One mile south-east of the city are a sanitarium and the Eastman mineral springs; within the city also there are springs and bath-houses. Near the city is a communistic religious community, the Israelite House of David, founded in 1903, the members believe that they are a part of the 144,000 elect (Revelation, vii, xiv) ultimately to be redeemed. Benton Harbor has a large trade in fruit (peaches, grapes, pears, cherries, strawberries, raspberries and apples) and other market garden produce raised in the vicinity. The city’s manufactures include fruit baskets, preserved fruits, cider, vinegar, pickles, furniture, lumber and stationers’ supplies, particularly material for the “loose-leaf ledger” system of accounting. Benton Harbor, which was known as Bronson Harbor until 1865, was incorporated as a village in 1869, was chartered as a city in 1891, and in 1903 received a new charter.

BENUE, a river of West Africa, the largest and most important affluent of the Niger (*q.v.*), which it joins after a course of over 800 m. in a general east to west direction from its source in the mountains of Adamawa. Through the Tuburi marshes there is a water connexion between the Benue (Niger) and Shari (Lake Chad) systems.

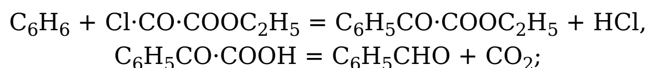
BEN VENUE, a mountain in south-west Perthshire, Scotland, 10 m. W. of Callander. Its principal peaks are 2393 and 2386 ft. high, and, owing to its position near the south-eastern shore of Loch Katrine, its imposing contour is one of the most familiar features in the scenery of the Trossachs, the mountain itself figuring prominently in *The Lady of the Lake*. On its northern base, close to the lake, Sir Walter Scott placed the Coir-nan-Uriskin, or “Goblin’s Cave.” Immediately to the south of the cave is the dell called Beal(ach)-nam-Bo, or “Cattle Pass,” through which were driven to the refuge of the Trossachs the herds lifted by the Highland marauders in their excursions to the lands south of Loch Lomond. The pass, though comparatively unvisited, offers the grandest scenery in the district.

BENZALDEHYDE (oil of bitter almonds), C_6H_5CHO, the simplest representative of the aromatic aldehydes. It was first isolated in 1803 and was the subject of an important investigation by J. v. Liebigin 1837 (*Annalen*, 1837, 22, p. 1). It occurs naturally in the form of

the glucoside amygdalin ($C_{20}H_{27}NO_{11}$), which is present in bitter almonds, cherries, peaches and the leaves of the cherry laurel; and is obtained from this substance by hydrolysis with dilute acids:

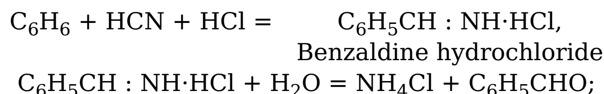
$$C_{20}H_{27}NO_{11} + 2H_2O = HCN + 2C_6H_{12}O_6 + C_6H_5CHO.$$

It occurs free in bitter almonds, being formed by an enzyme decomposition of amygdalin (*q.v.*). It may also be prepared by oxidizing benzyl alcohol with concentrated nitric acid; by distilling a mixture of calcium benzoate and calcium formate; by the condensation of chlor-oxalic ester with benzene in the presence of aluminium chloride, the ester of the ketonic acid formed being then hydrolysed and the resulting acid distilled:



$$C_6H_6 + Cl\cdot CO\cdot COOC_2H_5 = C_6H_5CO\cdot COOC_2H_5 + HCl,$$
$$C_6H_5CO\cdot COOH = C_6H_5CHO + CO_2;$$

by the action of anhydrous hydrocyanic acid and hydrochloric acid on benzene, an aldime being formed as an intermediate product:



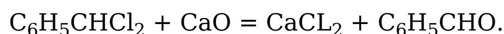
$$C_6H_6 + HCN + HCl = \underset{\text{Benzaldine hydrochloride}}{C_6H_5CH : NH\cdot HCl,}$$
$$C_6H_5CH : NH\cdot HCl + H_2O = NH_4Cl + C_6H_5CHO;$$

and by the action of chromium oxychloride on toluene dissolved in carbon bisulphide (A. Etard, *Berichte*, 1884, 17, pp. 1462, 1700).

Technically it is prepared from toluene, by converting it into benzyl chloride, which is then heated with lead nitrate:

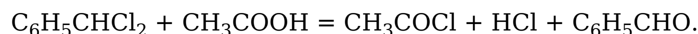
$$C_6H_5CH_2Cl + Pb(NO_3)_2 = 2NO_2 + PbCl\cdot OH + C_6H_5CHO,$$

or, by conversion into benzal chloride, which is heated with milk of lime under pressure.



$$C_6H_5CHCl_2 + CaO = CaCL_2 + C_6H_5CHO.$$

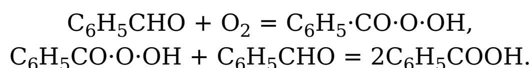
E. Jacobsen has also obtained benzaldehyde by heating benzal chloride with glacial acetic acid:



$$C_6H_5CHCl_2 + CH_3COOH = CH_3COCl + HCl + C_6H_5CHO.$$

Benzaldehyde is a colourless liquid smelling of bitter almonds. Its specific gravity is 1.0636 (%° C.), and it boils at 179.1° C. (751.3 mm). It is only slightly soluble in water, but is readily volatile in steam. It possesses all the characteristic properties of an aldehyde; being readily oxidized to benzoic acid; reducing solutions of silver salts; forming addition products with hydrogen, hydrocyanic acid and sodium bisulphite; and giving an oxime and a hydrazone. On the other hand, it differs from the aliphatic aldehydes in many respects; it does not form an addition product with ammonia but condenses to hydrobenzamide ($(C_6H_5CH)_3N_2$; on shaking with alcoholic potash it undergoes simultaneous oxidation and reduction, giving benzoic acid and benzyl alcohol (S. Cannizzaro); and on warming with alcoholic potassium cyanide it condenses to benzoin (*q.v.*).

The oxidation of benzaldehyde to benzoic acid when exposed to air is not one of ordinary oxidation, for it has been observed in the case of many compounds that during such oxidation, as much oxygen is rendered “active” as is used up by the substance undergoing oxidation; thus if benzaldehyde is left for some time in contact with air, water and indigosulphonic acid, just as much oxygen is used up in oxidizing the indigo compound as in oxidizing the aldehyde. A. v. Baeyer and V. Villiger (*Berichte*, 1900, 33, pp. 858, 2480) have shown that benzoyl hydrogen peroxide $C_6H_5\cdot CO\cdot O\cdot OH$ is formed as an intermediate product and that this oxidizes the indigo compound, being itself reduced to benzoic acid; they have also shown that this peroxide is soluble in benzaldehyde with production of benzoic acid, and it must be assumed that the oxidation of benzaldehyde proceeds as shown in the equations:

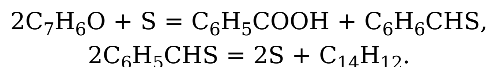


$$C_6H_5CHO + O_2 = C_6H_5\cdot CO\cdot O\cdot OH,$$
$$C_6H_5CO\cdot O\cdot OH + C_6H_5CHO = 2C_6H_5COOH.$$

Further see G. Bodlander, *Ahrens Sammlung*, 1899, iii. 470; W.P. Jorissen, *Zeit. für phys. Chem.*, 1897, 22, p. 56; C. Engler and W. Wild, *Berichte*, 1897, 30, p. 1669.

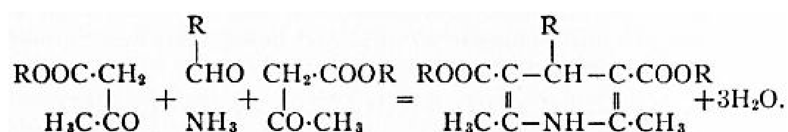
The oxime of benzaldehyde ($C_6H_5CH : N\cdot OH$), formed by the addition of hydroxylamine to the aldehyde, exhibits a characteristic behaviour when hydrochloric acid gas is passed into its ethereal solution, a second modification being produced. The former (known as the α or benz-anti-aldoxime) melts at 34-35° C.; the latter (β or benz-syn-aldoxime) melts at 130° C. and is slowly transformed into the α form. The difference between the two forms has been explained by A. Hantzsch and A. Werner (*Berichte*, 1890, 23, p. 11) by the assumption of the different spatial arrangement of the atoms (see Stereo-Isomerism). On account of the readiness with which it

condenses with various compounds, benzaldehyde is an important synthetic reagent. With aniline it forms benzylidine aniline $C_6H_5CH : N{\cdot}C_6H_5$, and with acetone, benzal acetone $C_6H_5CH : CH{\cdot}CO{\cdot}CH_3$. Heated with anhydrous sodium acetate and acetic anhydride it gives cinnamic acid (*q.v.*); with ethyl bromide and sodium it forms triphenyl-carbinol $(C_6H_5)_3C{\cdot}OH$; with dimethylaniline and anhydrous zinc chloride it forms leuco-malachite green $C_6H_5CH[C_6H_4N(CH_3)_2]_2$; and with dimethylaniline and concentrated hydrochloric acid it gives dimethylaminobenzhydrol, $C_6H_5CH(OH)C_6H_4N(CH_3)_2$. Heated with sulphur it forms benzoic acid and stilbene:

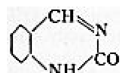


$$2C_7H_6O + S = C_6H_5COOH + C_6H_6CHS,$$
$$2C_6H_5CHS = 2S + C_{14}H_{12}.$$

Its addition compound with hydrocyanic acid gives mandelic acid $C_6H_5CH(OH){\cdot}COOH$ on hydrolysis; when heated with sodium succinate and acetic anhydride, phenyl-iso-crotonic acid $C_6H_5CH : CH{\cdot}CH_2COOH$ is produced, which on boiling is converted into α-naphthol $C_{10}H_7OH$. It can also be used for the synthesis of pyridine derivatives, since A. Hantzsch has shown that aldehydes condense with aceto-acetic ester and ammonia to produce the homologues of pyridine, thus:



On nitration it yields chiefly meta-nitro-benzaldehyde, crystallizing in needles which melt at 58° C. The ortho-compound may be obtained by oxidizing ortho-nitrocinnamic acid with alkaline potassium permanganate in the presence of benzene; or from ortho-nitrobenzyl chloride by condensing it with aniline, oxidizing the product so obtained to ortho-nitrobenzylidine aniline, and then hydrolysing this compound with an acid (*Farben fabrik d. Meister, Lucius und Brüning*). It crystallizes in yellowish needles, which are volatile in steam and melt at 46° C. It is used in the artificial production of indigo (see *German Patent* 19768).

Para-nitrobenzaldehyde crystallizes in prisms melting at 107° C. and is prepared by the action of chromium oxychloride on para-nitrotoluene, or by oxidizing para-nitrocinnamic acid. By the reduction of ortho-nitrobenzaldehyde with ferrous sulphate and ammonia, ortho-aminobenzaldehyde is obtained. This compound condenses in alkaline solution with compounds containing the grouping $—CH_2—CO—$ to form quinoline (*q.v.*) or its derivatives; thus, with acetaldehyde it forms quinoline, and with acetone, α-methyl quinoline. With urea it gives quinazolone , and with mandelic nitrile and its homologues it forms oxazole derivatives (S.S. Minovici, *Berichte*, 1896, 29, p. 2097).

BENZENE, C_6H_6, a hydrocarbon discovered in 1825 by Faraday in the liquid produced in the compression of the illuminating gas obtained by distilling certain oils and fats. E. Mitscherlich prepared it in 1834 by distilling benzoic acid with lime; and in 1845 Hofmann discovered it in coal-tar. It was named “benzin” or “benzine” by Mitscherlich in 1833, but in the following year Liebig proposed “benzol” (the termination *ol* being suggested by the Lat. *oleum*, oil); the form “benzene” was due to A.W. Hofmann. The word “benzine” is sometimes used in commerce for the coal-tar product, but also for the light petroleum better known as petroleum-benzine; a similar ambiguity is presented by the word “benzoline,” which is applied to the same substances as the word “benzine.” “Benzene” is the term used by English chemists, “benzol” is used in Germany, and “benzole” in France.

Benzene is manufactured from the low-boiling fractions of the coal-tar distillate (see Coal-Tar). The first successful fractionation of coal-tar naphtha was devised by C.B. Mansfield (1819-1855), who separated a benzol distilling below 100° from a less volatile naphtha by using a simple dephlegmator. At first, the oil was manufactured principally for combustion in the Read-Holliday lamp and for dissolving rubber, but the development of the coal-tar colour industry occasioned a demand for benzols of definite purity. In the earlier stages 30%, 50% and 90% benzols were required, the 30% being mainly used for the manufacture of “aniline for red,” and the 90% for “aniline for blue.” (The term “30% benzol” means that 30% by volume distils below 100°.) A

purer benzol was subsequently required for the manufacture of aniline black and other dyestuffs. The process originally suggested by Mansfield is generally followed, the success of the operation being principally conditioned by the efficiency of the dephlegmator, in which various improvements have been made. The light oil fraction of the coal-tar distillate, which comes over below 140° and consists principally of benzene, toluene and the xylenes, yields on fractionation (1) various volatile impurities such as carbon disulphide, (2) the benzene fraction boiling at about 80° C., (3) the toluene fraction boiling at 100°, (4) the xylene fraction boiling at 140°. The fractions are agitated with strong sulphuric acid, and then washed with a caustic soda solution. The washed products are then refractionated. The toluene fraction requires a more thorough washing with sulphuric acid in order to eliminate the thiotolene, which is sulphonated much less readily than thiophene.

Benzene is a colourless, limpid, highly refracting liquid, having a pleasing and characteristic odour. It may be solidified to rhombic crystals which melt at 5.4° C. (Mansfield obtained perfectly pure benzene by freezing a carefully fractionated sample.) It boils at 80.4°, and the vapour is highly inflammable, the flame being extremely smoky. Its specific gravity is 0.899 at 0° C. It is very slightly soluble in water, more soluble in alcohol, and completely miscible with ether, acetic acid and carbon disulphide. It is an excellent solvent for gums, resins, fats, &c.; sulphur, phosphorus and iodine also dissolve in it. It sometimes separates with crystals of a solute as "benzene of crystallization," as for example with triphenylmethane, thio-p-tolyl urea, tropine, &c.

Benzene is of exceptional importance commercially on account of the many compounds derivable from it, which are exceedingly valuable in the arts. Chemically it is one of the most interesting substances known, since it is the parent of the enormous number of compounds styled the "aromatic" or "benzenoid" compounds. The constitution of the benzene ring, the isomerism of its derivatives, and their syntheses from aliphatic or open-chain compounds, are treated in the article Chemistry. A summary of its chemical transformations may be given here, and reference should be made to the articles on the separate compounds for further details.

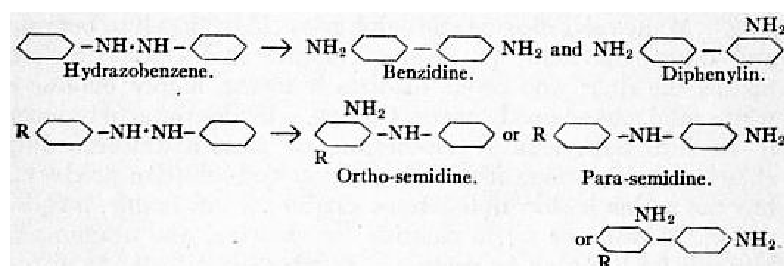
Passed through a red-hot tube, benzene vapour yields hydrogen, diphenyl, diphenylbenzenes and acetylene; the formation of the last compound is an instance of a reversible reaction, since Berthelot found that acetylene passed through a red-hot tube gave some benzene. Benzene is very stable to oxidants, in fact resistance to oxidation is a strong characteristic of the benzene ring. Manganese dioxide and sulphuric acid oxidize it to benzoic and o-phthalic acid; potassium chlorate and sulphuric acid breaks the ring; and ozone oxidizes it to the highly explosive white solid named ozo-benzene, $C_6H_6O_6$. Hydriodic acid reduces it to hexamethylene (cyclo-hexane or hexa-hydro-benzene); chlorine and bromine form substitution and addition products, but the action is slow unless some carrier such as iodine, molybdenum chloride or ferric chloride for chlorine, and aluminium bromide for bromine, be present. It is readily nitrated to nitrobenzene, two, and even three nitro groups being introduced if some dehydrator such as concentrated sulphuric acid be present. Sulphuric acid gives a benzene sulphonic acid.

BENZIDINE (Dipara-diamino-diphenyl), $NH_2\cdot C_6H_4\cdot C_6H_4\cdot NH_2$, a chemical base which may be prepared by the reduction of the corresponding dinitro-diphenyl, or by the reduction of azo-benzene with tin and hydrochloric acid. In this latter case hydrazo-benzene $C_6H_5NH\cdot NH\cdot C_6H_5$ is first formed and then undergoes a peculiar re-arrangement into benzidine (see H. Schmidt and G. Schultz, *Annalen*, 1881, 207, p. 320; O.N. Witt and Hans v. Helmont, *Berichte*, 1894, 27, p. 2352; P. Jacobson, *Berichte*, 1892, 25, p. 994). Benzidine crystallizes in plates (from water) which melt at 122° C., and boil above 360° C., and is characterized by the great insolubility of its sulphate. It is a di-acid base and forms salts with the mineral acids. It is readily brominated and nitrated; when the nitration is carried out in the presence of sulphuric acid, the nitro-groups take up the meta position with regard to the amino-groups. Benzidine finds commercial application since its tetrazo compound couples readily with amino-sulphonic acids, phenol carboxylic acids, and phenol and naphthol-sulphonic acids to produce substantive cotton dyes (see Dyeing). Among such dyestuffs are chrysamine or flavophenine, obtained from salicylic acid and diazotized benzidine, and congo red obtained from sodium naphthionate and diazotized benzidine. On the constitution of benzidine see G. Schultz (*Annalen*, 1874, 174, p. 227).

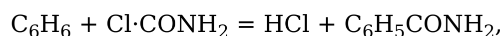
The Benzidine and Semidine Change.—Aromatic hydrazo compounds which contain free para positions are readily converted by the action of acids, acid chlorides and anhydrides into diphenyl derivatives; thus, as mentioned above, hydrazo-benzene is converted into benzidine, a small quantity of diphenylin being formed at the same time. The two products are separated by the different solubilities of their sulphates. This reaction is known as the *benzidine*

transformation. If, however, one of the para positions in the hydrazo compound is substituted, then either diphenyl derivatives or azo compounds are formed, or what is known as the *semidine change* takes place (P. Jacobson, *Berichte*, 1892, 25, p. 992; 1893, 26, p. 681; 1896, 29, p. 2680; *Annalen*, 1895, 287, p. 97; 1898, 303, p. 290). A para mono substituted hydrazo compound in the presence of a hydrochloric acid solution of stannous chloride gives either a para diphenyl derivative (the substituent group being eliminated), an ortho-semidine, a para-semidine, or a diphenyl base, whilst a decomposition with the formation of amines may also take place. The nature of the substituent exerts a specific influence on the reaction; thus with chlorine or bromine, ortho-semidines and the diphenyl bases are the chief products; the dimethylamino, $-N(CH_3)_2$, and acetamino, $-NHCOCH_3$, groups give the diphenyl base and the para-semidine respectively. With a methyl group, the chief product is an ortho-semidine, whilst with a carboxyl group, the diphenyl derivative is the chief product. The ortho- and para- semidines can be readily distinguished by their behaviour with different reagents; thus with nitrous acid the ortho-semidines give azimido compounds, whilst the para-semidines give complex diazo derivatives; with formic or acetic acids the ortho-semidines give anhydro compounds of a basic character, the para-semidines give acyl products possessing no basic character. The carbon disulphide and salicylic aldehyde products have also been used as means of distinction, as has also the formation of the stilbazonium bases obtained by condensing ortho-semidines with benzil (O.N. Witt, *Berichte*, 1892, 25, p. 1017).

Structurally we have:—

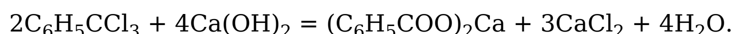


BENZOIC ACID, $C_7H_6O_2$ or C_6H_5COOH, the simplest representative of the aromatic acids. It occurs naturally in some resins, especially in gum benzoin (from *Styrax benzoin*), in dragon's blood, and as a benzyl ester in Peru and Tolu balsams. It can be prepared by the oxidation of toluene, benzyl alcohol, benzaldehyde and cinnamic acid; by the oxidation of benzene with manganese dioxide and concentrated sulphuric acid in the cold (L. Carius, *Ann.* 1868, 148, p. 51); by hydrolysis of benzonitrile or of hippuric acid; by the action of carbon dioxide on benzene in the presence of aluminium chloride (C. Friedel and J.M. Crafts, *Ann. chim. phys.* 1888 [6], 14, p. 441); by the action of carbon dioxide on monobrombenzene in the presence of sodium; by condensing benzene and carbonyl chloride in presence of aluminium chloride, the benzoyl chloride formed being subsequently hydrolysed; and similarly from benzene and chlorformamide:—



$$C_6H_6 + Cl{\cdot}CONH_2 = HCl + C_6H_5CONH_2,$$

the benzamide being then hydrolysed. It may also be prepared by boiling benzyl chloride with dilute nitric acid (G. Lunge, *Berichte*, 1877, 10, p. 1275); by fusing sodium benzene sulphonate with sodium formate: $C_6H_5SO_3Na + HCO_2Na = C_6H_5COONa + NaHSO_3$; by heating calcium phthalate with calcium hydroxide to 330°-350° C.; by heating benzotrichloride with water in a sealed tube, and from the hippuric acid which is found in the urine of the herbivorae. For this purpose the urine is concentrated and the hippuric acid precipitated by the addition of hydrochloric acid; it is then filtered and boiled for some time with concentrated hydrochloric acid, when it is hydrolysed into benzoic and amido-acetic acid. It is made commercially by boiling benzotrichloride (obtained from toluene) with milk of lime, the calcium benzoate so obtained being then decomposed by hydrochloric acid



$$2C_6H_5CCl_3 + 4Ca(OH)_2 = (C_6H_5COO)_2Ca + 3CaCl_2 + 4H_2O.$$

Benzoic acid crystallizes in glistening leaflets (from water) which melt at 121.4° C. and boil at 249.2° C. (H. Kopp). Its specific heat is 0.1946. It sublimes readily and is volatile in steam. It is readily soluble in hot water and the ordinary organic solvents, but is only slightly soluble in cold water. When heated with lime, it is decomposed, benzene being formed; if its vapours are passed over heated zinc dust, it is converted into benzaldehyde (A. Baeyer, *Ann.* 1866, 140, p.

296). Distillation of its calcium salt gives benzophenone (*q.v.*) with small quantities of other substances, but if the calcium salt be mixed with calcium formate and the mixture distilled, benzaldehyde is produced. By the action of sodium amalgam on an aqueous solution of the acid, benzyl alcohol, tetrahydrobenzoic acid and hexahydrobenzoic acid are formed. The salts of benzoic acid are known as the benzoates and are mostly soluble in water. They are readily decomposed by mineral acids with the production of benzoic acid, and on addition of ferric chloride to their neutral solutions give a reddish-brown precipitate of ferric benzoate.

Benzoic anhydride, $(C_6H_5CO)_2O$, is prepared by the action of benzoyl chloride on sodium benzoate, or by heating benzoyl chloride with anhydrous oxalic acid (R. Anschütz, *Ann.* 1884, 226, p. 15). It crystallizes in needles, melting at 42° C., and boiling at 360° C. It is insoluble in water but readily soluble in alcohol and ether.

Benzoyl chloride, C_6H_5COCl, is formed by distilling a mixture of phosphorus pentachloride and benzoic acid; by the action of chlorine on benzaldehyde, or by passing a stream of hydrochloric acid gas over a mixture of benzoic acid and phosphorus pentoxide heated to 200° C. (C. Friedel, *Ber.* 1869, 2, p. 80). It is a colourless liquid of very unpleasant smell, which boils at 198° C., and solidifies in a freezing mixture, the crystals obtained melting at −1° C. It shows all the characteristic properties of an acid chloride.

Ethyl benzoate, $C_6H_5COOC_2H_5$, is best prepared by boiling benzoic acid and alcohol with a small quantity of sulphuric acid for some hours (E. Fischer and A. Speier, *Berichte*, 1896, 28, p. 3252). It is a colourless liquid of boiling point 213° C.

Benzamide, $C_6H_5CONH_2$, is prepared by the action of benzoyl chloride on ammonia or ammonium carbonate, or from ethyl benzoate and ammonia. It crystallizes (from water) in glistening leaflets which melt at 130° C. and boil at 288° C. Its silver salt behaves as if it were the salt of an imido benzoic acid, since it yields benzimido ethyl ether $C_6H_5{\cdot}C(:NH){\cdot}OC_2H_5$ with ethyl iodide (J. Tafel and C. Enoch, *Berichte*, 1890, 23, p. 1550).

Chlor-, brom-, iodo- and fluor-benzoic acids are known and can be obtained by oxidizing the corresponding halogen toluenes, or from the amido acids, or by substitution. Nitration of benzoic acid gives chiefly meta-nitro-benzoic acid. The ortho- and para-nitro-benzoic acids can be obtained by oxidizing ortho-and para-nitro-cinnamic acids. Ortho-amino-benzoic acid, $C_6H_4{\cdot}NH_2{\cdot}COOH$ (anthranilic acid), is closely related to indigo (*q.v.*).

Gum benzoin, which contains from 12 to 20% of benzoic acid, is used in medicine as the essential constituent of benzoated lard, *Adeps benzoatus*, which owes its antiseptic properties to benzoic acid; and in friar’s balsam, *Tinctura benzoini composita*, which is an ancient and valuable medicament, still largely used for inhalation in cases of laryngitis, bronchitis and other inflammatory or actually septic conditions of the respiratory tract. It owes its value to the benzoic acid which it contains. A fluid drachm of friar’s balsam may be added to a pint of water at a temperature of about 140° F., and the resultant vapour may be inhaled from the spout of a kettle or from a special inhaler. Benzoic acid itself, ammonium benzoate and sodium benzoate are all administered internally in doses of from five to thirty grains. The ammonium salt is most often employed, owing to the stimulant character of the ammonium base. The acid itself is a powerful antiseptic. When administered internally, it causes the appearance of hippuric acid in the urine. This is due to its combination in the body with glycocoll. The combination probably occurs in the kidney. The hippuric acid in the urine acts as a stimulant and disinfectant to the urinary mucous membrane. Benzoic acid is also excreted by the bronchi and tends to disinfect and stimulate the bronchial mucous membrane. Hence the value of friar’s balsam. The acid and its salts are antipyretic and were used in Germany instead of salicylates in rheumatic fever. But the most important fact is that ammonium benzoate is largely used—often in combination with urinary anodynes such as tincture of hyoscyamus—as a urinary antiseptic in cases of cystitis (inflammation of the bladder) and pyelitis (inflammation of the pelvis of the kidney).

BENZOIN, $C_6H_5CHOH{\cdot}CO{\cdot}C_6H_5$, a ketone-alcohol, which may be prepared by boiling an alcoholic solution of benzaldehyde with potassium cyanide; by reducing benzil ($C_6H_5CO{\cdot}CO{\cdot}C_6H_5$) with zinc and acetic acid; or by the oxidation of hydrobenzoin (C_6H_5-CHOH-CHOH-C_6H_5). It is a colourless, crystalline solid, readily soluble in alcohol and ether, melting at 137° C. and boiling at 343-344° C. On passing the vapour of benzoin over heated lead oxide, it is converted into benzil and benzophenone. Owing to the readiness with which it is oxidized, it acts as a reducing agent, giving a red precipitate of cuprous oxide with Fehling’s solution in the cold. Chlorine and nitric acid oxidize it to benzil; chromic acid mixture and potassium permanganate,

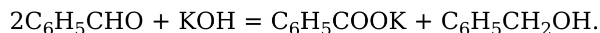
to benzoic acid and benzaldehyde. On heating with zinc dust, desoxy-benzoin ($C_6H_5CO{\cdot}CH_2{\cdot}C_6H_5$) is obtained; sodium amalgam converts it into hydrobenzoin; and fuming hydriodic acid at 130° C. gives dibenzyl ($C_6H_5CH_2{\cdot}CH_2{\cdot}C_6H_5$). By fusion with alkali it is converted into benzil; and with an alcoholic solution of benzaldehyde in presence of ammonia it forms amarine (triphenyl dihydro-glyoxaline). In the presence of sulphuric acid it condenses with nitriles to oxazoles (*q.v.*).

BENZOIN, or Gum Benjamin (supposed to be from Arab. *luban*, frankincense, the first syllable being dropped in Romanic as if it were the article), a balsamic resin obtained from *Styrax benzoin*, a tree of considerable size, native to Sumatra and Java, and from other species of *Styrax*. It is obtained by making incisions in the bark of the trees, and appears to be formed as the result of the wound, not to be secreted normally. There are several varieties of benzoin in commerce: (1) Siam benzoin, which apparently does not come from *Styrax benzoin*, is the finest and most aromatic, and occurs in the form of small "tears," rarely exceeding 2 in. in length by ½ in. in thickness, and of "blocks" made up of these tears agglomerated by a clear reddish-brown resin. The odour of Siam benzoin is partly due to the presence of vanillin, and the substance contains as much as 38% of benzoic acid but no cinnamic acid. (2) Sumatra benzoin occurs only in masses formed of dull red resin enclosing white tears. It contains about 20% of cinnamic acid in addition to 18 or even more of benzoic. (3) Palembang benzoin, an inferior variety, said to be obtained from *Styrax benzoin* in Sumatra, consists of greyish translucent resinous masses, containing small white opaque tears. It does not appear to contain cinnamic acid. Large quantities of benzoin are used as incense. Its medicinal uses depend on the contained benzoic acid (*q.v.*).

BENZOPHENONE (Diphenyl Ketone), $C_6H_5{\cdot}CO{\cdot}C_6H_5$, the simplest representative of the true aromatic ketones. It may be prepared by distilling calcium benzoate; by condensing benzene with benzoyl chloride in the presence of anhydrous aluminium chloride; by the action of mercury diphenyl on benzoyl chloride, or by oxidizing diphenylmethane with chromic acid. It is a dimorphous substance existing in two enantiotropic forms, one melting at 26° C. and the other at 48° C: (Th. Zmcke, *Berichte*, 1871, 4, p. 576). It boils at 306.1° C., under a pressure of 760.32 mm. It is reduced by sodium amalgam to *benzhydrol* or *diphenyl carbinol* $C_6H_5{\cdot}CHOH{\cdot}C_6H_5$; a stronger reducing agent, such as hydriodic acid in the presence of amorphous phosphorus converts it into *diphenylmethane* $(C_6H_5)_2{\cdot}CH_2$. Potash fusion converts it into benzene and benzoic acid. With phenylhydrazine it forms a hydrazone, and with hydroxylamine an oxime, which exists in one form only; if, however, one of the phenyl groups in the oxime be substituted in any way then two stereo-isomeric oximes are produced (cf. Stereo-Isomerism); thus parachlorbenzophenone oxime exists in two different forms (V. Meyer and K.F. Auwers, *Berichte*, 1890, 23, p. 2403). Many derivatives are known, thus ortho-amino-benzophenone, melting at 106° C., can be obtained by reduction of the corresponding nitro compound; it condenses under the influence of heated lead monoxide to an acridine derivative and with acetone in presence of caustic soda it gives a quinoline. *Tetramethyl-diamido-benzophenone* or *Michler's ketone*, $CO[C_6H_4N{\cdot}(CH_3)_2]_2$, melting at 173°, is of technical importance, as by condensation with various substances it can be made to yield dye-stuffs. It is prepared by the action of carbonyl chloride on dimethyl aniline in the presence of aluminium chloride: $COCl_2 + 2C_6H_5N(CH_3)_2 = 2HCl + CO[C_6H_4N(CH_3)_2]_2$.

BENZYL ALCOHOL (Phenyl Carbinol), $C_6H_5CH_2OH$, occurs as a benzoic ester in Peru balsam, as cinnamic ester in Tolu balsam, as acetic ester in essential oil of jasmine, and also in storax. It may be synthetically prepared by the reduction of benzoyl chloride; by the action of nitrous acid on benzylamine; by boiling benzyl chloride with an aqueous solution of potassium carbonate, or by the so-called "Cannizzaro" reaction, in which benzaldehyde is shaken up with caustic potash,

one half of the aldehyde being oxidized to benzoic acid, and the other half reduced to the alcohol. (*Berichte*, 1881, 14, p. 2394).



$$2C_6H_5CHO + KOH = C_6H_5COOK + C_6H_5CH_2OH.$$

It is a colourless liquid, with a faint aromatic smell, and boils at 206° C. On oxidation with nitric acid it is converted into benzaldehyde, whilst chromic acid oxidizes it to benzoic acid. Reduction by means of hydriodic acid and phosphorus at 140° C. gives toluene, whilst on distillation with alcoholic potash, toluene and benzoic acid are formed.

BEOTHUK, a tribe of North American Indians formerly dwelling in the interior of Newfoundland. A certain mystery attaches to them, since investigation of the few words of their language which have survived suggests that they were of distinct stock. The name (of Micmac origin) is said to mean simply “red men.” They were bitterly hostile to the French settlers, and were hunted down and killed off until 1820, when a few survivors made their escape into Labrador. The last of them is believed to have died in 1829.

BEÖTHY, ÖDÖN (1796-1854), Hungarian deputy and orator, was born at Grosswardein, his father being a retired officer and deputy lord-lieutenant of the county of Bihar. At the age of sixteen he served in the war against Napoleon, and was present at the great battle of Leipzig. Like so many others of his compatriots, he picked up Liberal ideas abroad. He was sent to parliament by his county in 1826 and again in 1830, but did not become generally known till the session of 1832-1836, when along with Deák he, as a liberal Catholic, defended the Protestant point of view in “the mixed marriages question.” He was also an energetic advocate of freedom of speech. After parliament rose he carried his principles to their logical conclusion by marrying a Protestant lady and, being denied a blessing on the occasion by an indignant bishop, publicly declared that he could very well dispense with such blessings. In 1841 he was elected deputy lord-lieutenant of his county to counteract the influence of the lord-lieutenant, Lajos Tisza, and powerfully promoted the popular cause by his eloquence and agitation. After 1843 the conservatives succeeded in excluding him both from parliament and from his official position in the county; but during the famous “March Days” (1848) he regained all his authority, becoming at the same time a commander of militia, a deputy and lord-lieutenant. At the first session of the Upper House (5th of July 1848), he moved that it should be radically reformed, and during the war of Independence he energetically served the Hungarian government as a civil commissioner and lord justice. Towards the end of the war he reappeared as a deputy at the Szeged diet, and on the flight of the government took refuge first with Richard Cobden in London and subsequently in Jersey, where he made the acquaintance of Victor Hugo. Thence he went to Hamburg, to meet his wife, and died there on the 7th of December 1854. Beöthy was a man of extraordinary ability and character, and an excellent debater. He also exercised as much influence socially over his contemporaries as politically, owing to his unfailing tact and pleasant wit.

See Antal Csengery, *Hungarian Orators and Statesmen* (Hung., Budapest, 1851).

(R. N. B.)

BEOWULF. The epic of Beowulf, the most precious relic of Old English, and, indeed, of all early Germanic literature, has come down to us in a single MS., written about A.D. 1000, which contains also the Old English poem of Judith, and is bound up with other MSS. in a volume in the Cottonian collection now at the British Museum. The subject of the poem is the exploits of Beowulf, son of Ecgtheow and nephew of Hygelac, king of the “Gēatas,” *i.e.* the people, called in Scandinavian records Gautar, from whom a part of southern Sweden has received its present name Götland.

The Story.—The following is a brief outline of the story, which naturally divides itself into five

parts.

1. Beowulf, with fourteen companions, sails to Denmark, to offer his help to Hrothgar, king of the Danes, whose hall (called “Heorot”) has for twelve years been rendered uninhabitable by the ravages of a devouring monster (apparently in gigantic human shape) called Grendel, a dweller in the waste, who used nightly to force an entrance and slaughter some of the inmates. Beowulf and his friends are feasted in the long-deserted Heorot. At night the Danes withdraw, leaving the strangers alone. When all but Beowulf are asleep, Grendel enters, the iron-barred doors having yielded in a moment to his hand. One of Beowulf’s friends is killed; but Beowulf, unarmed, wrestles with the monster, and tears his arm from the shoulder. Grendel, though mortally wounded, breaks from the conqueror’s grasp, and escapes from the hall. On the morrow, his bloodstained track is followed until it ends in a distant mere.

2. All fear being now removed, the Danish king and his followers pass the night in Heorot, Beowulf and his comrades being lodged elsewhere. The hall is invaded by Grendel’s mother, who kills and carries off one of the Danish nobles. Beowulf proceeds to the mere, and, armed with sword and corslet, plunges into the water. In a vaulted chamber under the waves, he fights with Grendel’s mother, and kills her. In the vault he finds the corpse of Grendel; he cuts off the head, and brings it back in triumph.

3. Richly rewarded by Hrothgar, Beowulf returns to his native land. He is welcomed by Hygelac. and relates to him the story of his adventures, with some details not contained in the former narrative. The king bestows on him lands and honours, and during the reigns of Hygelac and his son Heardred he is the greatest man in the kingdom. When Heardred is killed in battle with the Swedes, Beowulf becomes king in his stead.

4. After Beowulf has reigned prosperously for fifty years, his country is ravaged by a fiery dragon, which inhabits an ancient burial-mound, full of costly treasure. The royal hall itself is burned to the ground. The aged king resolves to fight, unaided, with the dragon. Accompanied by eleven chosen warriors, he journeys to the barrow. Bidding his companions retire to a distance, he takes up his position near the entrance to the mound—an arched opening whence issues a boiling stream. I The dragon hears Beowulf’s shout of defiance, and rushes forth, breathing flames. The fight begins; Beowulf is all but overpowered, and the sight is so terrible that his men, all but one, seek safety in flight. The young Wiglaf, son of Weohstan, though yet untried in battle, cannot, even in obedience to his lord’s prohibition, refrain from going to his help. With Wiglaf’s aid, Beowulf slays the dragon, but not before he has received his own death-wound. Wiglaf enters the barrow, and returns to show the dying king the treasures that he has found there. With his last breath Beowulf names Wiglaf his successor, and ordains that his ashes shall be enshrined in a great mound, placed on a lofty cliff, so that it may be a mark for sailors far out at sea.

5. The news of Beowulf’s dear-bought victory is carried to the army. Amid great lamentation, the hero’s body is laid on the funeral pile and consumed. The treasures of the dragon’s hoard are buried with his ashes; and when the great mound is finished, twelve of Beowulf’s most famous warriors ride around it, celebrating the praises of the bravest, gentlest and most generous of kings.

The Hero.—Those portions of the poem that are summarized above—that is to say, those which relate the career of the hero in progressive order—contain a lucid and well-constructed story, told with a vividness of imagination and a degree of narrative skill that may with little exaggeration be called Homeric. And yet it is probable that there are few readers of Beowulf who have not felt—and there are many who after repeated perusal continue to feel—that the general impression produced by it is that of a bewildering chaos. This effect is due to the multitude and the character of the episodes. In the first place, a very great part of what the poem tells about Beowulf himself is not presented in regular sequence, but by way of retrospective mention or narration. The extent of the material thus introduced out of course may be seen from the following abstract.

When seven years old the orphaned Beowulf was adopted by his grandfather king Hrethel, the father of Hygelac, and was regarded by him with as much affection as any of his own sons. In youth, although famed for his wonderful strength of grip, he was generally despised as sluggish and unwarlike. Yet even before his encounter with Grendel, he had won renown by his swimming contest with another youth named Breca, when after battling for seven days and nights with the waves, and slaying many sea-monsters, he came to land in the country of the Finns. In the disastrous invasion of the land of the Hetware, in which Hygelac was killed, Beowulf killed many of the enemy, amongst them a chieftain of the Hugas, named Daeghrefn, apparently the slayer of Hygelac. In the retreat he once more displayed his powers as a swimmer, carrying to his ship the armour of thirty slain enemies. When he reached his native land, the widowed queen offered him the kingdom, her son Heardred being too young to rule. Beowulf, out of loyalty, refused to be made king, and acted as the guardian of Heardred during

his minority, and as his counsellor after he came to man’s estate. By giving shelter to the fugitive Eadgils, a rebel against his uncle the king of the “Swēon” (the Swedes, dwelling to the north of the Gautar), Heardred brought on himself an invasion, in which he lost his life. When Beowulf became king, he supported the cause of Eadgils by force of arms; the king of the Swedes was killed, and his nephew placed on the throne.

Historical Value.—Now, with one brilliant exception—the story of the swimming-match, which is felicitously introduced and finely told—these retrospective passages are brought in more or less awkwardly, interrupt inconveniently the course of the narrative, and are too condensed and allusive in style to make any strong poetic impression. Still, they do serve to complete the portraiture of the hero’s character. There are, however, many other episodes that have nothing to do with Beowulf himself, but seem to have been inserted with a deliberate intention of making the poem into a sort of cyclopaedia of Germanic tradition. They include many particulars of what purports to be the history of the royal houses, not only of the Gautar and the Danes, but also of the Swedes, the continental Angles, the Ostrogoths, the Frisians and the Heathobeards, besides references to matters of unlocalized heroic story such as the exploits of Sigismund. The Saxons are not named, and the Franks appear only as a dreaded hostile power. Of Britain there is no mention; and though there are some distinctly Christian passages, they are so incongruous in tone with the rest of the poem that they must be regarded as interpolations. In general the extraneous episodes have no great appropriateness to their context, and have the appearance of being abridged versions of stories that had been related at length in poetry. Their confusing effect, for modern readers, is increased by a curiously irrelevant prologue. It begins by celebrating the ancient glories of the Danes, tells in allusive style the story of Scyld, the founder of the “Scylding” dynasty of Denmark, and praises the virtues of his son Beowulf. If this Danish Beowulf had been the hero of the poem, the opening would have been appropriate; but it seems strangely out of place as an introduction to the story of his namesake.

However detrimental these redundancies may be to the poetic beauty of the epic, they add enormously to its interest for students of Germanic history or legend. If the mass of traditions which it purports to contain be genuine, the poem is of unique importance as a source of knowledge respecting the early history of the peoples of northern Germany and Scandinavia. But the value to be assigned to *Beowulf* in this respect can be determined only by ascertaining its probable date, origin and manner of composition. The criticism of the Old English epic has therefore for nearly a century been justly regarded as indispensable to the investigation of Germanic antiquities.

The starting-point of all *Beowulf* criticism is the fact (discovered by N.F.S. Grundtvig in 1815) that one of the episodes of the poem belongs to authentic history. Gregory of Tours, who died in 594, relates that in the reign of Theodoric of Metz (511-534) the Danes invaded the kingdom, and carried off many captives and much plunder to their ships. Their king, whose name appears in the best MSS. as Chlochilaicus (other copies read Chrochilaicus, Hrodolaicus, &c.), remained on shore intending to follow afterwards, but was attacked by the Franks under Theodobert, son of Theodoric, and killed. The Franks then defeated the Danes in a naval battle, and recovered the booty. The date of these events is ascertained to have been between 512 and 520. An anonymous history written early in the eighth century (*Liber Hist. Francorum*, cap. 19) gives the name of the Danish king as Chochilaicus, and says that he was killed in the land of the Attoarii. Now it is related in *Beowulf* that Hygelac met his death in fighting against the Franks and the Hetware (the Old English form of Attoarii). The forms of the Danish king’s name given by the Frankish historians are corruptions of the name of which the primitive Germanic form was Hugilaikaz, and which by regular phonetic change became in Old English *Hygelāc*, and in Old Norse Hugleikr. It is true that the invading king is said in the histories to have been a Dane, whereas the Hygelac of Beowulf belonged to the “Gēatas” or Gautar. But a work called *Liber Monstrorum*,[1] preserved in two MSS. of the 10th century, cites as an example of extraordinary stature a certain “Huiglaucus, king of the Getae,” who was killed by the Franks, and whose bones were preserved on an island at the mouth of the Rhine, and exhibited as a marvel. It is therefore evident that the personality of Hygelac, and the expedition in which, according to *Beowulf*, he died, belong not to the region of legend or poetic invention, but to that of historic fact.

This noteworthy result suggests the possibility that what the poem tells of Hygelac’s near relatives, and of the events of his reign and that of his successor, is based on historic fact. There is really nothing to forbid the supposition; nor is there any unlikelihood in the view that the persons mentioned as belonging to the royal houses of the Danes and Swedes had a real existence. It can be proved, at any rate, that several of the names are derived from the native traditions of these two peoples. The Danish king Hrothgar and his brother Halga, the sons of Healf-dene, appear in the *Historia Danica* of Saxo as Roe (the founder of Roskilde) and Helgo, the sons of Haldanus. The Swedish princes Eadgils, son of Ohthere, and Onela, who are mentioned in *Beowulf*, are in the Icelandic *Heimskringla* called Adils son of Ōttarr, and Āli; the correspondence of the names, according to the phonetic laws of Old English and Old Norse,

being strictly normal. There are other points of contact between *Beowulf* on the one hand and the Scandinavian records on the other, confirming the conclusion that the Old English poem contains much of the historical tradition of the Gautar, the Danes and the Swedes, in its purest accessible form.

Of the hero of the poem no mention has been found elsewhere. But the name (the Icelandic form of which is Bjōlfr) is genuinely Scandinavian. It was borne by one of the early settlers in Iceland, and a monk named Biuulf is commemorated in the *Liber Vitae* of the church of Durham. As the historical character of Hygelac has been proved, it is not unreasonable to accept the authority of the poem for the statement that his nephew Beowulf succeeded Heardred on the throne of the Gautar, and interfered in the dynastic quarrels of the Swedes. His swimming exploit among the Hetware, allowance being made for poetic exaggeration, fits remarkably well into the circumstances of the story told by Gregory of Tours; and perhaps his contest with Breca may have been an exaggeration of a real incident in his career; and even if it was originally related of some other hero, its attribution to the historical Beowulf may have been occasioned by his renown as a swimmer.

On the other hand, it would be absurd to imagine that the combats with Grendel and his mother and with the fiery dragon can be exaggerated representations of actual occurrences. These exploits belong to the domain of pure mythology. That they have been attributed to Beowulf in particular might seem to be adequately accounted for by the general tendency to connect mythical achievements with the name of any famous hero. There are, however, some facts that seem to point to a more definite explanation. The Danish king "Scyld Scēfing," whose story is told in the opening lines of the poem, and his son Beowulf, are plainly identical with Sceldwea, son of Sceaf, and his son Beaw, who appear among the ancestors of Woden in the genealogy of the kings of Wessex given in the *Old English Chronicle*. The story of Scyld is related, with some details not found in *Beowulf*, by William of Malmesbury, and, less fully, by the 10th-century English historian Ethelwerd, though it is told not of Scyld himself, but of his father Sceaf. According to William's version, Sceaf was found, as an infant, alone in a boat without oars, which had drifted to the island of "Scandza." The child was asleep with his head on a *sheaf*, and from this circumstance he obtained his name. When he grew up he reigned over the Angles at "Slaswic." In *Beowulf* the same story is told of Scyld, with the addition that when he died his body was placed in a ship, laden with rich treasure, which was sent out to sea unguided. It is clear that in the original form of the tradition the name of the foundling was Scyld or Sceldwea, and that his cognomen *Scefing* (derived from *scēaf*, a sheaf) was misinterpreted as a patronymic. Sceaf, therefore, is no genuine personage of tradition, but merely an etymological figment.

The position of Sceldwea and Beaw (in Malmesbury's Latin called Sceldius and Beowius) in the genealogy as anterior to Woden would not of itself prove that they belong to divine mythology and not to heroic legend. But there are independent reasons for believing that they were originally gods or demi-gods. It is a reasonable conjecture that the tales of victories over Grendel and the fiery dragon belong properly to the myth of Beaw. If Beowulf, the champion of the Gautar, had already become a theme of epic song, the resemblance of name might easily suggest the idea of enriching his story by adding to it the achievements of Beaw. At the same time, the tradition that the hero of these adventures was a son of Scyld, who was identified (whether rightly or wrongly) with the eponymus of the Danish dynasty of the Scyldings, may well have prompted the supposition that they took place in Denmark. There is, as we shall see afterwards, some ground for believing that there were circulated in England two rival poetic versions of the story of the encounters with supernatural beings: the one referring them to Beowulf the Dane, while the other (represented by the existing poem) attached them to the legend of the son of Ecgtheow, but ingeniously contrived to do some justice to the alternative tradition by laying the scene of the Grendel incident at the court of a Scylding king.

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As the name of Beaw appears in the genealogies of English kings, it seems likely that the traditions of his exploits may have been brought over by the Angles from their continental home. This supposition is confirmed by evidence that seems to show that the Grendel legend was popularly current in this country. In the schedules of boundaries appended to two Old English charters there occurs mention of pools called "Grendel's mere," one in Wiltshire and the other in Staffordshire. The charter that mentions the Wiltshire "Grendel's mere" speaks also of a place called *Bēowan hām* ("Beowa's home"), and another Wiltshire charter has a "Scyld's tree" among the landmarks enumerated. The notion that ancient burial mounds were liable to be inhabited by dragons was common in the Germanic world: there is perhaps a trace of it in the Derbyshire place-name Drakelow, which means "dragon's barrow."

While, however, it thus appears that the mythic part of the Beowulf story is a portion of primeval Angle tradition, there is no proof that it was originally peculiar to the Angles; and even if it was so, it may easily have passed from them into the poetic cycles of the related peoples. There are, indeed, some reasons for suspecting that the blending of the stories of the mythic

Beaw and the historical Beowulf may have been the work of Scandinavian and not of English poets. Prof. G. Sarrazin has pointed out the striking resemblance between the Scandinavian legend of Bödvarr Biarki and that of the Beowulf of the poem. In each, a hero from Gautland slays a destructive monster at the court of a Danish king, and afterwards is found fighting on the side of Eadgils (Adils) in Sweden. This coincidence cannot well be due to mere chance; but its exact significance is doubtful. On the one hand, it is possible that the English epic, which unquestionably derived its historical elements from Scandinavian song, may be indebted to the same source for its general plan, including the blending of history and myth. On the other hand, considering the late date of the authority for the Scandinavian traditions, we cannot be sure that the latter may not owe some of their material to English minstrels. There are similar alternative possibilities with regard to the explanation of the striking resemblances which certain incidents of the adventures with Grendel and the dragon bear to incidents in the narratives of Saxo and the Icelandic sagas.

Date and Origin.—It is now time to speak of the probable date and origin of the poem. The conjecture that most naturally presents itself to those who have made no special study of the question, is that an English epic treating of the deeds of a Scandinavian hero on Scandinavian ground must have been composed in the days of Norse or Danish dominion in England. This, however, is impossible. The forms under which Scandinavian names appear in the poem show clearly that these names must have entered English tradition not later than the beginning of the 7th century. It does not indeed follow that the extant poem is of so early a date; but its syntax is remarkably archaic in comparision with that of the Old English poetry of the 8th century. The hypothesis that *Beowulf* is in whole or in part a translation from a Scandinavian original, although still maintained by some scholars, introduces more difficulties than it solves, and must be dismissed as untenable. The limits of this article do not permit us to state and criticize the many elaborate theories that have been proposed respecting the origin of the poem. All that can be done is to set forth the view that appears to us to be most free from objection. It may be premised that although the existing MS. is written in the West-Saxon dialect, the phenomena of the language indicate transcription from an Anglian (*i.e.* a Northumbrian or Mercian) original; and this conclusion is supported by the fact that while the poem contains one important episode relating to the Angles, the name of the Saxons does not occur in it at all.

In its original form, *Beowulf* was a product of the time when poetry was composed not to be read, but to be recited in the halls of kings and nobles. Of course an entire epic could not be recited on a single occasion; nor can we suppose that it would be thought out from beginning to end before any part of it was presented to an audience. A singer who had pleased his hearers with a tale of adventure would be called on to tell them of earlier or later events in the career of the hero; and so the story would grow, until it included all that the poet knew from tradition, or could invent in harmony with it. That *Beowulf* is concerned with the deeds of a foreign hero is less surprising than it seems at first sight. The minstrel of early Germanic times was required to be learned not only in the traditions of his own people, but also in those of the other peoples with whom they felt their kinship. He had a double task to perform. It was not enough that his songs should give pleasure; his patrons demanded that he should recount faithfully the history and genealogy both of their own line and of those other royal houses who shared with them the same divine ancestry, and who might be connected with them by ties of marriage or warlike alliance. Probably the singer was always himself an original poet; he might often be content to reproduce the songs that he had learned, but he was doubtless free to improve or expand them as he chose, provided that his inventions did not conflict with what was supposed to be historic truth. For all we know, the intercourse of the Angles with Scandinavia, which enabled their poets to obtain new knowledge of the legends of Danes, Gautar and Swedes, may not have ceased until their conversion to Christianity in the 7th century. And even after this event, whatever may have been the attitude of churchmen towards the old heathen poetry, the kings and warriors would be slow to lose their interest in the heroic tales that had delighted their ancestors. It is probable that down to the end of the 7th century, if not still later, the court poets of Northumbria and Mercia continued to celebrate the deeds of Beowulf and of many another hero of ancient days.

Although the heathen Angles had their own runic alphabet, it is unlikely that any poetry was written down until a generation had grown up trained in the use of the Latin letters learned from Christian missionaries. We cannot determine the date at which some book-learned man, interested in poetry, took down from the lips of a minstrel one of the stories that he had been accustomed to sing. It may have been before 700; much later it can hardly have been, for the old heathen poetry, though its existence might be threatened by the influence of the church, was still in vigorous life. The epic of Beowulf was not the only one that was reduced to writing: a fragment of the song about Finn, king of the Frisians, still survives, and possibly several other heroic poems were written down about the same time. As originally dictated, *Beowulf* probably contained the story outlined at the beginning of this article, with the addition of one or two of the episodes relating to the hero himself—among them the legend of the swimming-match. This story had doubtless been told at greater length in verse, but its insertion in its present place is

the work of a poet, not of a mere redactor. The other episodes were introduced by some later writer, who had heard recited, or perhaps had read, a multitude of the old heathen songs, the substance of which he piously sought to preserve from oblivion by weaving it in an abridged form, into the texture of the one great poem which he was transcribing. The Christian passages, which are poetically of no value, are evidently of literary origin, and may be of any date down to that of the extant MS. The curious passage which says that the subjects of Hrothgar sought deliverance from Grendel in prayer at the temple of the Devil, "because they knew not the true God," must surely have been substituted for a passage referring sympathetically to the worship of the ancient gods.

An interesting light on the history of the written text seems to be afforded by the phenomena of the existing MS. The poem is divided into numbered sections, the length of which was probably determined by the size of the pieces of parchment of which an earlier exemplar consisted. Now the first fifty-two lines, which are concerned with Scyld and his son Beowulf, stand outside this numbering. It may reasonably be inferred that there once existed a written text of the poem that did not include these lines. Their substance, however, is clearly ancient. Many difficulties will be obviated if we may suppose that this passage is the beginning of a different poem, the hero of which was not Beowulf the son of Ecgtheow, but his Danish namesake. It is true that Beowulf the Scylding is mentioned at the beginning of the first numbered section; but probably the opening lines of this section have undergone alteration in order to bring them into connexion with the prefixed matter.

Bibliography.—The volume containing the *Beowulf* MS. (then, as now, belonging to the Cottonian collection, and numbered "Vitellius A. xv.") was first described by Humphrey Wanley in 1705, in his catalogue of MSS., published as vol. iii. of G. Hickes's *Thesaurus Veterum Linguarum Septentrionalium*. In 1786 G.J. Thorkelin, an Icelander, made or procured two transcripts of the poem, which are still preserved in the Royal Library at Copenhagen, and are valuable for the criticism of the text, the MS. having subsequently become in places less legible. Thorkelin's edition (1815) is of merely historic interest. The first edition showing competent knowledge of the language was produced in 1833 by J.M. Kemble. Since then editions have been very numerous. The text of the poem was edited by C.W.M. Grein in his *Bibliothek der angelsächsischen Poesie* (1857), and again separately in 1867. Autotypes of the MS. with transliteration by Julius Zupitza, were issued by the Early English Text Society in 1882. The new edition of Grein's *Bibliothek*, by R.P. Wülker, vol. i. (1883), contains a revised text with critical notes. The most serviceable separate editions are those of M. Heyne (7th ed., revised by A. Socin, 1903), A.J. Wyatt (with English notes and glossary, 1898), and F. Holthausen (vol. i., 1905).

Eleven English translations of the poem have been published (see C.B. Tinker, *The Translations of Beowulf*, 1903). Among these may be mentioned those of J.M. Garnett (6th ed., 1900), a literal rendering in a metre imitating that of the original; J. Earle (1892) in prose; W. Morris (1895) in imitative metre, and almost unintelligibly archaistic in diction; and C.B. Tinker (1902) in prose.

For the bibliography of the earlier literature on *Beowulf*, and a detailed exposition of the theories therein advocated, see R.P. Wülker, *Grundriss der angelsächsischen Litteratur* (1882). The views of Karl Müllenhoff, which, though no longer tenable as a whole, have formed the basis of most of the subsequent criticism, may be best studied in his posthumous work, *Beovulf, Untersuchungen über das angelsächsische Epos* (1889). Much valuable matter may be found in B. ten Brink, *Beowulf, Untersuchungen* (1888). The work of G. Sarrazin, *Beowulf-studien* (1888), which advocates the strange theory that *Beowulf* is a translation by Cynewulf of a poem by the Danish singer Starkadr, contains, amid much that is fanciful, not a little that deserves careful consideration. The many articles by E. Sievers and S. Bugge, in *Beiträdge zur Geschichte der deutschen Sprache und Litteratur* and other periodicals, are of the utmost importance for the textual criticism and interpretation of the poem.

(H. Br.)

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1 Printed in Berger de Xivrey, *Traditions Tératologiques* (1836), from a MS. in private hands. Another MS., now at Wolfenbüttel, reads "Hunglacus" for Huiglaucus, and (ungrammatically) "gentes" for *Getis*.

BEQUEST (from O. Eng. *becwethan*, to declare or express in words; cf. "quoth"), the disposition of property by will. Strictly, "bequest" is used of personal, and "devise" of real property. (See Legacy; Will or Testament.)

BÉRAIN, JEAN (1638-1711), known as "the Elder," Belgian draughtsman and designer, painter and engraver of ornament, was born in 1638 or 1639 at Saint Mihiel (Meuse) and died in Paris on the 24th of January 1711. In 1674 he was appointed *dessinateur de la chambre et du cabinet de Roi*, in succession to Gissey, whose pupil he is believed to have been. From 1677 onward he had apartments, near to those of André Charles Boulle (*q.v.*), for whom he made many designs, in the Louvre, where he died. After the death of Le Brun he was commissioned to compose and supervise the whole of the exterior decoration of the king's ships. Without possessing great originality he was inventive and industrious, and knew so well how to assimilate the work of those who had preceded him (especially Raffaelle's arabesques) and to adapt it to the taste of the time that his designs became the rage. He furnished designs for the decorations and costumes used in the opera performances, for court festivals, and for public solemnities such as funeral processions, and inspired the ornamentations of rooms and of furniture to such an extent that a French writer says that nothing was done during his later years which he had not designed, or at least which was not in his manner. He was, in fact, the oracle of taste and the supreme pontiff whose fiat was law in all matters of decoration. His numerous designs were for the most part engraved under his own superintendence, and a collection of them was published in Paris in 1711 by his son-in-law, Thuret, clockmaker to the king. There are three books, *Œuvre de J. Bérain, Ornements inventés par J. Bérain* and *Œvres de J. Bérain contenant des ornements d'architecture*. His earliest known works show him as engraver—twelve plates in the collection of *Diverses pièces de serrurerie inventées par Hughes Brisville el gravées par Jean Bérain* (Paris, 1663), and in 1667 ten plates of designs for the use of gunsmiths. M. Guilmard in *Les Maîtres ornemanistes*, gives a complete list of his published works.

His son Jean Bérain, "the Younger" (1678-1726), was born in Paris, where he also died. He was his father's pupil, and exercised the same official functions after his death. Thus he planned the funeral ceremonies at St Denis on the death of the dauphin, and afterwards made the designs for the obsequies of Louis XIV. He is perhaps best known as an engraver. He engraved eleven plates of the collection *Ornements de peinture et de sculpture qui sont dans la galerie d'Apollon au chasteau du Louvre, et dans le grand appartement du roy au palais des Tuileries* (Paris, 1710), which have been wrongly attributed to his father, the *Mausolei du duc de Bourgogne*, and that of *Marie-Louise Gabrielle de Savoie, reine d'Espagne* (1714), &c. His work is exceedingly difficult to distinguish from his father's, the similarity of style being remarkable.

Claude Bérain, brother of the elder Jean, was still living in 1726. He was engraver to the king, and executed a good number of plates of ornament and arabesque of various kinds, some of which are included in his more distinguished brother's works.

(J. P. B.)

BÉRANGER, PIERRE JEAN DE (1780-1857), French song-writer, was born in Paris on the 19th of August 1780. The aristocratic *de* was a piece of groundless vanity on the part of his father, who had assumed the name of Béranger de Mersix. He was descended in truth from a country innkeeper on the one side, and, on the other, from a tailor in the rue Montorgueil. Of education, in the narrower sense, he had but little. From the roof of his first school he beheld the capture of the Bastille, and this stirring memory was all that he acquired. Later on he passed some time in a school at Péronne, founded by one Bellenglise on the principles of Rousseau, where the boys were formed into clubs and regiments, and taught to play solemnly at politics and war. Béranger was president of the club, made speeches before such members of Convention as passed through Péronne, and drew up addresses to Tallien or Robespierre at Paris. In the meanwhile he learned neither Greek nor Latin—not even French, it would appear; for it was after he left school, from the printer Laisney, that he acquired the elements of grammar. His true education was of another sort. In his childhood, shy, sickly and skilful with his hands, as he sat at home alone to carve cherry stones, he was already forming for himself those habits of retirement and patient elaboration which influenced the whole tenor of his life and the character of all that he wrote. At Péronne he learned of his good aunt to be a stout republican; and from the doorstep of her inn, on quiet evenings, he would listen to the thunder of the guns before Valenciennes, and fortify himself in his passionate love of France and distaste for all things foreign. Although he could never read Horace save in a translation, he had been educated on *Télémaque*, Racine and the dramas of Voltaire, and taught, from a child, in the tradition of all that is highest and most correct in French.

After serving his aunt for some time in the capacity of waiter, and passing some time also in the printing-office of one Laisney, he was taken to Paris by his father. Here he saw much low speculation, and many low royalist intrigues. In 1802, in consequence of a distressing quarrel,

he left his father and began life for himself in the garret of his ever memorable song. For two years he did literary hackwork, when he could get it, and wrote pastorals, epics and all manner of ambitious failures. At the end of that period (1804) he wrote to Lucien Bonaparte, enclosing some of these attempts. He was then in bad health, and in the last state of misery. His watch was pledged. His wardrobe consisted of one pair of boots, one greatcoat, one pair of trousers with a hole in the knee, and "three bad shirts which a friendly hand wearied itself in endeavouring to mend." The friendly hand was that of Judith Frère, with whom he had been already more or less acquainted since 1796, and who continued to be his faithful companion until her death, three months before his own, in 1857. She must not be confounded with the Lisette of the songs; the pieces addressed to her (*La Bonne Vieille, Maudit printemps*, &c.) are in a very different vein. Lucien Bonaparte interested himself in the young poet, transferred to him his own pension of 1000 francs from the Institute, and set him to work on a *Death of Nero*. Five years later, through the same patronage, although indirectly, Béranger became a clerk in the university at a salary of another thousand.

Meanwhile he had written many songs for convivial occasions, and "to console himself under all misfortunes"; some, according to M. Boiteau, had been already published by his father, but he set no great store on them himself; and it was only in 1812, while watching by the sick-bed of a friend, that it occurred to him to write down the best he could remember. Next year he was elected to the *Caveau Moderne*, and his reputation as a song-writer began to spread. Manuscript copies of *Les Gueux, Le Sénateur*, above all, of *Le Roi d'Yvetot*, a satire against Napoleon, whom he was to magnify so much in the sequel, passed from hand to hand with acclamation. It was thus that all his best works went abroad; one man sang them to another over all the land of France. He was the only poet of modern times who could altogether have dispensed with printing.

His first collection escaped censure. "We must pardon many things to the author of *Le Roi d'Yvetot*," said Louis XVIII. The second (1821) was more daring. The apathy of the Liberal camp, he says, had convinced him of the need for some bugle call of awakening. This publication lost him his situation in the university, and subjected him to a trial, a fine of 500 francs and an imprisonment of three months. Imprisonment was a small affair for Béranger. At Sainte Pélagie he occupied a room (it had just been quitted by Paul Louis Courier), warm, well furnished, and preferable in every way to his own poor lodging, where the water froze on winter nights. He adds, on the occasion of his second imprisonment, that he found a certain charm in this quiet, claustral existence, with its regular hours and long evenings alone over the fire. This second imprisonment of nine months, together with a fine and expenses amounting to 1100 francs, followed on the appearance of his fourth collection. The government proposed through Laffitte that, if he would submit to judgment without appearing or making defences, he should only be condemned in the smallest penalty. But his public spirit made him refuse the proposal; and he would not even ask permission to pass his term of imprisonment in a *Maison de santé*, although his health was more than usually feeble at the time. "When you have taken your stand in a contest with government, it seems to me," he wrote, "ridiculous to complain of the blows it inflicts on you, and impolitic to furnish it with any occasion of generosity." His first thought in La Force was to alleviate the condition of the other prisoners.

In the revolution of July he took no inconsiderable part. Copies of his song, *Le Vieux Drapeau*, were served out to the insurgent crowd. He had been for long the intimate friend and adviser of the leading men; and during the decisive week his counsels went a good way towards shaping the ultimate result. "As for the republic, that dream of my whole life," he wrote in 1831, "I did not wish it should be given to us a second time unripe." Louis Philippe, hearing how much the song-writer had done towards his elevation, expressed a wish to see and speak with him; but Béranger refused to present himself at court, and used his favour only to ask a place for a friend, and a pension for Rouget de l'Isle, author of the famous *Marseillaise*, who was now old and poor, and whom he had been already succouring for five years.

In 1848, in spite of every possible expression of his reluctance, he was elected to the Constituent Assembly, and that by so large a number of votes (204,471) that he felt himself obliged to accept the seat. Not long afterwards, and with great difficulty, he obtained leave to resign. This was the last public event of Béranger's life. He continued to polish his songs in retirement, visited by nearly all the famous men of France. He numbered among his friends Chateaubriand, Thiers, Jacques Laffitte, Michelet, Lamennais, Mignet. Nothing could exceed the amiability of his private character; so poor a man has rarely been so rich in good actions; he was always ready to receive help from his friends when he was in need, and always forward to help others. His correspondence is full of wisdom and kindness, with a smack of Montaigne, and now and then a vein of pleasantry that will remind the English reader of Charles Lamb. He occupied some of his leisure in preparing his own memoirs, and a certain treatise on *Social and Political Morality*, intended for the people, a work he had much at heart, but judged at last to be beyond his strength. He died on the 16th July 1857. It was feared that his funeral would be the signal for some political disturbance; but the government took immediate measures, and all went quietly.

The streets of Paris were lined with soldiers and full of townsfolk, silent and uncovered. From time to time cries arose:—“*Honneur, honneur à Béranger!*”

The songs of Béranger would scarcely be called songs in England. They are elaborate, written in a clear and sparkling style, full of wit and incision. It is not so much for any lyrical flow as for the happy turn of the phrase that they claim superiority. Whether the subject be gay or serious, light or passionate, the medium remains untroubled. The special merits of the songs are merits to be looked for rather in English prose than in English verse. He worked deliberately, never wrote more than fifteen songs a year and often less, and was so fastidious that he has not preserved a quarter of what he finished. “I am a good little bit of a poet,” he says himself, “clever in the craft, and a conscientious worker to whom old airs and a modest choice of subjects (*le coin où je me suis confiné*) have brought some success.” Nevertheless, he makes a figure of importance in literary history. When he first began to cultivate the *chanson*, this minor form lay under some contempt, and was restricted to slight subjects and a humorous guise of treatment. Gradually he filled these little chiselled toys of verbal perfection with ever more and more of sentiment. From a date comparatively early he had determined to sing for the people. It was for this reason that he fled, as far as possible, the houses of his influential friends and came back gladly to the garret and the street corner. Thus it was, also, that he came to acknowledge obligations to Emile Debraux, who had often stood between him and the masses as interpreter, and given him the key-note of the popular humour. Now, he had observed in the songs of sailors, and all who labour, a prevailing tone of sadness; and so, as he grew more masterful in this sort of expression, he sought more and more after what is deep, serious and constant in the thoughts of common men. The evolution was slow; and we can see in his own works examples of every stage, from that of witty indifference in fifty pieces of the first collection, to that of grave and even tragic feeling in *Les Souvenirs du peuple* or *Le Vieux Vagabond*. And this innovation involved another, which was as a sort of prelude to the great romantic movement. For the *chanson*, as he says himself, opened up to him a path in which his genius could develop itself at ease; he escaped, by this literary postern, from strict academical requirements, and had at his disposal the whole dictionary, four-fifths of which, according to La Harpe, were forbidden to the use of more regular and pretentious poetry. If he still kept some of the old vocabulary, some of the old imagery, he was yet accustoming people to hear moving subjects treated in a manner more free and simple than heretofore; so that his was a sort of conservative reform, preceding the violent revolution of Victor Hugo and his army of uncompromising romantics. He seems himself to have had glimmerings of some such idea; but he withheld his full approval from the new movement on two grounds:—first, because the romantic school misused somewhat brutally the delicate organism of the French language; and second, as he wrote to Sainte-Beuve in 1832, because they adopted the motto of “Art for art,” and set no object of public usefulness before them as they wrote. For himself (and this is the third point of importance) he had a strong sense of political responsibility. Public interest took a far higher place in his estimation than any private passion or favour. He had little toleration for those erotic poets who sing their own loves and not the common sorrows of mankind, “who forget,” to quote his own words, “forget beside their mistress those who labour before the Lord.” Hence it is that so many of his pieces are political, and so many, in the later times at least, inspired with a socialistic spirit of indignation and revolt. It is by this socialism that he becomes truly modern and touches hands with Burns.

Authorities.—*Ma biographie* (his own memoirs) (1858); *Vie de Béranger*, by Paul Boiteau (1861); *Correspondance de Béranger*, edited by Paul Boiteau (4 vols., 1860); *Béranger et Lamennais*, by Napoléon Peyrat (1857); *Quarante-cinq lettres de Béranger publiées par Madame Louise Colet* (almost worthless) (1857); *Béranger, ses amis, ses ennemis et ses critiques*, by A. Arnould (2 vols., 1864); J. Janin, *Béranger et son temps* (2 vols., 1866); also Sainte-Beuve’s *Portraits contemporains*, vol. i.; J. Carson, *Béranger et la légende napoleonienne* (1897) A bibliography of Béranger’s works was published by Jules Brivois in 1876.

(R. L. S.)

BERAR, known also as the Hyderabad Assigned Districts, formerly a province administered on behalf of the nizam of Hyderabad by the British government, but since the 1st of October 1903 under the administration of the commissioner-general for the Central Provinces (*q.v.*). The origin of the name Berar is not known, but may perhaps be a corruption of Vidarbha, the name of a kingdom in the Deccan of which, in the period of the Mahabharata, Berar probably formed part. The history of Berar belongs generally to that of the Deccan, the country falling in turn under the sway of the various dynasties which successively ruled in southern India, the first authentic records showing it to have been part of the Andhra or Satavahana empire. On the final fall of the Chalukyas in the 12th century, Berar came under the sway of the Yadavas of Deogiri, and remained in their possession till the Mussulman invasions at the end of the 13th century. On the

establishment of the Bahmani dynasty in the Deccan (1348) Berar was constituted one of the four provinces into which their kingdom was divided, being governed by great nobles, with a separate army. The perils of this system becoming apparent, the province was divided (1478 or 1479) into two separate governments, named after their capitals Gawil and Mahur. The Bahmani dynasty was, however, already tottering to its fall; and in 1490 Imad-ul-Mulk, governor of Gawil, who had formerly held all Berar, proclaimed his independence and proceeded to annex Mahur to his new kingdom. Imad-ul-Mulk was by birth a Kanarese Hindu, but had been captured as a boy in one of the expeditions against Vijayanagar and reared as a Mussulman. He died in 1504 and his direct descendants held the sultanate of Berar until 1561, when Burhan Imad Shah was deposed by his minister Tufal Khan, who assumed the kingship. This gave a pretext for the intervention of Murtaza Nizam Shah of Ahmednagar, who in 1572 invaded Berar, imprisoned and put to death Tufal Khan, his son Shams-ul-Mulk, and the ex-king Burhan, and annexed Berar to his own dominions. In 1595 Sultan Murad, son of the emperor Akbar, besieged Ahmednagar, and was bought off by the formal cession of Berar.

Murad, founding the city of Shahpur, fixed his seat at Berar, and after his death in 1598, and the conquest of the Deccan by Akbar, the province was united with Ahmednagar and Khandesh under the emperor’s fifth son, Daniyal (d. 1605), as governor. After Akbar’s death (1605) Berar once more became independent under the Abyssinian Malik Ambar (d. 1626), but in the first year of Shah Jahan’s reign it was again brought under the sway of the Mogul empire. Towards the close of the 17th century the province began to be overrun by the Mahrattas, and in 1718 the Delhi government formally recognized their right to levy blackmail (*chauth*) on the unhappy population. In 1724 the Nizam-ul-Mulk Asaf Jah established the independent line of the nizams of Hyderabad, and thenceforth the latter claimed to be *de jure* sovereigns of Berar, with exception of certain districts (Mehkar, Umarkhed, &c.) ceded to the peshwa in 1760 and 1795. The claim was contested by the Bhonsla rajas, and for more than half a century the miserable country was ground between the upper and the nether millstone.

This condition of things was ended by Wellesley’s victories at Assaye and Argaon (1803), which forced the Bhonsla raja to cede his territories west of the Wardha, Gawilgarh and Narnala. By the partition treaty of Hyderabad (1804) these ceded territories in Berar were transferred to the nizam, together with some tracts about Sindkhed and Jalna which had been held by Sindhia. By a treaty of 1822, which extinguished the Mahratta right to levy *chauth*, the Wardha river was fixed as the eastern boundary of Berar, the Melghat and adjoining districts in the plains being assigned to the nizam in exchange for the districts east of the Wardha held by the peshwa.

Though Berar was no longer oppressed by its Mahratta taskmasters nor harried by Pindari and Bhil raiders, it remained long a prey to the turbulent elements let loose by the sudden cessation of the wars. From time to time bands of soldiery, whom the government was powerless to control, scoured the country, and rebellion succeeded rebellion till 1859, when the last fight against open rebels took place at Chichamba near Risod. Meanwhile the misery of the country was increased by the reckless raising of loans by the nizam’s government and the pledging of the revenues to a succession of great farmers-general. At last the British government had to intervene effectively, and in 1853 a new treaty was signed with the nizam, under which the Hyderabad contingent was to be maintained by the British government, while for the pay of this force and in satisfaction of other claims, certain districts were “assigned” to the East India Company. It was these “Hyderabad Assigned Districts” which were popularly supposed to form the province of Berar, though they coincided in extent neither with the Berar of the nizams nor with the old Mogul province. In 1860, by a new treaty which modified in the nizam’s favour that of 1853, it was agreed that Berar should be held in trust by the British government for the purposes specified in the treaty of 1853.

Under British control Berar rapidly recovered its prosperity. Thousands of cultivators who had emigrated across the Wardha to the peshwa’s dominions, in order to escape the ruinous fiscal system of the nizam’s government, now returned; the American Civil War gave an immense stimulus to the cotton trade; the laying of a line of railway across the province provided yet further employment, and the people rapidly became prosperous and contented.

See *Imperial Gazetteer of India* (Oxford, 1908), and authorities there quoted.

BÉRARD, JOSEPH FRÉDÉRIC (1789-1828), French physician and philosopher, was born at Montpellier. Educated at the medical school of that town, he afterwards went to Paris, where he was employed in connexion with the *Dictionnaire des sciences médicales*. He returned in 1816,

and published a work, *Doctrine médicale de l'école de Montpellier* (1819), which is indispensable to a proper understanding of the principles of the Vitalistic school. In 1823 he was called to a chair of medicine at Paris, which he held for three years; he was then nominated professor of hygiene at Montpellier. His health gave way under his labours, and he died in 1828. His most important book is his *Doctrines des rapports du physique et du moral* (Paris, 1823). He held that consciousness or internal perception reveals to us the existence of an immaterial, thinking, feeling and willing subject, the self or soul. Alongside of this there is the vital force, the nutritive power, which uses the physical frame as its organ. The soul and the principle of life are in constant reciprocal action, and the first owes to the second, not the formation of its faculties, but the conditions under which they are evolved. He showed himself unable to understand the points of view of those whom he criticized, and yet his own theories, midway between vitalism and animism, are entirely destitute of originality.

To the *Esprit des doctrines médicales de Montpellier*, published posthumously (Paris, 1830), the editor, H. Pétiot, prefixed an account of his life and works; see also Damiron, *Phil. en France au XIXe siècle* (Paris, 1834); C.J. Tissot, *Anthropologie générale* (1843).

BERAT (Slav. *Byelgorod*; Turk. *Arnaut-Beligradi*), the capital of a sanjak in the vilayet of Iannina, southern Albania, Turkey; on the river Ergene, Ergeni or Osum, a left-hand tributary of the Semeni. Pop. (1900) about 15,000. Berat is a fortified town, situated in a fertile valley, which produces wine, olive-oil, fruit and grain. It is the see of an Orthodox metropolitan, and the inhabitants, of whom two-thirds are Albanian and the remainder principally Greek, are equally divided in religion between Christianity and Islam.

BERAUN (Czech *Beroun*), a town of Bohemia, Austria, 27 m. S.W. of Prague by rail. Pop. (1900) 9693, mostly Czech. It is situated at the confluence of the Beraun with the Litawa river, and is the seat of important textile industry, sugar-refining, corn-milling and brewing. Lime-kilns and the manufacture of cement, and smelting and iron works are carried on in the environs. Beraun is a place of immemorial antiquity. It was originally called *na Brodě* (by the ford), and received the name of Bern, Berun or Verona in the 13th century, when it obtained the privileges of a city from the emperor Charles IV., who was specially attached to the place, calling it "Verona mea." Under his patronage the town rapidly prospered. In 1421 Zizka stormed the town, which later on was retaken and devastated by the troops of Duke Leopold, bishop of Passau. During the Thirty Years' War it was sacked by the Imperialists, the Saxons and the Swedes in turn; and in the first Silesian war the same fate befell it at the hands of the French and Bavarians.

BERBER, a town and mudiria (province) of the Anglo-Egyptian Sudan. The town is on the right bank of the Nile, 1140 ft. above sea-level, in 18° 1' N., 33° 59′ E., and 214 m. by rail N.W. of Khartum. Pop. about 6000. Berber derived its importance from being the starting-point of the caravan route, 242 m. long, across the Nubian desert to the Red Sea at Suakin, a distance covered in seven to twelve days. It was also one of the principal stopping-places between Cairo and Khartum. The caravan route to the Red Sea was superseded in 1906 by a railway, which leaves the Wadi Halfa-Khartum line at the mouth of the Atbara. Berber thus lost the Red Sea trade. It remains the centre and market-place for the produce of the Nile valley for a considerable distance. East of the town is an immense plain, which, if irrigated, would yield abundant crops.

Berber, or El Mekerif, is a town of considerable antiquity. Before its conquest by the Egyptians in 1820 its ruler owed allegiance to the kings of Sennar. It was captured by the Mahdists on the 26th of May 1884, and was re-occupied by the Anglo-Egyptian army on the 6th of September 1897. It was the capital of the mudiria until 1905, in which year the headquarters of the province were transferred to Ed Damer, a town near the confluence of the Nile and Atbara. At

the northern end of the mudiria is Abu Hamed (*q.v.*), important as a railway junction for Dongola mudiria. The best-known of the tribes inhabiting the province are the Hassania, Jaalin, Bisharin and Kimilab. During the Mahdia most of these tribes suffered severely at the hands of the dervishes. In 1904 the total population of the province was estimated at 83,000. It has since considerably increased. The riverain population is largely engaged in agriculture, the chief crops cultivated being durra, barley, wheat and cotton.

BERBERA, chief town and principal port of the British Somaliland protectorate, North-East Africa, 155 m. S. of Aden, in 10° 26′ N., 45° 4′ E. Berbera stands at the head of a deep inlet which forms the only completely sheltered haven on the south side of the Gulf of Aden. It is the residence of the commissioner of the protectorate and the headquarters of the Somaliland battalion of the King’s African Rifles. The harbour is eleven to thirteen fathoms deep at the entrance (indicated by a lighthouse), decreasing to five fathoms near the shore. Ocean-going steamers find ample accommodation. There are two piers and numerous warehouses. The town is built in two divisions—the native town to the east, the new town, laid out by the Egyptians (1875-1877), to the west. The majority of the better-class houses are of rubble, one-storeyed and flat-roofed. The public buildings include the fort, hospital and barracks. There are a Roman Catholic mission-house and convent and a government school. The affairs of the town are administered by a municipality. The water-supply is brought to the town by an aqueduct from the hills some 8 m. distant. The bulk of the inhabitants are Somali, who have abandoned a nomadic life and adopted largely the ways of the Arab and Indian traders. The permanent population is under 10,000; but from October to April the population rises to 30,000 or more by the arrival of caravans from Ogaden and Dolbahanta. The traders bring with them tents on the backs of camels and these are pitched near the native town. Their merchandise consists of sheep and goats, gum and resin, skins and ostrich feathers. The trade is almost entirely with Aden, of which Berbera may be considered a commercial dependency. The value of the goods brought in yearly by caravan exceeds on the average £100,000. The total trade of the port for the five years 1901-1902 to 1905-1906 averaged over £200,000 a year. The chief articles of import are cotton goods (European white longcloth and American grey shirting), rice and jowari, flour, dates, sugar and tobacco (the last from Rotterdam). Berbera is said to have been founded by the Ptolemies among the *Barbari* of the adjacent coast lands. It fell subsequently into the possession of Arabs and was included in the Mahommedan state of Adel. At the time of the visit to the town of R.F. Burton and J.H. Speke (1854) it was governed by its own sheiks. In 1870 it was claimed by the khedive Ismail, but was not permanently occupied by Egypt until 1875. In 1884 it passed into the possession of Great Britain (see SOMALILAND, § 2, *History*).

BERBERINE, $C_{20}H_{17}NO_4$, an alkaloid occurring together with the alkaloids oxyacanthine $C_{18}H_{19}NO_3$, berbamine $C_{18}H_{19}NO_3$, hydrastine $C_{21}H_{21}NO_6$, and canadine $C_{20}H_{21}NO_4$, in *Berberis vulgaris*; it also occurs in other plants, *Berberis aristata, B. aquifolium, Hydrastis canadensis*, &c. It is a yellow, crystalline solid, insoluble in ether and chloroform, soluble in 4½ parts of water at 21°, and moderately soluble in alcohol. It is a monacid base; the hydrochloride, $C_{20}H_{17}NO_4 \cdot HCl$, is insoluble in cold alcohol, ether and chloroform, and soluble in 500 parts of water; the acid sulphate, $C_{20}H_{17}NO_4 \cdot H_2SO_4$ dissolves in about 100 parts of water. Canadine is a tetrahydroberberine.

Its constitution was worked out by W.H. Perkin (*J.C.S.*, 1889, 55, p. 63; 1890, 57, p. 991). This followed from a study of the decomposition products, there being obtained hemipinic acid $(CH_3O)_2C_6H_2(COOH)_2$, and a substance which proved to be ω-amino-ethyl-piperonyl carboxylic acid, $CH_2O_2 : C_6H_2 \cdot COOH \cdot CH_2 \cdot CH_2NH_2$. His formula was modified by Gadamer (*Abs. J.C.S.*, 1902, 1, p. 555), who made the free base an aldehyde, but the salts of an *iso*-quinolinium type. This formula, which necessitates the presence of two asymmetric carbon atoms in an alkyl tetrahydroberberine, has been accepted by M. Freund and F. Mayer (*Abs. J.C.S.*, 1907, 1, p. 632), who showed that two racemic propyl tetrahydroberberines are produced when propyl dihydroberberine is reduced.

BERBERS, the name under which are included the various branches of the indigenous “Libyan” race of North Africa. Since the dawn of history the Berbers have occupied the tract between the Mediterranean and the Sahara from Egypt to the Atlantic. The origin of the name is doubtful. Some believe it to be derived from the word βάρβαροι (barbarians), employed first by the Greeks and later by the Romans. Others attribute the first use of the term to the Arab conquerors. However this may be, tribal titles, *Barabara* and *Beraberata*, appear in Egyptian inscriptions of 1700 and 1300 B.C., and the Berbers were probably intimately related with the Egyptians in very early times. Thus the true ethnical name may have become confused with *Barbari*, the designation naturally used by classical conquerors. To the Egyptians they were known as “Lebu,” “Mashuasha,” “Tamahu,” “Tehennu” and “Kahaka”; a long list of names is found in Herodotus, and the Romans called them Numidae, Gaetuli and Mauri, terms which have been derived respectively from the Greek νομάδες (nomads), the name Gued’oula, of a great Berber tribe, and the Hebrew *mahur* (western). To speak of more modern times there can be enumerated the Zouaoua and Jebalia (Tripoli and Tunisia); the Chauwia, Kabyles and Beni-Mzab (Algeria); the Shlûh (Chlouah), Amazîgh and Berbers (Morocco); the Tuareg, Arnóshagh, Sorgu, &c. (Sahara). These tribes have many sub-tribes, each with a distinctive name. Among the Azgar, an important division of the Tuareg, one of the noble or free tribes, styled Aouraghen, is said to descend from a tribe named Avrigha. The Avrigha, or Afrigha, in ancient times occupied the coast lands near Carthage, and some scholars derive the word Africa from their name (see Africa, Roman). In regard to the ethnic relations of the Berbers there has been much dispute. The antiquity of their type is evidenced by the monuments of Egypt, where their ancestors are pictured with the same comparatively blond features which many of them still display. The aborigines of the Canary Islands, the Guanches, would seem almost certainly, from the remains of their language, to have been Berbers. But the problem of the actual origin of the Berber race has not yet been solved. Perhaps the most satisfactory theory is that of Sergi, who includes the Berbers in the “Mediterranean Race.” General L.L.C. Faidherbe regards them as indigenous Libyans mingled with a fair-skinned people of European origin. Dr Franz Pruner-Bey, Henri Duveyrier and Prof. Flinders Petrie maintain that they are closely related to the ancient Egyptians. Connexion has been traced between the early Libyan race and the Cro-Magnon and other early European races and, later, the Basque peoples, Iberians, Picts, Celts and Gauls. The megalithic monuments of Iberia and Celtic Europe have their counterparts in northern Africa, and it is suggested that these were all erected by the same race, by whatever name they be known, Berbers and Libyans in Africa, Iberians in Spain, Celts, Gauls and Picts in France and Britain.

Ethnology.

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In spite of a history of foreign conquest—Phoenician, Greek, Roman, Vandal, Arab and French—the Berber physical type and the Berber temperament and nationality have persisted since the stone age. The numerous invasions have naturally introduced a certain amount of foreign blood among the tribes fringing the Mediterranean, but those farther inland have preserved their racial purity to a surprising degree. Though considerable individual differences of type may be found in every village, the Berbers are distinctively a “white” race, and the majority would, if clad in European costume, pass unchallenged as Europeans. Dark hair and brown or hazel eyes are the rule; blue-eyed blonds are found, but their frequency has been considerably overstated. The invaders who have most affected the Berber race are the Arabs, but the two races, with a common religion, often a common government, with the same tribal groupings, have failed to amalgamate to any great extent. This fact has been emphasized by Dr R.G. Latham, who writes: “All that is not Arabic in the kingdom of Morocco, all that is not Arabic in the French provinces of Algeria, and all that is not Arabic in Tunis, Tripoli and Fezzan, is Berber.” The explanation lies in a profound distinction of character. The Arab is a herdsman and a nomad; the Berber is an agriculturist and a townsman. The Arab has built his social structure on the Koran, which inculcates absolutism, aristocracy, theocracy; the Berber, despite his nominal Mahommedanism, is a democrat, with his *Jemáa* or “Witangemot” and his *Kanum* or unwritten code, the Magna Carta of the individual’s liberty as opposed to the community’s good. The *Kanum* forbids no sort of exercise of individual will, so long as it is not inimical to the right or rights of other individuals. The Arabizing of the Berbers is indeed limited to little beyond the conversion of the latter to Islam. The Arab, transported to a soil which does not always suit him, so far from thriving, tends to disappear, whereas the Berber becomes more and more aggressive, and yearly increases in numbers. At present he forms at least three-fifths of the population in Algeria, and in Morocco the proportion is greater. The difference between the Berber and the Arab of the Barbary States is summed up by Dr Randall MacIver in the following words:—“The Berber gives the impression of being, as he is, the descendant of men who have lived in sturdy independence, self-governing and self-reliant. The Arab is the degenerate offspring of a race which only from its history and past records can claim any title to respect. Cringing, venal, avaricious, dishonest, the Arab combines all the faults of a vicious nature with those which a degraded religion inculcates or encourages. The Berber, on the other hand, is straightforward, honest, by no means averse to money-making, but not unscrupulous in the methods which he employs to this end, intelligent in a degree to which the ordinary Arab never approaches, and trustworthy as no Arab can be.”

Characteristics.

The Berber’s village is his state, and the government is vested in an assembly, the *Jemáa*, formed of all males old enough to observe the fast of Ramadan. By them are determined all matters of peace or war, legislation, taxation and justice. The executive officer is the *Amin*, a kind of mayor, elected from some influential family in which the dignity is often in practice hereditary. He owes his position to the good-will of his fellows, receives no remuneration, and resigns as soon as he loses the confidence of the people. By him are appointed certain *Temman* (sing. *Tamen*) who act as overseers, though without executive powers, in the various quarters of the village. The poorest Berber has as great a voice in affairs as the richest. The undue power of the *Jemáa* is checked by vendetta and a sort of lynch law, and by the formation of parties (*sofs*), within or without the assembly, for trade, political and other purposes. The Berbers are a warlike people who have never been completely subjugated. Every boy as soon as he reaches sixteen is brought into the *Jemáa* and given weapons which he carries till he is sixty. Though each village is absolutely independent as far as its internal affairs are concerned, two or more are often connected by administrative ties to form an *Arsh* or tribe. A number of these tribes form a *Thakebilt* or confederation, which is an extremely loose organization. An exception to this form of government is constituted by the Tuareg, whose organization, owing to their peculiar circumstances of life, is monarchical. Wars are declared by special messengers; the exchange of sticks or guns renders an armistice inviolable. In some tribes a tablet, on which is inscribed the name of every man fit to bear arms, is placed in the mosque. The Berbers, though Mahommedans, do not often observe the prescribed ablutions; they break their fast at Ramadan; and eat wild boar’s flesh and drink fig brandy. On the other hand, saints, both male and female, are paid more reverence by Berbers than by Arabs. Around their tombs their descendants settle, and thus sacred villages, often of considerable size, spring up. Almost every village, too, has its saint or prophet, and disputes as to their relative sanctity and powers cause fierce feuds. The hereditary caste known as Marabouts are frequently in open opposition to the absolute authority of the *Jemáa*. They are possessed of certain privileges, such as exemption from the chief taxes and the duty of bearing arms. They, however, often take a foremost part in tribal administration, and are frequently called upon to perform the office of arbitrators in questions of disputed policy, &c. In the *Jemáa*, too, the Marabout at times takes the place of honour and keeps order. The Berbers, if irreligious, are very superstitious, never leaving their homes without exorcizing evil spirits, and have a good and evil interpretation for every day of the week. Many Berbers still retain certain Christian and Jewish usages, relics of the pre-Islamitic days in North Africa, but of their primitive religion there is no trace. They are seldom good scholars, but those under French rule take all the advantage they can of the schools instituted by the government. Their social tendencies are distinctly communistic; property is often owned by the family in common, and a man can call upon the services of his fellow villagers for certain purposes, as the building of a house. Provision for the poor is often made by the community.

Government.

The dress of the Berbers was formerly made of home-woven cloth, and the manufacture of woollen stuffs has always been one of the chief occupations of their women. The men wear a tunic reaching to the knees, the women a longer garment. For work the men use a leather apron, and in the cold season and in travelling a burnous, usually a family heirloom, old and ragged; the women, in winter, throw a coloured cloth over their shoulders. The men’s hair is cut short but their beards are allowed to grow. In some districts there are peculiar customs, such as the wearing of small silver nose-rings, seen in El-Jofra. The Berbers’ weapons are those of the Arab: the long straight sword, the slightly curved and highly ornamented dagger, and the long gun. Berbers are not great town-builders. Their villages, however, are often of substantial appearance: with houses of untrimmed stones, occasionally with two storeys, built on hills, and invariably defended by a bank, a stone wall or a hedge. Sometimes their homes are mere huts of turf, or of clay tiles, with mortar made from lime and clay or cow-dung. The sloping roof is covered with reeds, straw or stones. The living room is on the right, the cattle-stall on the left. The dwelling is surrounded by a garden or small field of grain. The second storey is not added till a son marries. In the villages of the western Atlas the greater part of the upper storey consists of a sort of rough verandah. In this mountain district the natives spend the winter in vaults beneath the houses, and, for the sake of warmth, the tenements are built very close. Agriculture, which is carried on even in the mountain districts by means of laboriously constructed terraces, is antiquated in its methods. The plough, often replaced on the steeper slopes by the hoe, is similar to that depicted in ancient Egyptian drawings, and hand irrigation is usual. A sickle, toothed like a saw, is used for reaping. Corn is trodden by oxen, and kept in osier baskets narrowing to the top, or clay granaries. The staple crop is barley, but wheat, lentils, vetches, flax and gourds are also cultivated. Tobacco, maize and potatoes have been introduced; and the aloe and prickly pear, called in Morocco the Christian fig, are also found. The Kabyles understand grafting, have fine orchards and grow vines. The Beni-Abbas tribe in the Algerian Atlas is famed for its walnuts, and many tribes keep bees, chiefly for the commercial value of the wax. The Berber diet largely consists of cucumbers, gourds, water-melons and onions, and a small artichoke (*Cynara humilis*) which grows wild. At the beginning and end of their meal they drink a strongly sweetened liquid made from green tea

Customs.

and mint. Tea-drinking probably became a habit in Morocco about the beginning of the 19th century; coffee came by way of Algiers. At feasts the food is served on large earthenware dishes with high basket-work covers, like bee-skeps but twice as high.

Industries.

The Berbers have many industries. They mine and work iron, lead and copper. They have olive presses and flour mills, and their own millstone quarries, even travelling into Arab districts to build mills for the Arabs. They make lime, tiles, woodwork for the houses, domestic utensils and agricultural implements. They weave and dye several kinds of cloth, tan and dress leather and manufacture oil and soap. Without the assistance of the wheel the women produce a variety of pottery utensils, often of very graceful design, and decorated with patterns in red and black. Whole tribes, such as the Beni-Sliman, are occupied in the iron trade; the Beni-Abbas made firearms before the French conquest, and even cannon are said to have been made by boring. Before it was proscribed by the French, the manufacture of gunpowder was general. The native jewellers make excellent ornaments in silver, coral and enamel. In some places wood-carving has been brought to considerable perfection; and native artists know how to engrave on metal both by etching and the burin. In its collective industry the Berber race is far superior to the Arab. The Berbers are keen traders too, and, after the harvest, hawk small goods, travelling great distances.

Women.

A Berber woman has in many ways a better position than her Arab sister. True, her birth is regarded as an event of no moment, while that of a boy is celebrated by great rejoicings, and his mother acquires the right to wear on her forehead the *tafzint*, a mark which only the women who have borne an heir can assume. Her husband buys and can dismiss her at will. She has most of the hard work to do, and is little better than a servant. When she is old and past work, especially if she has not been the mother of a male child, she is often abandoned. But she has a voice in public affairs; she has laws to protect her, manages the household and goes unveiled; she has a right to the money she earns; she can inherit under wills, and bequeath property, though to avoid the alienation of real property, succession to it is denied her. But most characteristic of her social position is the Berber woman’s right to enter into a sacred bond or agreement, represented by the giving of the *anaya*. This is some symbolic object, stick or what not, which passes between the parties to a contract, the obligations under which, if not fulfilled by the contracting parties during their lives, become hereditary. Female saints, too, are held in high honour; and the Berber pays his wife the compliment of monogamy. The Kabyle women have stood side by side with their husbands in battle. Among many Berber tribes the law of inheritance is such that the eldest daughter’s son succeeds. South of Morocco proper, Gerhard Rohlfs, who travelled extensively in the region (*c.* 1861-1867), states that a Berber religious corporation, the *Savia Kartas*, was ruled over by a woman, the chief’s wife. The Berbers consult their women in many matters, and only one woman is really held in low esteem. She, curiously, is the *kuata* or “go-between,” even though her services are only employed in the respectable task of arranging marriages. Berber women are intelligent and hard-working, and, when young, very pretty and graceful. The Berbers, unlike the Arabs, do not admire fat women. Among the Kabyles the adulteress is put to death, as are those women who have illegitimate children, the latter suffering with their mothers.

Language.

Though Arabic has to a considerable extent displaced the Berber language, the latter is still spoken by millions of people from Egypt to the Atlantic and from the Mediterranean to the Sudan. It is spoken nowhere else, though, as has been said, place-names in the Canary Islands and other remains of the aboriginal language there prove it to have been the native tongue. Although the Berber tongue shows a certain affinity with Semitic in the construction both of its words and sentences Berber is quite distinct from the Semitic languages; and a remarkable fact is that in spite of the enormous space over which the dialects are spread and the thousands of years that some of the Berber peoples have been isolated from the rest, these dialects show but slight differences from the long-extinct Hamitic speech from which all are derived. Whatever these dialects be called, the Kabyle, the Shilha, the Zenati, the Tuareg or Tamashek, the Berber language is still essentially one, and the similarity between the forms current in Morocco, Algeria, the Sahara and the far-distant oasis of Siwa is much more marked than between the Norse and English in the sub-Aryan Teutonic group. The Berbers have, moreover, a writing of their own, peculiar and little used or known, the antiquity of which is proved by monuments and inscriptions ranging over the whole of North Africa.

The various spoken dialects, though apparently very unlike each other, are not more dissimilar than are Portuguese, Spanish, French and Italian, and their differences are doubtless attributable to the lack of a literary standard. Even where different words are used, there is evidence of a common stem from which the various branches have sprung. The great difficulty of satisfactory comparison arises from the fact that few of the Beber dialects possess any writings. The *Tawahhid* (The Unity of God), said to have been written in Moroccan Berber and believed to be the oldest African work in existence, except Egyptian and Ethiopic, was the work of the Muwahhadi leader, Ibn Tumart the Mahdi, at a time when the officials of the Kairawan mosque

were dismissed because they could not speak Berber. Most of the writings found, however, have been in the form of inscriptions, chiefly on ornaments. A collection of the various signs of the alphabet has shown thirty-two letters, four more than Arabic. De Slane, in his notes on the Berber historian Ibn Khaldūn, shows the following points of similarity to the Semitic class:—its tri-literal roots, the inflections of the verb, the formation of derived verbs, the genders of the second and third persons, the pronominal affixes, the aoristic style of tense, the whole and broken plurals and the construction of the phrase. Among the peculiar grammatical features of Berber may be mentioned two numbers (no dual), two genders and six cases, and verbs with one, two, three and four radicals, and imperative and aorist tense only. As might be expected the Berber tongue is most common in Morocco and the western Sahara—the regions where Arab dominion was least exercised. When Arabic is mentioned as the language of Morocco it is seldom realized how small a proportion of its inhabitants use it as their mother tongue. Berber is the real language of Morocco, Arabic that of its creed and government.

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BERCEUSE (Fr. for a “lullaby,” from *berceau*, a cradle), a cradle-song, the German *Wiegenlied*, a musical composition with a quiet rocking accompaniment.

BERCHEM (or Berghem), **NICOLAAS** (1620-1683), Dutch painter, was born at Haarlem. He received instruction from his father (Pieter Claasz van Haarlem) and from the painters Van Goyen, Jan Wils and Weenix. It is not known why he called himself Berchem (or Berighem, and other variants). His pictures, of which he produced an immense number, were in great demand, as were also his etchings and drawings. His landscapes are highly esteemed; and many of them have been finely engraved by John Visscher. His finest pictures are at the Amsterdam Museum and at the Hermitage, St Petersburg.

BERCHTA (English Bertha), a fairy in South German mythology. She was at first a benevolent spirit, the counterpart of Hulda in North German myth. Later her character changed and she

came to be regarded as a witch. In Pagan times Berchta had the rank of a minor deity.

BERCHTESGADEN, a town of Germany, beautifully situated on the south-eastern confines of the kingdom of Bavaria, 1700 ft. above the sea on the southern declivity of the Untersberg, 6 m. S.S.E. from Reichenhall by rail. Pop. (1900) 10,046. It is celebrated for its extensive mines of rock-salt, which were worked as early as 1174. The town contains three old churches, of which the early Gothic abbey church with its Romanesque cloister is most notable, and some good houses. Apart from the salt-mines, its industries include toys and other small articles of wood, horn and ivory, for which the place has long been famous. The district of Berchtesgaden was formerly an independent spiritual principality, founded in 1100 and secularized in 1803. The abbey is now a royal castle, and in the neighbourhood a hunting-lodge was built by King Maximilian II. in 1852.

BERCK, a bathing resort of northern France, in the department of Pas-de-Calais, 25 m. S. of Boulogne by rail. Pop. (1906) 7638. It comprises two parts—Berck-Ville, 1½ m. from the shore, and Berck-Plage, the latter with a fine sandy beach. There are two children’s hospitals, the climate proving peculiarly beneficial in the treatment of scrofulous affections. About 150 boats are employed in the fisheries, and herrings form the staple of an active trade. Boat-building and fish-curing are carried on.

BERDICHEV, a town of W. Russia, in the government of Kiev, 116 m. S.W. of Kiev by rail and not far from the borders of Volhynia. The cathedral of the Assumption, finished in 1832, is the principal place of worship. The fortified Carmelite monastery, founded in 1627, was captured and plundered by Chmielnicki, chief of the Zaporogian Cossacks, in 1647, and disestablished in 1864. An extensive trade is carried on in peltry, silk goods, iron and wooden wares, salt fish, grain, cattle and horses. Four fairs are held yearly, the most important being on the 12th of June and the 15th of August. The numerous minor industries include the manufacture of tobacco, soap, candles, oil, bricks and leather. Pop. (1867) 52,563; (1897) 53,728, Jews forming about 80%. In the treaty of demarcation between the Lithuanians and the Poles in 1546 Berdichev was assigned to the former. In 1768 Pulaski, leader of the confederacy of Bar, fled, after the capture of that city, to Berdichev, and there maintained himself during a siege of twenty-five days. The town belongs to the Radziwill family.

BERDYANSK, a seaport town of Russia, in the government of Taurida, on the north coast of the Sea of Azov, in 46° 45′ N. lat. and 36° 40′ E. long. The principal industries are in bricks and tiles, tallow and macaroni. The roads are protected from every wind except the south, which occasions a heavy surf; but against this a mole was constructed in 1863. The chief articles of export are cereals, flour, wool, hemp, skins and fish; and the imports include hardwares, fruits, oil and petroleum. In the immediate neighbourhood are salt-lagoons. Pop. (1867) 12,223; (1900) 29,168.

BEREA, a town of Madison county, Kentucky, U.S.A., 131 m. by rail S. of Cincinnati. Pop.

(1900) 762. Berea is served by the Louisville & Nashville railway. It is pleasantly situated on the border between the Blue Grass and the Mountain regions. The town is widely known as the seat of Berea College, which has done an important work among the mountaineers of Kentucky and of Tennessee. The college has about 70 acres of ground (and about 4000 acres of mountain land for forestry study), with a large recitation hall, a library, a chapel (seating 1400 persons), a science hall, an industrial hall, a brick-making plant, a woodwork building, a printing building, a tabernacle for commencement exercises and other buildings. In 1908 Berea had 65 instructors and 1150 students; and it paid the tuition of 141 negro students in Fisk University (Nashville, Tennessee) and in other institutions. The school out of which Berea College has developed was founded in the anti-slavery interests in 1855. An attempt was made to procure for it a college charter in 1859, but the slavery interests caused it to be closed before the end of that year and it was not reopened until 1865, the charter having then been obtained, as Berea College. Negroes as well as whites were admitted until 1904, when education of the two races at the same institution was prohibited by an act of the state legislature (upheld by the U.S. Supreme Court in 1908). This act did not, however, prohibit an institution from maintaining separate schools for the two races, provided these schools were at least 25 m. apart, and a separate school for the negroes was at once projected by Berea.

BEREKHIAH NAQDAN, Jewish fabulist, author of a collection of *Fox Fables*, written in Hebrew. As his title implies (Naqdan = punctuator of the Biblical text), Berekhiah was also a grammarian. He further wrote an ethical treatise and was the author of various translations. His date is disputed. Most authorities place him in the 13th century, but J. Jacobs has identified him with Benedictus le Puncteur, an English Jew of the 12th century.

BERENGARIUS [Berengar] (d. 1088), medieval theologian, was born at Tours early in the 11th century; he was educated in the famous school of Fulbert of Chartres, but even in early life seems to have exhibited great independence of judgment. Appointed superintendent of the cathedral school of his native city, he taught with such success as to attract pupils from all parts of France, and powerfully contributed to diffuse an interest in the study of logic and metaphysics, and to introduce that dialectic development of theology which is designated the scholastic. The earliest of his writings of which we have any record is an *Exhortatory Discourse* to the hermits of his district, written at their own request and for their spiritual edification. It shows a clear discernment of the dangers of the ascetic life, and a deep insight into the significance of the Augustinian doctrine of grace. Sometime before 1040 Berengar was made archdeacon of Angers. It was shortly after this that rumours began to spread of his holding heretical views regarding the sacrament of the eucharist. He had submitted the doctrine of transubstantiation (already generally received both by priests and people, although in the west it had been first unequivocally taught and reduced to a regular theory by Paschasius Radbert in 831) to an independent examination, and had come to the conclusion that it was contrary to reason, unwarranted by Scripture, and inconsistent with the teaching of men like Ambrose, Jerome and Augustine. He did not conceal this conviction from his scholars and friends, and through them the report spread widely that he denied the common doctrine respecting the eucharist. His early friend and school companion, Adelmann, archdeacon of Liége, wrote to him letters of expostulation on the subject of this report in 1046 and 1048; and a bishop, Hugo of Langres, wrote (about 1049) a refutation of the views which he had himself heard Berengar express in conversation. Berengar's belief was not shaken by their arguments and exhortations, and hearing that Lanfranc, the most celebrated theologian of that age, strongly approved the doctrine of Paschasius and condemned that of "Scotus" (really Ratramnus), he wrote to him a letter expressing his surprise and urging him to reconsider the question. The letter, arriving at Bec when Lanfranc was absent at Rome (1050), was sent after him, but was opened before it reached him, and Lanfranc, fearing the scandal, brought it under the notice of Pope Leo IX. Because of it Berengar was condemned as a heretic without being heard, by a synod at Rome and another at Vercelli, both held in 1050. His enemies in France cast him into prison; but the bishop of Angers and other powerful friends, of whom he had a considerable number, had sufficient influence to procure his release. At the council of Tours (1054) he found a protector in the papal legate, the famous Hildebrand, who, satisfied himself with the fact that Berengar did not deny the real presence of Christ in the sacramental elements, succeeded in persuading the

assembly to be content with a general confession from him that the bread and wine, after consecration, were the body and blood of the Lord, without requiring him to define how. Trusting in Hildebrand's support, and in the justice of his own cause, he presented himself at the synod of Rome in 1059, but found himself surrounded by zealots, who forced him by the fear of death to signify his acceptance of the doctrine "that the bread and wine, after consecration, are not merely a sacrament, but the true body and the true blood of Christ, and that this body is touched and broken by the hands of the priests, and ground by the teeth of the faithful, not merely in a sacramental but in a real manner." He had no sooner done so than he bitterly repented his weakness; and acting, as he himself says, on the principle that "to take an oath which never ought to have been taken is to estrange one's self from God, but to retract what one has wrongfully sworn to, is to return back to God," when he got safe again into France he attacked the transubstantiation theory more vehemently than ever. He continued for about sixteen years to disseminate his views by writing and teaching, without being directly interfered with by either his civil or ecclesiastical superiors, greatly to the scandal of the multitude and of the zealots, in whose eyes Berengar was "ille apostolus Satanae," and the academy of Tours the "Babylon nostri temporis." An attempt was made at the council of Poitiers in 1076 to allay the agitation caused by the controversy, but it failed, and Berengar narrowly escaped death in a tumult. Hildebrand, now pope as Gregory VII., next summoned him to Rome, and, in a synod held there in 1078, tried once more to obtain a declaration of his orthodoxy by means of a confession of faith drawn up in general terms; but even this strong-minded and strong-willed pontiff was at length forced to yield to the demands of the multitude and its leaders; and in another synod at Rome (1079), finding that he was only endangering his own position and reputation, he turned unexpectedly upon Berengar and commanded him to confess that he had erred in not teaching a change *as to substantial reality* of the sacramental bread and wine into the body and blood of Christ. "Then," says Berengar, "confounded by the sudden madness of the pope, and because God in punishment for my sins did not give me a steadfast heart, I threw myself on the ground, and confessed with impious voice that I had erred, fearing the pope would instantly pronounce against me the sentence of condemnation, and, as a necessary consequence, that the populace would hurry me to the worst of deaths." He was kindly dismissed by the pope not long after, with a letter recommending him to the protection of the bishops of Tours and Angers, and another pronouncing anathema on all who should do him any injury or call him a heretic. He returned home overwhelmed with shame and bowed down with sorrow for having a second time been guilty of a great impiety. He immediately recalled his forced confession, and besought all Christian men "to pray for him, so that his tears might secure the pity of the Almighty." He now saw, however, that the spirit of the age was against him, and hopelessly given over to the belief of what he had combated as a delusion. He withdrew, therefore, into solitude, and passed the rest of his life in retirement and prayer on the island of St Côme near Tours. He died there in 1088.

Berengar left behind him a considerable number of followers. All those who in the middle ages denied the substantial presence of the body and blood of Christ in the eucharist were commonly designated Berengarians. They differed, of course, in many respects, even in regard to the nature of the supper. Berengar's own views on the subject may be thus summed up:—1. That bread and wine should become flesh and blood and yet not lose the properties of bread and wine was, he held, contradictory to reason, and therefore irreconcilable with the truthfulness of God. 2. He admitted a change (*conversio*) of the bread and wine into the body of Christ, in the sense that to those who receive them they are transformed by grace into higher powers and influences —into the true, the intellectual or spiritual body of Christ. The unbelieving receive the external sign or *sacramentum*; but the believing receive in addition, although invisibly, the reality represented by the sign, the *res sacramenti*. 3. He rejected the notion that the sacrament of the altar was a constantly renewed sacrifice, and held it to be merely a commemoration of the one sacrifice of Christ. 4. He dwelt strongly on the importance of men looking away from the externals of the sacrament to the spirit of love and piety. The transubstantiation doctrine seemed to him full of evil, from its tendency to lead men to overvalue what was sensuous and transitory. 5. He rejected with indignation the miraculous stories told to confirm the doctrine of transubstantiation. 6. Reason and Scripture seemed to him the only grounds on which a true doctrine of the Lord's supper could be rested. He attached little importance to mere ecclesiastical tradition or authority, and none to the voice of majorities, even when sanctioned by the decree of a pope. In this, as in other respects, he was a precursor of Protestantism.

The opinions of Berengar are to be ascertained from the works written in refutation of them by Adelmann, Lanfranc, Guitmund, &c.; from the fragments of the *De sacr. coena adv. Lanfr. liber*, edited by Stäudlin (1820-1829); and from the *Liber posterior*, edited by A.F. and F.T. Vischer (1834). See the collection of texts by Sudendorf (1850); the *Church Histories* of Gieseler, ii. 396-411 (Eng. trans.), and Neander, vi. 221-260 (Eng. trans.); A. Harnack's *History of Dogma*, Hauréau's *Histoire de la philosophie scolastique*, i. 225-238; Hermann Reuter, *Geschichte der religiosen Aufklarung des Mittelalters*, vol. i. (Berlin, 1875); L. Schwabe, *Studien zur Geschichte des Zweilen Abendmahlstreits* (1887); and W. Broecking, "Bruno von Angers und Berengar von

Tours,” in *Deutsche Zeitichrift für Geschichtewissenschaft* (vol. xii., 1895).

BÉRENGER, ALPHONSE MARIE MARCELLIN THOMAS (1785-1866), known as Bérenger de la Drôme, French lawyer and politician, son of a deputy of the third estate of Dauphiné to the Constituent Assembly, was born at Valence on the 31st of May 1785. He entered the magistracy and became *procureur général* at Grenoble, but resigned this office on the restoration of the Bourbons. He now devoted himself mainly to the study of criminal law, and in 1818 published *La Justice criminelle en France*, in which with great courage he attacked the special tribunals, provosts’ courts or military commissions which were the main instruments of the Reaction, and advocated a return to the old common law and trial by jury. The book had a considerable effect in discrediting the reactionary policy of the government; but it was not until 1828, when Bérenger was elected to the chamber, that he had an opportunity of exercising a personal influence on affairs as a member of the group known as that of constitutional opposition. His courage, as well as his moderation, was again displayed during the revolution of 1830, when, as president of the parliamentary commission for the trial of the ministers of Charles X., he braved the fury of the mob and secured a sentence of imprisonment in place of the death penalty for which they clamoured.

His position in the chamber was now one of much influence, and he had a large share in the modelling of the new constitution, though his effort to secure a hereditary peerage failed. Above all he was instrumental in framing the new criminal code, based on more humanitarian principles, which was issued in 1835. It was due to him that, in 1832, the right, so important in actual French practice, was given to juries to find “extenuating circumstances” in cases when guilt involved the death penalty. In 1831 he had been made a member of the court of appeal (*cour de cassation*), and the same year was nominated a member of the academy of moral and political sciences. He was raised to the peerage in 1839. This dignity he lost owing to the revolution of 1848; and as a politician his career now ended. As a judge, however, his activity continued. He was president of the high courts of Bourges and Versailles in 1840. Having been appointed president of one of the chambers of the court of cassation, he devoted himself entirely to judicial work until his retirement, under the age limit, on the 31st of May 1860. He now withdrew to his native town, and occupied himself with his favourite work of reform of criminal law. In 1833 he had shared in the foundation of a society for the reclamation of young criminals, in which he continued to be actively interested to the end. In 1851 and 1852, on the commission of the academy of moral sciences, he had travelled in France and England for the purpose of examining and comparing the penal systems in the two countries. The result was published in 1855 under the title *La Répression pénale, comparaison du système pénitentiaire en France et en Angleterre.* He died on the 15th of May 1866.

His son, René Bérenger (1830-), continued the work of his father, and at the outbreak of the revolution of 1870 was *avocat général* of Lyons. He served as a volunteer in the Franco-German War, being wounded at Nuits on the 28th of December. Returned to the National Assembly by the department of Drõme, he was for a few days in 1873 minister of public works under Thiers. He then entered the senate, of which he was vice-president from 1894 to 1897. He founded in 1871 a society for the reclamation of discharged prisoners, and presided over various bodies formed to secure improvement of the public morals. He succeeded Charles Lucas in 1890 at the Academy of Moral and Political Science.

BERENICE, or Bernice, the Macedonian forms of the Greek Pherenice, the name of (A) five Egyptian and (B) two Jewish princesses.

(A) 1. Berenice, daughter of Lagus, wife of an obscure Macedonian soldier and subsequently of Ptolemy Soter, with whose bride Eurydice she came to Egypt as a lady-in-waiting. Her son, Ptolemy Philadelphus, was recognized as heir over the heads of Eurydice’s children. So great was her ability and her influence that Pyrrhus of Epirus gave the name Berenicis to a new city. Her son Philadelphus decreed divine honours to her on her death. (See Theocritus, *Idylls* xv. and xvii.)

2. Berenice, daughter of Ptolemy Philadelphus, wife of Antiochus Theos of Syria, who, according to agreement with Ptolemy (249), had divorced his wife Laodice and transferred the

succession to Berenice's children. On Ptolemy's death, Antiochus repudiated Berenice and took back Laodice, who, however, at once poisoned him and murdered Berenice and her son. The prophecy in Daniel xi. 6 seq. refers to these events.

3. Berenice, the daughter of Magas, king of Cyrene, and the wife of Ptolemy III. Euergetes. During her husband's absence on an expedition to Syria, she dedicated her hair to Venus for his safe return, and placed it in the temple of the goddess at Zephyrium. The hair having by some unknown means disappeared, Conon of Samos, the mathematician and astronomer, explained the phenomenon in courtly phrase, by saying that it had been carried to the heavens and placed among the stars. The name *Coma Berenices*, applied to a constellation, commemorates this incident. Callimachus celebrated the transformation in a poem, of which only a few lines remain, but there is a fine translation of it by Catullus. Soon after her husband's death (221 B.C.) she was murdered at the instigation of her son Ptolemy IV., with whom she was probably associated in the government.

4. Berenice, also called Cleopatra, daughter of Ptolemy X., married as her second husband Alexander II., grandson of Ptolemy VII. He murdered her three weeks afterwards.

5. Berenice, daughter of Ptolemy Auletes, eldest sister of the great Cleopatra. The Alexandrines placed her on the throne in succession to her father (58 B.C.). She married Seleucus Cybiosactes, but soon caused him to be slain, and married Archelaus, who had been made king of Comana in Pontus (or in Cappadocia) by Pompey. Auletes was restored and put both Berenice and Archelaus to death in 55 B.C.

(B) 1. Berenice, daughter of Salome, sister of Herod I., and wife of her cousin Aristobulus, who was assassinated in 6 B.C. Their relations had been unhappy and she was accused of complicity in his murder. By Aristobulus she was the mother of Herod Agrippa I. Her second husband, Theudion, uncle on the mother's side of Antipater, son of Herod I., having been put to death for conspiring against Herod, she married Archelaus. Subsequently she went to Rome and enjoyed the favour of the imperial household.

2. Berenice, daughter of Agrippa I., king of Judaea, and born probably about A.D. 28. She was first married to Marcus, son of the alabarch[1] Alexander of Alexandria. On his early death she was married to her father's brother, Herod of Chalcis, after whose death (A.D. 48) she lived for some years with her brother, Agrippa II. Her third husband was Polemon, king of Cilicia, but she soon deserted him, and returned to Agrippa, with whom she was living in 60 when Paul appeared before him at Caesarea (Acts xxvi.). During the devastation of Judaea by the Romans, she fascinated Titus, whom along with Agrippa she followed to Rome as his promised wife (A.D. 75). When he became emperor (A.D. 79) he dismissed her finally, though reluctantly, to her own country. Her influence had been exercised vainly on behalf of the Jews in A.D. 66, but the burning of her palace alienated her sympathies. For her influence see Juvenal, *Satires*, vi., and Tacitus, *Hist.* ii. 2.

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1 Alabarch or Arabarch (Gr. ἀλαβάρχης, or ἀραβάρχης), the name of the head magistrate of the Jews in Alexandria under the Ptolemaic and Roman rules.

BERENICE, an ancient seaport of Egypt, on the west coast of the Red Sea, in 23° 56′ N., 35° 34′ E. Built at the head of a gulf, the *Sinus Immundus*, or Foul Bay, of Strabo, it was sheltered on the north by Ras Benas (*Lepte Extrema*). The port is now nearly filled up, has a sand-bar at its entrance and can be reached only by small craft. Most important of the ruins is a temple; the remnants of its sculptures and inscriptions preserve the name of Tiberius and the figures of many deities, including a goddess of the emerald mines. Berenice was founded by Ptolemy II. (285-247 B.C.) in order to shorten the dangerous Red Sea voyages, and was named in honour of his mother. For four or five centuries it became the entrepot of trade between India, Arabia and Upper Egypt. From it a road, provided with watering stations, leads north-west across the desert to the Nile at Coptos. In the neighbourhood of Berenice are the emerald mines of Zabara and Saket.

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BERESFORD, LORD CHARLES WILLIAM DE LA POER (1846-), British admiral,

second son of the 4th marquess of Waterford, was born in Ireland, and entered the "Britannia" as a naval cadet in 1859. He became lieutenant in 1868, and commander in 1875. In 1874 he was returned to parliament as Conservative M.P. for Waterford, retaining his seat till 1880, and he was already known in this period as a gallant officer, with a special interest in naval administration. In 1875-1876 he accompanied the then prince of Wales on his visit to India as naval A.D.C.; from 1878 to 1881 he was commander of the royal yacht "Osborne." He was in command of the gunboat "Condor" in the Mediterranean when the Egyptian crisis of 1882 occurred; and he became a popular hero in England in connexion with the bombardment of Alexandria (July 11), when he took his ship close in to the forts and engaged them with such conspicuous gallantry that the admiral ordered a special signal "Well done, Condor!" He was promoted captain for his services, and, after taking an active part in the re-establishment of order in Alexandria, he served again in Egypt on Lord Wolseley's staff in the expedition of 1884-85, commanding the naval brigade at Abu Klea, Abu Kru and Metemmeh, and, with the river steamer "Safieh," rescuing Sir C. Wilson and his party, who had been wrecked on returning from Khartum (Feb. 4, 1885). In November 1885 he was again returned to parliament as member for East Marylebone (re-elected 1886), and in Lord Salisbury's ministry of 1886 he was appointed a lord of the admiralty. The press agitation in favour of a stronger navy was now in full swing, and it was well known that in Lord Charles Beresford it had an active supporter; but very little impression was made on the government, and in 1888 he resigned his office on this question, a dramatic step which had considerable effect. In the House of Commons he advocated an expenditure of twenty millions sterling on the fleet, and the passing of the Naval Defence Act in 1889 was largely due to his action. At the end of 1889 he became captain of the cruiser "Undaunted" in the Mediterranean, and when this ship was paid off in 1893 he was appointed in command of the steam reserve at Chatham, a post he held for three years. In 1897 he became rear-admiral, and again entered parliament, winning a by-election at York; he retained his seat till 1900, but was mainly occupied during these years by a mission to China on behalf of the Associated Chambers of Commerce; he published his book *The Break-up of China* in 1899. In 1902 he was returned to parliament for Woolwich, but resigned on his appointment to command the Channel squadron (1903-1905); in 1905 he was given the command of the Mediterranean fleet, and from 1906 to 1909 was commander-in-chief of the Channel fleet; in 1906 he became a full admiral. At sea he had always shown himself a remarkable disciplinarian, possessed of great influence over his men, and his reputation as one who would, if necessary, prove a great fighting commander was second to none; and, even when serving afloat and therefore unable to speak direct to the public, he was in the forefront of the campaign for increased naval efficiency. During the administration (1903-1910) of Sir John Fisher (see Fisher, Baron) as first sea lord of the admiralty it was notorious that considerable friction existed between them, and both in the navy and in public a great deal of party-spirit was engendered in the discussion of their opposing views. When Lord Charles Beresford's term expired as commander-in-chief in March 1909 he was finally "unmuzzled," and the attack which for some years his supporters had made against Sir J. Fisher's administration came to a head at a moment coinciding with the new shipbuilding crisis occasioned by the revelations as to the increase of the German fleet. He himself came forward with proposals for a large increase in the navy and a reorganization of the administrative system, his first step being a demand for an inquiry, to which the government promptly assented (May) in the shape of a small Committee under the prime minister. Its report (August), however, gave him no satisfaction, and he proceeded with his public campaign, bitterly attacking the ministerial policy. In January 1910, at the general election, he was returned as Conservative M.P. for Portsmouth; but meanwhile Sir John Fisher's term of office came to an end, and in his successor, Admiral Sir Arthur Knyvet Wilson (b. 1842), the navy obtained a first sea lord who commanded universal confidence.

BERESFORD, JOHN (1738-1805), Irish statesman, was a younger son of Sir Marcus Beresford, who, having married Catherine, sole heiress of James Power, 3rd earl of Tyrone, was created earl of Tyrone in 1746. After the death of the earl in 1763, Beresford's mother successfully asserted her claim *suo jure* to the barony of La Poer. John Beresford, born on the 14th of March 1738, thus inherited powerful family connexions. He was educated at Trinity College, Dublin, was called to the Irish bar, and entered the Irish parliament as member for Waterford in 1760. His industry, added to the influence of his family, procured his admission to the privy council in 1768, and his appointment as one of the commissioners of revenue two years later. In 1780 he became first commissioner of revenue, a position which gave him powerful influence in the Irish administration. He introduced some useful reforms in the machinery of taxation; and he was the author of many improvements in the architecture of the public buildings and streets of Dublin. He was first brought into conflict with Grattan and the popular

party, in 1784, by his support of the proposal that the Irish parliament in return for the removal of restrictions on Irish trade should be bound to adopt the English navigation laws. In 1786 he was sworn a member of the English privy council, and the power which he wielded in Ireland through his numerous dependants and connexions grew to be so extensive that a few years later he was spoken of as the “king of Ireland.” He was a vehement opponent of the increasing demand for relief of the Roman Catholics; and when it became known that Lord Fitzwilliam was to succeed Lord Westmorland as lord lieutenant in 1795 for the purpose of carrying out a conciliatory policy, Beresford expressed strong hostility to the appointment. One of Fitzwilliam’s first acts was to dismiss Beresford from his employment but with permission to retain his entire official salary for life, and with the assurance that no other member of his family would be removed. Beresford immediately exerted all his influence with his friends in England, to whom he described himself as an injured and persecuted man; he appealed to Pitt, and went in person to London to lay his complaint before the English ministers. There is little doubt that the recall of Lord Fitzwilliam (*q.v.*), which was followed by such momentous consequences in the history of Ireland, was, as the viceroy himself believed, mainly due to Beresford’s dismissal. There had been a misunderstanding on the point between Pitt and Fitzwilliam. The latter, whose veracity was unimpeachable, asserted that previous to his coming to Ireland he had informed the prime minister of his intention to dismiss Beresford, and that Pitt had raised no objection. Pitt denied all recollection of any such communication, and on the contrary described the dismissal as “an open breach of the most solemn promise.”[1] In a letter to Lord Carlisle, justifying his action, Fitzwilliam mentioned that malversation had been imputed to Beresford. Beresford sent a challenge to Fitzwilliam, but the combatants were interrupted on the field and Fitzwilliam then made an apology.

When Lord Camden replaced Fitzwilliam in the viceroyalty in March 1795, Beresford resumed his former position. On the eve of the rebellion in 1798 his letters to Lord Auckland gave an alarming description of the condition of Ireland, and he counselled strong measures of repression. When first consulted by Pitt on the question of the union Beresford appears to have disliked the idea; but he soon became reconciled to the policy and warmly supported it. After the union Beresford continued to represent Waterford in the imperial parliament, and he remained in office till 1802, taking an active part in settling the financial relations between Ireland and Great Britain. He died near Londonderry on the 5th of November 1805. John Beresford was twice married: in 1760 to a foreign lady, Constantia Ligondes, who died in 1772; and, secondly, in 1774 to Barbara Montgomery, a celebrated beauty who figures in Sir Joshua Reynolds’s picture of “The Graces.” He had large families by both marriages. His son, John Claudius, kept a riding school in Dublin, which acquired an evil reputation as the chief scene of the floggings by which evidence was extorted of the conspiracy which came to a head in 1798. He took a prominent part in the Irish House of Commons, where he unsuccessfully moved the reduction of the proposed Irish contribution to the imperial exchequer in the debates on the Act of Union, of which, unlike his father, he was to the last an ardent opponent.

See *Correspondence of the Right Hon. John Beresford*, edited by W. Beresford (2 vols., London, 1854); Edward Wakefield, *An Account of Ireland* (2 vols., London, 1812); Earl Stanhope, *Life of William Pitt* (4 vols., London, 1861); W.E.H. Lecky, *History of Ireland in the Eighteenth Century*, vols. iii., iv., v. (5 vols., London, 1892).

(R. J. M.)

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1 Stanhope, *Life of Pitt*, ii, 301.

BERESFORD, WILLIAM CARR BERESFORD, Viscount (1768-1854), British general and Portuguese marshal, illegitimate son of the first marquess of Waterford, was born on the 2nd of October 1768. He entered the British army in 1785, and while in Nova Scotia with his regiment in the following year lost the sight of one eye by a shooting accident. He first distinguished himself at Toulon in 1793, receiving two years later the command of the 88th regiment (Connaught Rangers). In 1799 his regiment was ordered to India, and a few months later Beresford left with Sir David Baird’s expedition for Egypt, and was placed in command of the first brigade which led the march from Kosseir across the desert. When, on the evacuation of Egypt in 1803, he returned home, his reputation was established. In 1805 he accompanied Sir David Baird to South Africa, and was present at the capture of Cape Town and the surrender of the colony. From South Africa he was despatched to South America. He had little difficulty in capturing Buenos Aires with only a couple of regiments. But this force was wholly insufficient to hold the colony. Under the leadership of a French *émigré*, the chevalier de Timers, the colonists attacked Beresford, and at the end of three days’ hard fighting he was compelled to capitulate.

After six months' imprisonment he escaped, and reached England in 1807, and at the end of that year he was sent to Madeira, occupying the island in the name of the king of Portugal. After six months in Madeira as governor and commander-in-chief, during which he learnt Portuguese and obtained an insight into the Portuguese character, he was ordered to join Sir Arthur Wellesley's army in Portugal. He was first employed as commandant in Lisbon, but accompanied Sir John Moore on the advance into Spain, and took a conspicuous part in the battle of Corunna (see Peninsular War). In February 1809 Beresford was given the task of reorganizing the Portuguese army. In this task, by systematic weeding-out of inefficient officers and men, he succeeded beyond expectation. By the summer of 1810 he had so far improved the *moral* and discipline of the force that Wellington brigaded some of the Portuguese regiments with English ones, and at Busaco Portuguese and English fought side by side. Beresford's services in this battle were rewarded by the British government with a knighthood of the Bath and by the Portuguese with a peerage.

In the spring of 1811 Wellington was compelled to detach Beresford from the Portuguese service. The latter was next in seniority to General (Lord) Hill who had gone home on sick leave, and on him, therefore, the command of Hill's corps now devolved. Unfortunately Beresford never really gained the confidence of his new troops. At Campo Mayor his light cavalry brigade got out of hand, and a regiment of dragoons was practically annihilated. He invested Badajoz with insufficient forces, and on the advance of Soult he was compelled to raise the siege and offer battle at Albuera. His personal courage was even more than usually conspicuous, but to the initiative of a junior staff officer, Colonel (afterwards Viscount) Hardinge, rather than to Beresford's own generalship, was the hardly-won victory to be attributed. Beresford then went back to his work of reorganizing the Portuguese army. He was present at the siege of Badajoz and at the battle of Salamanca, where he was severely wounded (1812). In 1813 he was present at the battle of Vittoria, and at the battles of the Pyrenees, while at the battle of the Nivelle, the Nive and Orthez he commanded the British centre, and later he led a corps at the battle of Toulouse. At the close of the Peninsular War he was created Baron Beresford of Albuera and Cappoquin, with a pension of £2000 a year, to be continued to his two successors.

In 1819 the revolution in Portugal led to the dismissal of the British officers in the Portuguese service. Beresford therefore left Portugal and placed the question of the arrears of pay of his army before the king at Rio Janeiro. On his return the new Portuguese government refused to allow him to land, and he accordingly left for home. On arriving in England he turned his attention to politics, and strongly supported the duke of Wellington in the House of Lords. In 1823 his barony was made a viscounty, and when the duke of Wellington formed his first cabinet in 1828 he gave Beresford the office of master-general of the ordnance. In 1830 Beresford retired from politics, and for some time subsequently he was occupied in a heated controversy with William Napier, the historian of the Peninsular War, who had severely criticised his tactics at Albuera. On this subject Wellington's opinion of Beresford is to the point. The duke had no illusions as to his being a great general, but he thought very highly of his powers of organization, and he went so far as to declare, during the Peninsular War, that, in the event of his own death, he would on this ground recommend Beresford to succeed him. The last years of Beresford's life were spent at Bedgebury, Kent, where he had purchased a country estate. He died on the 8th of January 1854.

BEREZINA, a river of Russia, in the government of Minsk, forming a tributary of the Dnieper. It rises in the marshes of Borizov and flows south, inclining to east, for 350 m. (250 m. navigable), for the most part through low-lying but well-wooded country. As a navigable river, and forming a portion of the canal system which unites the Black Sea with the Baltic, it is of importance for commerce, but is subject to severe floods. It was just above Borizov that Napoleon's army forced the passage of the Berezina, with enormous losses, on the 26th-28th of November 1812, during the retreat from Moscow.

BEREZOV. a town of Asiatic Russia, in the government of Tobolsk, 700 m. N. of the city of that name, situated on three hills on the left bank of the Sosva, 26 m. above its mouth in the Ob, in 63° 55′ N. lat. and 65° 7′ E. long. It has more than once suffered from conflagrations—for example, in 1710 and 1808. Prince Menshikov, the favourite of Peter the Great and Catherine I.,

died here an exile, in 1729. In 1730 his enemy and rival, Prince Dolgoruki, was interned here with his family; and in 1742 General Ostermann was sent to Berezov with his wife and died there in 1747. The yearly mean temperature is 25° Fahr., the maximum cold being 4.7°. It has a cathedral, near which lie buried Mary Menshikov, once betrothed to the tsar Peter II., and some of the Dolgorukis. There is some trade in furs, mammoth bones, dried and salted fish. Pop. (1897) 1073.

BEREZOVSK, a village of east Russia, in the government of Perm, on the eastern slope of the Urals, 8 m. N.E. of Ekaterinburg. It is the centre of an important gold-mining region (5 m. by 2½) of the same name. The mines have been known since 1747. The inhabitants also manufacture boots, cut stone and carry on cabinet-making.

BERG (*Ducatus Montensis*), a former duchy of Germany, on the right bank of the Rhine, bounded N. by the duchy of Cleves, E. by the countship of La Marck and the duchy of Westphalia, and S. and W. by the bishopric of Cologne. Its area was about 1120 sq. m. The district was raised in 1108 to the rank of a countship, but did not become a duchy till 1380, after it had passed into the possession of the Jülich family. In 1423 the duchy of Jülich fell to Adolf of Berg, and in 1437 the countship of Ravensberg was united to the duchies. The male line of the dukes of Jülich-Berg-Ravensberg became extinct in 1511, and the duchy passed by marriage to John III. (d. 1539), duke of Cleves and count of La Marck, whose male line became extinct with the death of John William, bishop of Münster, in 1609. Of the latter's four sisters, the eldest (Marie Eleonore) was married to Albert Frederick, duke of Prussia, the second (Anna) to Philip Louis, count palatine of Neuburg, the third (Magdalena) to John, count palatine of Zweibrücken, and the fourth (Sybille) to Charles of Habsburg, margrave of Burgau. The question of the succession led to a prolonged contest, which was one of the causes of the Thirty Years' War. It was settled in 1614 by a partition, under which Berg, with Jülich, was assigned to the count palatine of Neuburg, in whose line it remained till 1742, when it passed to the Sultzbach branch of the house of Wittelsbach. On the death of Charles Theodore, the last of this line, in 1799, Jülich and Berg fell to Maximilian Joseph of Zweibrücken (Maximilian I. of Bavaria), who ceded the duchies in 1806 to Napoleon. Berg was bestowed by Napoleon, along with the duchy of Cleves and other possessions, on Joachim Murat, who bore the title of grand-duke of Berg; and after Murat's elevation to the throne of Naples, it was transferred to Louis, the son of the king of Holland. By the congress of Vienna in 1815 it was made over to Prussia.

See B. Schönneshöfer, *Geschichte des Bergischen Landes* (Elberfeld, 1895); Stokvis, *Manuel d'histoire, &c.* vol. iii. (Leiden, 1890-1893); and R. Göcke, *Das Grossherzogtum Berg unter Joachim Murat, Napoleon Ier und Louis Napoleon, 1806-1813* (Cologne, 1877).

BERGAMASK, or Bergomask (from the town of Bergamo in North Italy), a clumsy rustic dance (cf. Shakespeare, *Midsummer Night's Dream*, v. 360) copied from the natives of Bergamo, reputed to be very awkward in their manners.

BERGAMO (anc. *Bergomum*), a city and episcopal see of Lombardy, Italy, capital of the province of Bergamo, situated at the foot of the Alps, at the junction of the Brembo and Serio, 33½ m. N.E. of Milan by rail, and 26 m. direct. Pop. (1901) town, 25,425; commune, 46,861. The town consists of two distinct parts, the older Città Alta, upon a hill 1200 ft. above sea-level, strongly fortified by the Venetians, and the new town (Città Bassa) below, the two being

connected by a funicular railway. The most interesting building of the former is the fine Romanesque church of S. Maria Maggiore, founded in 1137 and completed in 1355, with a baroque interior and some interesting works of art. Adjoining it to the north is the Cappella Colleoni, with a richly sculptured polychrome façade, and a modernized interior, containing the fine tombs of Bartolommeo Colleoni (*c.* 1400-1475), a native of Bergamo, and his daughter Medea. The work was executed in 1470-1476 by Giovanni Antonio Amadeo, who was also employed at the Certosa di Pavia. The market-place (now Piazza Garibaldi) contains the Gothic Palazzo Vecchio or Broletto; close by are the cathedral (1614) and a small baptistery of 1340, rebuilt in 1898. The lower town contains an important picture-gallery, consisting of three collections of works of north Italian masters, one of which was bequeathed in 1891 by the art critic Giovanni Morelli. Bergamo has fine modern buildings and numerous silk and cotton factories. It also has a considerable cattle market, though its yearly Fiera di S. Alessandro (the patron saint) has lost some of its importance. Railways radiate from it to Lecco, Ponte della Selva, Usmate (for Monza or Seregno), Treviglio (on the main line from Milan to Verona and Venice) and (via Rovato) to Brescia, and steam tramways to Treviglio, Sarnico and Soncino.

The ancient Bergomum was the centre of the tribe of the Orobii; it became, after their subjection to Rome, a Roman municipality with a considerable territory, and after its destruction by Attila, became the capital of a Lombard duchy. From 1264 to 1428 it was under Milan, but then became Venetian, and remained so until 1797. Remains of the Roman city are not visible above ground, but various discoveries made are recorded by G. Mantovani in *Not. Scav.*, 1890, 25.

(T. As.)

BERGAMOT, OIL OF, an essential oil obtained from the rind of the fruit of the Citrus bergamia. The bergamot is a small tree with leaves and flowers like the bitter orange, and a round fruit nearly 3 in. in diameter, having a thin lemon-yellow smooth rind. The tree is cultivated in southern Calabria, whence the entire supply of bergamot oil is drawn. Machinery is mostly used to express the oil from the fruit, which is gathered in November and December. The oil, which on standing deposits a stearoptene, bergamot camphor or bergaptene, is a limpid greenish-yellow fluid of a specific gravity of 0.882 to 0.886, and its powerful but pleasant odour is mainly due to the presence of linalyl acetate, or *bergamiol*, which can be artificially prepared by heating linalol with acetic anhydride. The chief use of bergamot oil is in perfumery. The word apparently is derived from the Italian town Bergamo. The name Bergamot, for a variety of pear, is an entirely different word, supposed to be a corruption of the Turkish *beg-armudi* (= prince’s pear; cf. Ger. *Fürstenbirn*).

BERGEDORF, a town of Germany, in the territory of Hamburg, on the river Bille, 10 m. by rail E. by S. from the city. Pop. (1900) 23,728. It produces vegetables and fruit for the Hamburg markets, and carries on tanning, glass manufacture, brewing and brick-making. It received civic rights in 1275, belonged to Lübeck and Hamburg conjointly from 1420 to 1868, and in the latter year was purchased by Hamburg. The surrounding district, exceptionally fertile marshland, is known as Die Vierlande, being divided into four parishes, whence the name is derived.

BERGEN, a city and seaport of Norway, forming a separate county (*amt*), on the west coast, in lat. 60° 23′ N. (about that of the Shetland Islands). Pop. (1900) 72,179. It lies at the head of the broad Byfjord, and partly on a rocky promontory (Nordnaes) between the fine harbour (Vaagen) and the Puddefjord. Its situation is very beautiful, the moist climate (mean annual rainfall, 74 in.) fostering on the steep surrounding hills a vegetation unusually luxuriant for the latitude. Behind the town lie the greater and lesser Lungegaard Lakes, so that the site is in effect a peninsula. The harbour is crowded with picturesque timber-ships and fishing-smacks, and is bordered by quays. The principal street is Strandgaden, on the Nordnaes, parallel with the harbour, communicating inland with the *torv* or marketplace, which fronts the harbour and

contains the fish and fruit market. The portion of the city on the mainland rises in an amphitheatre. The houses, of wood or stucco, are painted in warm reds and yellows. On the banks of the lesser Lungegaard Lake is the small town park, and above the greater lake the pleasant Nygaards park, with an aquarium adjoining. Among the principal buildings are the cathedral (rebuilt in the 16th century), and several other churches, among which the Mariae Kirke with its Romanesque nave is the earliest; a hospital, diocesan college, naval academy, school of design and a theatre. An observatory and biological station are maintained. The museums are of great interest. The Vestlandske fishery and industrial museum also contains a picture gallery, and exhibition of the Bergen Art Union (*Kunstforening*). The Bergen museum contains antiquities and a natural history collection. The Hanseatic museum is housed in a carefully-preserved *gaard*, or store-house and offices of the Hanseatic League of German merchants, who inhabited the German quarter (Tydskenbryggen) and were established here in great strength from 1445 to 1558 (when the Norwegians began to find their presence irksome), and brought much prosperity to the city in that period. The Bergenhus and Fredriksberg forts defend the north and south entries of the harbour respectively. The first was originally built in the 13th century by King Haakon Haakonsson, and subsequently enlarged; and still bears marks of an English attack when a Dutch fleet was driven to shelter here in 1665. Near it are remains of another old fort, the Sverresborg. Electric trams ply in the principal streets.

Bergen is the birthplace of the poets Ludvig Holberg (1684-1754) and Johan Welhaven (1807-1873), of Johan Dahl the painter (1788-1857), of Ole Bull (1810-1880) and Edvard Grieg the musicians. There are statues to Holberg and Bull, and also to Christie, president of the Storthing (parliament) in 1815 and 1818.

Bergen ranks first of the Norwegian ship-owning centres, having risen to this position from fifth in 1879. The trade, however, is exceeded by that of Christiania. The staple export trade is in fish and their products: other exports are butter, copper ore and hides. The principal imports are coal, machinery, salt, grain and provisions. The manufactures are not extensive, but the preparation of fish products, shipbuilding, weaving and distillery, with manufactures of paper, pottery, tobacco and ropes are carried on. Bergen is an important centre of the extensive tourist traffic of Norway. Regular steamers serve the port from Hull and Newcastle (about 40 hours), from Hamburg, and from all the Norwegian coast towns. Many local steamers penetrate the fjords, touching at every village and *gaard*. Bergen is the nearest port to the famous Hardanger Fjord, and is the starting-point of a remarkable railway which runs through many tunnels and fine scenery towards Vossevangen or Voss. In 1896 a beginning was made with the continuation of this line through the mountains to connect with Christiania. In the first 50 m. from Voss the line ascends 4080 ft., passing through a tunnel 5796 yds. long.

Bergen (formerly Björgvin) was founded by King Olaf Kyrre in 1070-1075, and rapidly grew to importance, the Byfjord becoming the scene of several important engagements in the civil wars of subsequent centuries. The famous Hansa merchants maintained a failing position here till 1764. The town suffered frequently from fire, as in 1702 and 1855, and the broad open spaces (*Almenninge*) which interrupt the streets are intended as a safeguard against the spread of flames.

See Y. Nielsen, *Bergen fra die äldste tider indtil nutiden* (Christiania, 1877); H. Jager, *Bergen og Bergenserne* (Bergen, 1889).

BERGEN-OP-ZOOM, a town in the province of North Brabant, Holland, situated on both sides of the small river Zoom, near its confluence with the East Scheldt, 38½ m. by rail E. by N. of Flushing. It is connected by steam tramway with Antwerp (20 m. S.) and with the islands of Tholen and Duiveland to the north-west. Pop. (1900) 13,663. The houses are well built, the market-places and squares handsome and spacious. It possesses a port and an arsenal, and contains a fine town hall, with portraits of the ancient margraves of Bergen-op-Zoom, a Latin school, and an academy of design and architecture. The remains of the old castle of the margraves have been converted into barracks. The tower is still standing and is remarkable for its increase in size as it rises, which causes it to rock in a strong wind. The church contains a monument to Lord Edward Bruce, killed in a duel with Sir Edward Sackville, afterwards earl of Dorset, in 1613. There are numerous tile-works and potteries of fine ware; and a considerable trade is carried on in anchovies and oysters caught in the Scheldt. A large sugar-beet industry has also sprung up here in modern times.

Bergen-op-Zoom is a very old town, but little is known of its early history beyond the fact that it was taken by the Normans in 880. In the 13th century it became the seat of Count Gerhard of

Wesemael, who surrounded it with walls and built a castle. By the end of the 15th century it had become one of the most prosperous towns of Holland, on account of its fisheries and its cloth-trade. In 1576 the town joined the United Netherlands, and was shortly afterwards fortified. In 1588 it was successfully defended against the duke of Parma by an English and Dutch garrison commanded by Colonel Morgan, and in 1605 it was suddenly attacked by Du Terail. In 1622 the Spaniards, under Spinola, made another attempt to take the town, but were forced to abandon the enterprise after a siege of ten weeks and the loss of 1200 men. Towards the end of the 17th century the fortifications were greatly strengthened by Coehoorn, and in 1725 they were further extended. In 1747, however, the town was taken by the French, under Marshal Löwendahl, who surprised it by means of a subterranean passage. Restored at the end of the war, it was again taken by the French under Pichegru in 1795. The English, under Sir Thomas Graham, afterwards Lord Lynedoch, in March 1814 made an attempt to take it by a *coup de main*, but were driven back with great loss by the French, who surrendered the place, however, by the treaty of peace in the following May.

The lordship of Bergen-op-Zoom appears, after the definite union of the Low Countries with the Empire in 924, as an hereditary fief of the Empire, and the succession of its lords may be traced from Henry (1098-1125), who also held Breda. In 1533 it was raised to a margraviate by the emperor Charles V., and was held by various families until in 1799 it passed, through the Sultzbach branch of the Wittelsbachs, to the royal house of Bavaria, by whom it was renounced in favour of the Batavian republic in 1801.

BERGERAC, a town of south-western France, capital of an arrondissement in the department of Dordogne, on the right bank of the Dordogne, 60 m. E. of Bordeaux on the railway to Cahors. Pop. (1906) town, 10,545; commune, 15,623. The river is rendered navigable by a large dam and crossed by a fine bridge which leads to the suburb of La Madeleine. Apart from a few old houses in the older quarter by the river, the town contains no monuments of antiquarian interest. There is a handsome modern church built in the middle of the 19th century. Bergerac is the seat of a sub-prefect and has tribunals of first instance and of commerce and a communal college. Wine of fine quality is grown in the district and is the chief source of the commerce of the town, which is mainly carried on with Libourne and Bordeaux. There is trade in grain, truffles, chestnuts, brandy and in the salmon of the Dordogne. The town has flour-mills, iron-works, tanneries, distilleries and nursery-gardens, and it has manufactures of casks and of vinegar. There are quarries of millstone in the vicinity. In the 16th century Bergerac was a very flourishing and populous place, but most of its inhabitants having embraced Calvinism it suffered greatly during the religious wars and by the revocation of the edict of Nantes (1685). It was in 1577 the scene of the signing of the sixth peace between the Catholics and Protestants. Its fortifications and citadel were demolished by Louis XIII. in 1621.

BERGHAUS, HEINRICH (1797-1884), German geographer, was born at Kleve on the 3rd of May 1797. He was trained as a surveyor, and after volunteering for active service under General Tauenzien in 1813, joined the staff of the Prussian trigonometrical survey in 1816. He carried on a geographical school at Potsdam in company with Heinrich Lange, August Petermann, and others, and long held the professorship of applied mathematics at the Bauakademie. But he is most famous in connexion with his cartographical work. His greatest achievement was the *Physikalischer Atlas* (Gotha, 1838-1848), in which work, as in others, his nephew Hermann Berghaus (1828-1890) was associated with him. He had also a share in the re-issue of the great *Stieler Handatlas* (originally produced by Adolf Stieler in 1817-1823). and in the production of other atlases. His written works were numerous and important, including *Allgemeine Länder- und Völkerkunde* (Stuttgart, 1837-1840), *Grundriss der Geographie in fünf Bückern* (Berlin, 1842), *Die Völker des Erdballs* (Leipzig, 1845-1847), *Was man van der Erde weiss* (Berlin, 1856-1860), and various large works on Germany. In 1863 he published *Briefwechsel mit Alexander van Humboldt* (Leipzig). He died at Stettin on the 17th of February 1884.

BERGK, THEODOR (1812-1881), German philologist, was born at Leipzig on the 22nd of May 1812. After studying at the university of his native town, where he profited by the instruction of G. Hermann, he was appointed in 1835 to the lectureship in Latin at the orphan school at Halle. After holding posts at Neustrelitz, Berlin and Cassel, he succeeded (1842) K.F. Hermann as professor of classical literature at Marburg. In 1852 he went to Freiburg, and in 1857 returned to Halle. In 1868 he resigned his professorship, and settled down to study and literary work in Bonn. He died on the 20th of July 1881, at Ragatz in Switzerland, where he had gone for the benefit of his health. Bergk's literary activity was very great, but his reputation mainly rests upon his work in connexion with Greek literature and the Greek lyric poets. His *Poetae Lyrici Graeci* (1843. 5th ed. 1900, &c.), and *Griechische Litteraturgeschichte* (1872-1887, completed by G. Hinrichs and R. Peppmüller) are standard works. He also edited Anacreon (1834), the fragments of Aristophanes (1840), Aristophanes (3rd ed., 1872), Sophocles (and ed., 1868), a lyric anthology (4th ed., 1890). Among his other works may be mentioned: *Augusti Rerum a se gestarum Index* (1873); *Inschriften römischer Schleudergeschosse* (1876); *Zur Geschichte und Topographie der Rheinlande in römischer Zeit* (1882); *Beiträge zur römischen Chronologie* (1884).

His *Kleine philologische Schriften* have been edited by Peppmüller (1884-1886), and contain, in addition to a complete list of his writings, a sketch of his life. See Sandys, *Hist. of Class. Schol* iii. 146 (1908).

BERGLER, STEPHAN, German classical scholar, was born about 1680 at Kronstadt in Transylvania. The date of his death is uncertain. After studying at Leipzig, he went to Amsterdam, where he edited Homer and the *Onomasticon* of Julius Pollux for Wetzstein the publisher. Subsequently, at Hamburg, he assisted the great bibliographer J.A. Fabricius in the production of his *Bibliotheca Graeca* and his edition of Sextus Empiricus. He finally found a permanent post in Bucharest as secretary to the prince of Walachia, Alexander Mavrocordato, whose work Περὶ τῶν καθηκόντων (*De Officiis*) he had previously translated for Fritzsch, the Leipzig bookseller, by whom he had been employed as proof-reader and literary hack. In the prince's library Bergler discovered the introduction and the first three chapters of Eusebius's *Demonstratio Evangelica*. He died in Bucharest, and was buried at his patron's expense. According to another account, Bergler, finding himself without means, drifted to Constantinople, where he came to an untoward end (*c*. 1740). He is said to have become a convert to Islam; this report was probably a mistake for the undisputed fact that he embraced Roman Catholicism. Bergler led a wild and irregular life, and offended his friends and made many enemies by his dissipated habits and cynical disposition. In addition to writing numerous articles for the Leipzig *Acta Eruditorum*, Bergler edited the editio princeps of the Byzantine historiographer Genesius (1733), and the letters of Alciphron (1715), in which seventy-five hitherto unpublished letters were for the first time included.

BERGMAN, TORBERN OLOF (1735-1784), Swedish chemist and naturalist, was born at Katrineberg, Vestergötland, Sweden, on the 20th of March 1735. At the age of seventeen he entered the university of Upsala. His father wished him to read either law or divinity, while he himself was anxious to study mathematics and natural science; in the effort to please both himself and his father he overworked himself and injured his health. During a period of enforced abstinence from study, he amused himself with field botany and entomology, to such good purpose that he was able to send Linnaeus specimens of several new kinds of insects, and in 1756 he succeeded in proving that, contrary to the opinion of that naturalist, *Coccus aquaticus* was really the ovum of a kind of leech. In 1758, having returned to Upsala, he graduated there, and soon afterwards began to teach mathematics and physics at the university, publishing papers on the rainbow, the aurora, the pyroelectric phenomena of tourmaline, &c. In 1767 Johann Gottschalck Wallerius (1709-1785) having resigned the chair of chemistry and mineralogy, Bergman determined to become a candidate, though he had paid no particular attention to chemistry. As evidence of his attainments he produced a memoir on the manufacture of alum, but his pretensions were strongly opposed, and it was only through the influence of Gustavus III., then crown prince and chancellor of the university, that he gained the appointment, which he held till the end of his life. He died at Medevi on Lake Vetter on the 8th of July 1784. Bergman's most important chemical paper is his *Essay on Elective Attractions*

(1775), a study of chemical affinity. In methods of chemical analysis, both by the blowpipe and in the wet way, he effected many improvements, and he made considerable contributions to mineralogical and geological chemistry, and to crystallography. He also made observations of the transit of Venus in 1761, and published a *Physical Description of the Earth* in 1766.

His works were collected and printed in 6 vols. as *Opuscula Physica et Chemica* in 1779-1790, and were translated into French, German and English.

BERGSCHRUND (Ger. *Berg*, mountain; *Schrund*, cleft or crevice), a gaping crack in the upper part of a snowfield or glacier, near the rock wall, caused by the glacier moving bodily away from the mountain-side as the mass settles downwards. The crack is roughly parallel to the rock-face of the upper edge of the glacier basin, and extends downwards to the solid rock beneath the glacier where at the bottom of this huge crevasse there are blocks of ice, and large pieces of rock torn off by the lower portion of the glacier from the rock wall and floor.

BERGUES, a town of northern France, in the department of Nord, at the junction of the canal of the Colme with canals to Dunkirk and Furnes (in Belgium), 5 m. S.S.E. of Dunkirk by rail. Pop. (1906) 4499. The town has a belfry, the finest in French Flanders, dating from the middle of the 16th century and restored in the 19th century. The church of St Martin is a brick building of the 17th century in the Gothic style with a modern façade. The town hall, dating from the latter half of the 19th century, contains a municipal library and an interesting collection of pictures. The industries of the town include brewing and malting, and the manufacture of brushes and oil.

BERHAMPUR, a town of British India, the headquarters of Murshidabad district, in Bengal, situated on the left bank of the river Bhagirathi, 5 m. below Murshidabad city. Pop. (1901) 24,397. Berhampur was fixed upon after the battle of Plassey as the site of the chief military station for Bengal; and a huge square of brick barracks was erected in 1767, at a cost of £300,000. Here was committed the first overt act of the mutiny, on the 25th of February 1857. No troops are now stationed here, and the barracks have been utilized for a jail, a lunatic asylum and other civic buildings. A college, founded by government in 1853, was made over in 1888 to a local committee, being mainly supported by the munificence of the rani Svarnamayi. In the municipality of Berhampur is included the remnant of the once important, but now utterly decayed city of Cossimbazar (*q.v.*).

BERHAMPUR, a town of British India, in the presidency of Madras. Pop. (1901) 25,729. It is the headquarters of Ganjam district, and is situated about 9 m. from the sea. It is a station on the East Coast railway, which connects Calcutta with Madras. Berhampur had a military cantonment, sometimes distinguished as Baupur, containing a wing of a native regiment; but the troops have been transferred elsewhere. There is some weaving of silk cloth, and export trade in sugar. The college, originally founded by government, is now maintained by the raja of Kallikota. Silk-weaving and sugar-manufacture are carried on.

BERI-BERI, a tropical disease of the greatest antiquity, and known to the Chinese from an extremely remote period. It gradually dropped out of sight of European practice, until an epidemic in Brazil in 1863, and the opening up of Japan, where it prevailed extensively, and the investigations into the disease in Borneo, brought it again into notice. The researches of Scheube and Bälz in Japan, and of Pekelharing and Winkler in the Dutch Indies, led to its description as a form of peripheral neuritis (see also NEUROPATHOLOGY). The geographical distribution of beri-beri is between 45° N. and 35° S. It occurs in Japan, Korea and on the Chinese coast south of Shanghai; in Manila, Tongking, Cochin China, Burma, Singapore, Malacca, Java and the neighbouring islands; also in Ceylon, Mauritius, Madagascar and the east coast of Africa. In the Western hemisphere it is found in Cuba, Panama, Venezuela and South America. It has been carried in ships to Australia and to England. Sir P. Manson has "known it originate in the port of London in the crews of ships which had been in harbour for several months," and he suggests that when peripheral neuritis occurs in epidemic form it is probably beri-beric.

The cause is believed by many authorities to be an infective agent of a parasitic nature, but attempts to identify it have not been entirely successful. It is "not obviously communicable from person to person" (Manson), but may be carried from place to place. It clings to particular localities, buildings and ships, in which it has a great tendency to occur; for instance, it is apt to break out again and again on certain vessels trading to the East. It haunts low-lying districts along the coast, and the banks of rivers. Moisture and high temperature are required to develop its activity, which is further favoured by bad ventilation, overcrowding and underfeeding. Another strongly supported hypothesis is that it is caused by unwholesome diet. The experience of the Japanese navy points strongly in this direction. Beri-beri was constantly prevalent among the sailors until 1884, when the dietary was changed. A striking and progressive diminution at once set in, and continued until the disease wholly disappeared. Major Ronald Ross suggested that beri-beri was really arsenical poisoning. A natural surmise is that it is due to some fungoid growth affecting grain, such as rice, maize or some other food stuff commonly used in the localities where beri-beri is prevalent, and among sailors. The conditions under which their food is kept on board certain ships might explain the tendency of the disease to haunt particular vessels. Dr Charles Hose is the principal advocate of this theory. Having had much experience of beri-beri in Sarawak, he associates it with the eating of mouldy rice, a germ in the fungus constituting the poison. But Dr Hose's views as to rice have been strongly opposed by Dr Hamilton Wright and others.

The most susceptible age is from 15 to 40. Children under 15 and persons over 50 or 60 are rarely attacked. Men are more liable than women. Race has no influence. Previous attacks powerfully predispose.

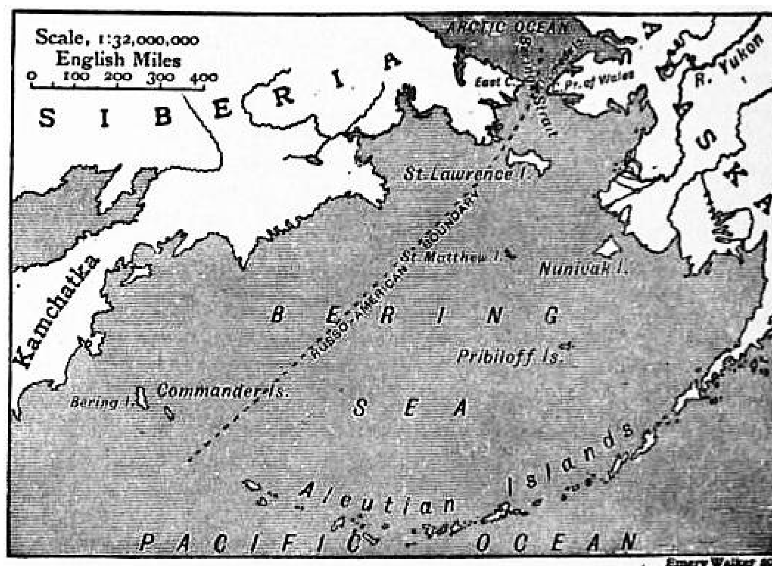
The symptoms are mainly those of peripheral neuritis with special implication of the phrenic and the pneumogastric nerves. There is usually a premonitory stage, in which the patient is languid, easily tired, depressed, and complains of numbness, stiffness and cramps in the legs; the ankles are oedematous and the face is puffy. After this, pronounced symptoms set in rapidly, the patient suddenly loses power in the legs and is hardly able to walk or stand; this paresis is accompanied by partial anaesthesia, and by burning or tingling sensations in the feet, legs and arms; the finger-tips are numb, the calf muscles tender. These symptoms increase, the oedema becomes general, the paralysis more marked; breathlessness and palpitation come on in paroxysms; the urine is greatly diminished. There is no fever, unless it is of an incidental character, and no brain symptoms arise. The patient may remain in this condition for several days or weeks, when the symptoms begin to subside. On the disappearance of the oedema the muscles of the leg are found to be atrophied. Recovery is very slow, but appears to be certain when once begun. When death occurs it is usually from syncope through over-distension of the heart. The mortality varies greatly, from 2 to 50% of the cases. The disease is said to be extremely fatal among the Malays. After death there is found to be serious infiltration into all the tissues, and often haemorrhages into the muscles and nerves, but the most important lesion is degeneration of the peripheral nerves. The cerebrospinal centres are not affected, and the degeneration of the nerve-fibres is more marked the farther they are from the point of origin. The implication of the phrenic and pneumogastric nerves, and of the cardiac plexus, accounts for the breathlessness, palpitation and heart failure; that of the vaso-motor system for the oedema and diminution of urine, and that of the spinal nerves for the loss of power, the impairment and perversion of sensation. According as these nerves are variously affected the symptoms will be modified, some being more prominent in one case and some in another.

AUTHORITIES.—See Sir Patrick Manson, *Tropical Diseases* (new ed., 1907), for a critical discussion of the subject, see *The Times* of 28th October 1905; a full bibliography is given by Manson in Allbutt and Rolleston's *System of Medicine* (1907).

BERING (Behring), **VITUS** (1680-1741), Danish navigator, was born in 1680 at Horsens. In 1703 he entered the Russian navy, and served in the Swedish war. A series of explorations of the north coast of Asia, the outcome of a far-reaching plan devised by Peter the Great, led up to Bering's first voyage to Kamchatka. In 1725, under the auspices of the Russian government, he went overland to Okhotsk, crossed to Kamchatka, and built the ship "Gabriel." In her he pushed northward in 1728, until he could no longer observe any extension of the land to the north, or its appearance to the east. In the following year he made an abortive search for land eastward, and in 1730 returned to St Petersburg. He was subsequently commissioned to a further expedition, and in 1740 established the settlement of Petropavlosk in Kamchatka; and built two vessels, the "St Peter" and "St Paul," in which in 1741 he led an expedition towards America. A storm separated the ships, but Bering sighted the southern coast of Alaska, and a landing was made at Kayak Island or in the vicinity. Bering was forced by adverse conditions to return quickly, and discovered some of the Aleutian Islands on his way back. He was afflicted with scurvy, and became too ill to command his ships, which were at last driven to refuge on an uninhabited island in the south-west of Bering Sea, where Bering himself and many of his company died. This island bears his name. Bering died on the 19th of December 1741. It was long before the value of his work was recognized; but Captain Cook was able to prove his accuracy as an observer.

See G.F. Müller, *Sammlung russischer Geschichten*, vol. iii. (St Petersburg, 1758); P. Lauridsen, *Bering og de Russishe Opdagelsesrejser* (Copenhagen, 1885).

BERING ISLAND, SEA and **STRAIT**. These take their name from the explorer Vitus Bering. The island (also called Avatcha), which was the scene of his death, lies in the south-western part of the sea, off the coast of Kamchatka, being one of the Commander or Komandor group, belonging to Russia. It is 69 m. long and 28 m. in extreme breadth; the area is 615 sq. m. The extreme elevation is about 300 ft. The smaller Copper Island lies near. The islands are treeless, and the climate is severe, but there is a population of about 650. Bering Sea is the northward continuation of the Pacific Ocean, from which it is demarcated by the long chain of the Aleutian Islands. It is bounded on the east by Alaska, and on the west by the Siberian and Kamchatkan coast. Its area is estimated at 870,000 sq. m. In the north and east it has numerous islands (St Lawrence, St Matthew, Nunivak and the Pribiloff group) and is shallow; in the south-west it reaches depths over 2000 fathoms. The seal-fisheries are important (see Bering Sea Arbitration). The sea is connected with the Arctic Ocean northward by Bering Strait, at the narrowest part of which East Cape (Deshnev) in Asia approaches within about 56 m. of Cape Prince of Wales on the American shore. North and south of these points the coasts on both sides rapidly diverge. They are steep and rocky, and considerably indented. The extreme depth of the strait approaches 50 fathoms, and it contains two small islands known as the Diomede Islands. These granite domes, lacking a harbour, lie about a mile apart, and the boundary line between the possessions of Russia and the United States passes between them. They are occupied by a small tribe of about 80 Eskimo, who have from early times plied the trade of middlemen between Asia and America. They call the western island Nunárbook and the eastern Ignálook. Haze and fogs greatly prevail in the strait, which is never free of ice.



The earliest names associated with the exploration of Bering Strait are those of Russians seeking to extend their trading facilities. Isai Ignatiev made a voyage eastward from the Kolyma river in 1646, and Simon Dezhnev in 1648 followed his route and prolonged it, rounding the East or Dezhnev Cape, and entering the strait. The post of Anadyrsk was founded on the river Anadyr, and overland communications were gradually opened up. A Russian named Popov first learnt a rumour of the existence of islands east of Cape Dezhnev, and of the proximity of America, and presently there followed the explorations of Vitus Bering. In 1731 the navigator Michael Gvosdev was driven by storm from a point north of Cape Dezhnev to within sight of the Alaskan coast, which he followed for two days. Under Bering on his last voyage (1741) was Commander Chirikov of the “St Paul,” and after being separated from his leader during foggy weather this officer reached the Alaskan coast and explored a considerable stretch of it. Lieutenant Waxel and William Steller, a naturalist, left at the head of Bering’s party after his death, by their researches laid the foundation of the important fur trade of these waters. The Aleutian Islands gradually became known in the pursuit of this trade, through Michael Novidiskov (1745) and his successors, and it was not until Captain James Cook, working from the south, explored the sea and strait in 1778 that the tide of discovery set farther northward.

BERING SEA ARBITRATION. The important fishery dispute between Great Britain and the United States, which was closed by this arbitration, arose in the following circumstances.

In the year 1867 the United States government had purchased from Russia all her territorial rights in Alaska and the adjacent islands. The boundary between the two powers, as laid down by the treaty for purchase, was a line drawn from the middle of Bering Strait south-west to a point midway between the Aleutian and Komandorski Islands dividing Bering Sea into two parts, of which the larger was on the American side of this line. This portion included the Pribiloff Islands, which are the principal breeding-grounds of the seals frequenting those seas. By certain acts of congress, passed between 1868 and 1873, the killing of seals was prohibited upon the islands of the Pribiloff group and in “the waters adjacent thereto” except upon certain specified conditions. No definition of the meaning of the words “adjacent waters” was given in the act. In 1870 the exclusive rights of killing seals upon these islands was leased by the United States to the Alaska Commercial Company, upon conditions limiting the numbers to be taken annually, and otherwise providing for their protection. As early as 1872 the operations of foreign sealers attracted the attention of the United States government, but any precautions then taken seem to have been directed against the capture of seals on their way through the passages between the Aleutian Islands, and no claim to jurisdiction beyond the three-mile limit appears to have been put forward. On the 12th of March 1881, however, the acting secretary of the United States treasury, in answer to a letter asking for an interpretation of the words “waters adjacent thereto” in the acts of 1868 and 1873, stated that all the waters east of the boundary line were considered to be within the waters of Alaska territory. In March 1886 this letter was communicated to the San Francisco customs by Mr Daniel Manning, secretary of the treasury, for publication. In the same summer three British sealers, the “Carolena,” “Onward” and “Thornton,” were captured by an American revenue cutter 60 m. from land. They were condemned by the district judge on the express ground that they had been sealing within the limits of Alaska territory. Diplomatic representations followed, and an order for release was issued, but in 1887 further captures were made and were judicially supported upon the same grounds. The respective positions taken up by the two governments in the controversy which ensued may be thus indicated. The United States claimed as a matter of right an exclusive jurisdiction over the sealing industry in Bering Sea; they also contended that the protection of the fur seal was, upon grounds both of morality and interest, an international duty, and should be secured by international arrangement. The British government repudiated the claim of right, but were willing to negotiate upon the question of international regulation. Between 1887 and 1890 negotiations were carried on between Russia, Great Britain and the United States with a view to a joint convention. Unfortunately the parties were unable to agree as to the principles upon which regulation should be based. The negotiations were wrecked upon the question of pelagic sealing. The only seal nurseries were upon the Pribiloff Islands, which belonged to the United States, and the Komandorski group, which belonged to Russia. Consequently to prohibit pelagic sealing would have been to exclude Canada from the industry. The United States, nevertheless, insisted that such prohibition was indispensable on the grounds—(1) that pelagic sealing involved the destruction of breeding stock, because it was practically impossible to distinguish between the male and female seal when in the water; (2) that it was unnecessarily wasteful, inasmuch as a large proportion of the seals so killed were lost. On the other hand, it was contended by Great Britain that in all known cases the extermination of seals had been the

result of operations upon land, and had never been caused by sealing exclusively pelagic. The negotiations came to nothing, and the United States fell back upon their claim of right. In June 1890 it was reported that certain American revenue cutters had been ordered to proceed to Bering Sea. Sir Julian Pauncefote, the British ambassador at Washington, having failed to obtain an assurance that British vessels would not be interfered with, laid a formal protest before the United States government.

Thereupon followed a diplomatic controversy, in the course of which the United States developed the contentions which were afterwards laid before the tribunal of arbitration. The claim that Bering Sea was *mare clausum* was abandoned, but it was asserted that Russia had formerly exercised therein rights of exclusive jurisdiction which had passed to the United States, and they relied *inter alia* upon the ukase of 1821, by which foreign vessels had been forbidden to approach within 100 Italian miles of the coasts of Russian America. It was pointed out by Great Britain that this ukase had been the subject of protest both by Great Britain and the United States, and that by treaties similar in their terms, made between Russia and each of the protesting powers, Russia had agreed that their subjects should not be troubled or molested in navigating or fishing in any part of the Pacific Ocean. The American answer was that the Pacific Ocean did not include Bering Sea. They also claimed an interest in the fur seals, involving the right to protect them outside the three-mile limit. In August 1890 Lord Salisbury proposed that the question at issue should be submitted to arbitration. This was ultimately assented to by the secretary of state, James Gillespie Blaine, on the understanding that certain specific points, which he indicated, should be laid before the arbitrators. On the 29th of February 1892 a definitive treaty was signed at Washington. Each power was to name two arbitrators, and the president of the French Republic, the king of Italy, the king of Norway and Sweden were each to name one. The points submitted were as follows:—(1) What exclusive jurisdiction in the sea now known as Bering Sea, and what exclusive rights in the seal fisheries therein, did Russia assert and exercise prior to and up to the time of the cession of Alaska to the United States? (2) How far were her claims of jurisdiction as to the seal fisheries recognized and conceded by Great Britain? (3) Was the body of water now known as Bering Sea included in the phrase “Pacific Ocean,” as used in the treaty of 1825 between Great Britain and Russia, and what rights, if any, in Bering Sea were held exclusively exercised by Russia after the said treaty? (4) Did not all the rights of Russia as to jurisdiction and as to the seal fisheries in Bering Sea east of the water boundary, in the treaty between the United States and Russia of the 30th of March 1867, pass unimpaired to the United States under that treaty? (5) Had the United States any and what right of protection over, or property in, the fur seals frequenting the islands of Bering Sea when such seals are found outside the three-mile limit? In the event of a determination in favour of Great Britain the arbitrators were to determine what concurrent regulations were necessary for the preservation of the seals, and a joint commission was to be appointed by the two powers to assist them in the investigation of the facts of seal life. The question of damages was reserved for further discussion, but either party was to be at liberty to submit any question of fact to the arbitrators, and to ask for a finding thereon. The tribunal was to sit at Paris. The treaty was approved by the Senate on the 29th of March 1892, and ratified by the president on the 22nd of April.

The United States appointed as arbitrator Mr John M. Harlan, a justice of the Supreme Court, and Mr John T. Morgan, a member of the Senate. The British arbitrators were Lord Hannen and Sir John Thompson. The neutral arbitrators were the baron de Courcel, the marquis Visconti Venosta, and Mr Gregers Gram, appointed respectively by the president of the French Republic, the king of Italy, and the king of Norway and Sweden. The sittings of the tribunal began in February and ended in August 1893. The main interest of the proceedings lies in the second of the two claims put forward on behalf of the United States. This claim cannot easily be stated in language of precision; it is indicated rather than formulated in the last of the five points specially submitted by the treaty. But its general character may be gathered from the arguments addressed to the tribunal. It was suggested that the seals had some of the characteristics of the domestic animals, and could therefore be the subject of something in the nature of a right of property. They were so far amenable to human control that it was possible to take their increase without destroying the stock. Sealing upon land was legitimate sealing; the United States being the owners of the land, the industry was a trust vested in them for the benefit of mankind. On the other hand, pelagic sealing, being a method of promiscuous slaughter, was illegitimate; it was *contra bonos mores* and analogous to piracy. Consequently the United States claimed a right to restrain such practices, both as proprietors of the seals and as proprietors and trustees of the legitimate industry. It is obvious that such a right was a novelty hitherto unrecognized by any system of law. Mr J.C. Carter, therefore, as counsel for the United States, submitted a theory of international jurisprudence which was equally novel. He argued that the determination of the tribunal must be grounded upon “the principles of right,” that “by the rule or principle of right was meant a moral rule dictated by the general standard of justice upon which civilized nations are agreed, that this international standard of justice is but another name for international law, that the particular recognized rules were but cases of the application of a

more general rule, and that where the particular rules were silent the general rule applied.” The practical result of giving effect to this contention would be that an international tribunal could make new law and apply it retrospectively. Mr Carter’s contention was successfully combated by Sir Charles Russell, the leading counsel for Great Britain.

The award, which was signed and published on the 15th of August 1893, was in favour of Great Britain on all points. The question of damages, which had been reserved, was ultimately settled by a mixed commission appointed by the two powers in February 1896, the total amount awarded to the British sealers being $473,151.26.

(M. H. C.)

BERIOT, CHARLES AUGUSTE DE (1802-1870), Belgian violinist and composer. Although not definitely a pupil of Viotti or Baillot he was much influenced by both. He was very successful in his concert tours, and held appointments at the courts of Belgium and France. From 1843 to 1852 he was violin professor at the Brussels conservatoire. Then his eyesight began to fail, and in 1858 he became blind. His compositions are still often played, and are good, clean displays of technique.

BERJA, a town of southern Spain, in the province of Almeria; on the south-eastern slope of the Sierra de Gádor, 10 m. N.E. of Adra by road. Pop. (1900) 13,224. Despite the lack of a railway Berja has a considerable trade. Lead is obtained among the mountains, and the more sheltered valleys produce grain, wine, oil, fruit and esparto grass. These, with the paper, linen and cotton goods manufactured locally in small quantities, are exported from Adra.

BERKA, a town and watering-place of Germany, in the grand-duchy of Saxe-Weimar, on the Ilm and the Weimar-Kranichfeld railway, 8 m. S. of Weimar. Pop. 2300. It has sulphur baths, which are largely frequented in the summer. Berka was once celebrated for its Cistercian nunnery, founded in 1251. Two m. down the Ilm is the curious castle of Burgfarth, partly hewn out of the solid rock.

BERKELEY, the name of an ancient English family remarkable for its long tenure of the feudal castle built by the water of Severn upon the lands from which the family takes its name. It traces an undoubted descent from Robert (d. 1170) son of Harding. Old pedigree-makers from the 14th century onward have made of Harding a younger son of a king of Denmark and a companion of the Conqueror, while modern historians assert his identity with one Harding who, although an English thane, is recorded by Domesday Book in 1086 as a great landowner in Somerset. This Harding the thane was son of Elnod or Alnod, who is recognized as Eadnoth the Staller, slain in beating off the sons of Harold when they attacked his county. But if Harding the Berkeley ancestor be the Harding who, as the queen’s butler, witnesses King Edward’s Waltham charter of 1062, his dates seem strangely apart from those of Robert his son, dead a hundred and eight years later. Of Robert fitz Harding we know that he was a Bristol man whose wealth and importance were probably increased by the trade of the port. A partisan of Henry, son of the empress, that prince before his accession to the throne granted him, by his charter at Bristol in the earlier half of 1153, the Gloucestershire manor of Bitton, and a hundred librates of land in the manor of Berkeley, Henry agreeing to strengthen the castle of Berkeley, which was evidently already in Robert’s hands. In his rhymed chronicle Robert of Gloucester tells how—

“A bourgois at Bristowe—Robert Harding
Vor gret tresour and richesse—so wel was mid the king
That he gat him and is eirs—the noble baronie
That so riche is of Berkele—mid al the seignorie.”

Later in the same year the duke of Normandy granted to Robert fitz Harding Berkeley manor and the appurtenant district called “Berkelaihernesse,” to hold in fee by the service of one knight or at a rent of 100 s. Being at Berkeley, the duke confirmed to Robert a grant of Bedminster made by Robert, earl of Gloucester, and in the first year of his reign as king of England he confirmed his own earlier grant of the Berkeley manor. About this time Robert, who had founded St Augustine’s Priory in Bristol, gave to the Black Canons there the five churches in Berkeley and Berkeley Herness. In their priory church he was buried in 1170, Berkeley descending to his son and heir Maurice.

Berkeley had already given a surname to an earlier family sprung from Roger, its Domesday tenant, whose descendants seem to have been ousted by the partisan of the Angevin. But if there had been a feud between the families it was ended by a double alliance, a covenant having been made at Bristol about November 1153 in the presence of Henry, duke of Normandy, whereby Maurice, son of Robert fitz Harding, was to marry the daughter of Roger of Berkeley, Roger’s own son Roger marrying the daughter of Robert. In his certificate of 1166 Robert tells the king that, although he owes the service of five knights for Berkeley, Roger of Berkeley still holds certain lands of the honour for which he does no service to Robert. This elder line of Berkeley survived for more than two centuries on their lands of Dursley and Cubberley, but after his father’s death Maurice, son of Robert, is styled Maurice of Berkeley. Robert of Berkeley, the eldest son of Maurice, paid in 1190 the vast sum of £1000 for livery of his great inheritance, but, rising with the rebellious barons against King John, his castle was taken into the king’s hands. Seizin, however, was granted in 1220 to Thomas his brother and heir, but the estate was again forfeit in the next generation for a new defection, although the wind of the royal displeasure was tempered by the fact that Isabel de Creoun, wife of Maurice, lord of Berkeley, was the king’s near kinswoman. Thomas, son of Maurice, was allowed to succeed his father in the lands, and, having a writ of summons to parliament in 1295, he is reckoned the first hereditary baron of the line.

Even in the age of chivalry the lords of Berkeley were notable warriors. Thomas, who as a lad had ridden on the barons’ side at Evesham, followed the king’s wars for half a century of his long life, flying his banner at Falkirk and at Bannockburn, in which fight he was taken by the Scots. His seal of arms is among those attached to the famous letter of remonstrance addressed by the barons of England to Pope Boniface VIII. Maurice, his son, joined the confederation against the two Despensers, and lay in prison at Wallingford until his death in 1326, the queen’s party gaining the upper hand too late to release him. But as the queen passed by Berkeley on her way to seize Bristol, she gave back the castle, which had been kept by the younger Despenser, to Thomas, the prisoner’s heir, who, with Sir John Mautravers, soon received in his hold the deposed king brought thither secretly. The chroniclers agree that Thomas of Berkeley had no part in the murder of the king, whom he treated kindly. It was when Thomas was away from the castle that Mautravers and Gournay made an end of their charge. Through the providence of this Thomas the Berkeley estates were saved to the male line of his house, a fine levied in the twenty-third year of Edward III. so settling them. Thomas of Berkeley fought at Creçy and Calais, bringing six knights and thirty-two squires to the siege in his train, with thirty mounted archers and two hundred men on foot. His son and heir-apparent, Maurice of Berkeley, was the hero of a misadventure recorded by Froissart, who tells how a young English knight, displaying his banner for the first time on the day of Poitiers, rode after a flying Picard squire, by whom he was grievously wounded and held to ransom. Froissart errs in describing this knight as Thomas lord of Berkeley, for the covenant made in 1360 for the release of Maurice is still among the Berkeley muniments, the ransom being stated at £1080.

Being by his mother a nephew of Roger Mortimer, earl of March, the paramour of Queen Isabel, Maurice Berkeley married Elizabeth, daughter of Hugh Despenser, the younger of Edward II.’s favourites and the intruder in Berkeley Castle. With his son and heir Thomas of Berkeley, one of the commissioners of parliament for the deposing of Richard II. and a warden of the Welsh marches who harried Owen of Glendower, the direct male line of Robert fitz Harding failed, and but for the settlement of the estates Berkeley would have passed from the family. On this Thomas’s death in 1417 Elizabeth, his daughter and heir, and her husband, Richard Beauchamp, earl of Warwick, the famous traveller, statesman and jouster, seized Berkeley Castle. Earl and countess only withdrew after James Berkeley, the nephew and heir male, had livery of his lands by the purchased aid of Humphrey of Gloucester. But the Beauchamps returned more than once to vain attacks on the stout walls of Berkeley, and a quarrel of two generations ended with the pitched battle of Nibley Green. Fought between the retainers of William, Lord Berkeley, son of James, and those who followed Thomas Talbot, Viscount Lisle,

grandson of the illustrious Talbot and great-grandson of the countess of Warwick, this was the last private battle on English ground between two feudal lords. Young Lisle was shot under the beaver by an arrow, and the feud ended with his death, all claims of his widow being settled with an annuity of £100. Bitter as was the long quarrel, it kept the Berkeleys from casting their interest into the Wars of the Roses, in which most of their fellows of the ancient baronage sank and disappeared.

The victorious Lord Berkeley, whose children died young, was on ill terms with his next brother, and made havoc of the great Berkeley estates by grants to the Crown and the royal house, for which he was rewarded with certain empty titles. Edward IV. gave him a viscount’s patent in 1481, and Richard III. created him earl of Nottingham in 1483. His complacence extending to the new dynasty, Henry VII. made him earl marshal in 1485 and marquess of Berkeley in 1487. For this last patent he, by a settlement following a recovery suffered, gave the king and his heirs male Berkeley Castle and all that remained to him of his ancestors’ lands, enjoying for his two remaining years a bare life interest. At his death in 1491 the king took possession, bringing his queen with him on a visit to Berkeley.

Here follows a curious chapter of the history of the Berkeley peerage. When Thomas, Lord Berkeley, died in 1417, it might have been presumed that his dignity would descend to his heir, the countess of Warwick. Nevertheless, his nephew and heir male was summoned as a baron from 1421, apparently by reason of his tenure of the castle and its lands. When the marquess of Berkeley was dead without surviving issue, the castle having passed to the crown, Maurice, the brother and heir, had no summons. Yet this Maurice’s son, another Maurice, had a summons as a baron, although not “with the room in the parliament chamber that the lords of Berkeley had of old time.” The old precedence was restored when Thomas, brother and heir of this baron, was summoned. This Thomas, who had a command at Flodden, held his ancestors’ castle as constable for the king. A final remainder under the marquess’s settlement brought back castle and lands on the failure in 1553 of the heirs male of the body of Henry VII., and Henry, Lord Berkeley, had special livery of them in his minority. Yet although seized of the castle he took a lower seat in the parliament house than did his grandfather who was not so seized, being given place after Abergavenny, Audley and Strange.

By these things we may see that peerage law in old time rested upon the pleasure of the sovereign and upon no ascertained and unvarying custom. Of the power behind that pleasure this Henry, Lord Berkeley, had one sharp reminder. He was, like most of his line, a keen sportsman, and, returning to Berkeley to find that a royal visit had made great slaughter among his deer, he showed his resentment by disparking Berkeley Park. Thereat Queen Elizabeth sent him a warning in round Tudor fashion. Let him beware, she wrote, for the earl of Leicester coveted the castle by the Severn.

At the Restoration, George, Lord Berkeley, who had been one of the commissioners to invite Charles II.’s return from the Hague, petitioned for a higher place in parliament, claiming a barony by right of tenure before 1295, but his claim was silenced by his advancement on September 11, 1679, to be viscount of Dursley and earl of Berkeley. James, the 3rd earl, an active sea captain who was all but lost in company with Sir Cloudesley Shovel, became knight of the Garter and lord high admiral and commander-in-chief in the Channel, he and his house being loyal supporters of the Hanoverian dynasty.

The last and most curious chapter of the history of the Berkeley honours was opened by Frederick Augustus, the 5th earl of Berkeley (1745-1810). This peer married at Lambeth, on the 16th of May 1796, one Mary Cole, the daughter of a small tradesman at Wotton-under-Edge, with whom he had already lived for several years, several children having been born to them. In order to legitimatize the issue born before the marriage, the earl in 1801 made declaration of an earlier marriage contracted privately at Berkeley in 1785. On his death in 1811 the validity of this alleged marriage was tested by the committee of privileges of the House of Lords, and it was shown without doubt that the evidence for it, a parish register entry, was a forgery.

Under the will of his father, Colonel William Berkeley, the eldest illegitimate son, had the castle and estates, and on the failure of his claim to the earldom he demanded a writ of summons as a baron by reason of his tenure of the castle. No judgment was given in the matter, the king in council having declared in 1669 that baronies by tenure were “not in being and so not fit to be revived.” But Colonel Berkeley’s political influence afterwards procured him (1831) a peerage as Lord Segrave of Berkeley, and ten years later an earldom with the title of Fitzhardinge. He died without issue in 1857. His brother, Sir Maurice Fitzhardinge Berkeley, who succeeded to Berkeley under the terms of the 5th earl’s will, revived the claims, and was likewise given a new barony (1861) as Lord Fitzhardinge, a title in which he was succeeded by two of his sons, the 3rd baron (b. 1830) being in 1909 owner of the Berkeley and Cranford estates. The earldom of Berkeley was never assumed by the eldest legitimate son of the 5th earl, and was in 1909 enjoyed by Randal Thomas Mowbray Berkeley, 8th earl, grandson of admiral Sir George Cranfield Berkeley, second son of the 4th earl. In 1893 Mrs Milman (d. 1899),

daughter and heir of Thomas Moreton Fitzhardinge Berkeley, 6th earl *de jure*, was declared by letters patent under the great seal to have succeeded to the ancient barony of Berkeley created by the writ of 1421; and she was succeeded by her daughter.

Many branches have been thrown out by this family during its many centuries of existence. Of these the most important descended from Maurice of Berkeley, the baron who died in Wallingford hold in 1326. His second son Maurice was ancestor of the Berkeleys of Stoke Giffard, whose descendant, Norborne Berkeley, claimed the barony of Botetourt and had a summons in 1764, dying without issue in 1770. Sir Maurice Berkeley of Bruton, a cadet of Stoke Giffard, was forefather of the Viscounts Fitzhardinge, the Lords Berkeley of Stratton (1658-1773) and the earls of Falmouth, all extinct, the Berkeleys of Stratton bequeathing their great London estate, including Berkeley Square and Stratton Street, to the main line. Edward Berkeley of Pylle in Somerset, head of a cadet line of the Bruton family, married Philippa Speke, whose mother was Joan, daughter of Sir John Portman of Orchard Portman, baronet. His grandson William, on succeeding to the Orchard Portman and Bryanston estates, took the additional name of Portman, and from him come the Viscounts Portman of Bryanston (1873). From James, Lord Berkeley, who died in 1463, descended Rowland Berkeley, a clothier of Worcester, who bought the estates of Spetchley. Rowland's second son, Sir Robert Berkeley, the king's bench justice who supported the imposition of ship-money, was ancestor of the Berkeleys of Spetchley, now the only branch of the house among untitled squires.

See John Smyth's *Lives of the Berkeleys*, compiled *c.* 1618, edited by Sir John Maclean (1883-1885); J.H. Round's introduction to the Somerset Domesday, V.C.H. series; G.E. C(okayne)'s *Complete Peerage*; Jeayes's *Descriptive Catalogue of the Charters and Muniments at Berkeley Castle* (1892); *Dictionary of National Biography*; *Transactions of Bristol and Gloucestershire Archaeological Society*, 3 vols., viii., xlv., *et passim*; *The Red Book of the Exchequer*, Chronicles of Roger of Wendover, Matthew Paris, Adam of Murimuth, Robert of Gloucester, Henry of Huntingdon, &c. (Rolls Series); British Museum Charters, &c.

(O. Ba.)

BERKELEY, GEORGE (1685-1753), Irish bishop and philosopher, the eldest son of William Berkeley (an officer of customs who had, it seems, come to Ireland in the suite of Lord Berkeley of Stratton, lord lieutenant, 1670-1672, to whom he was related), was born on the 12th of March 1685, in a cottage near Dysert Castle, Thomastown, Ireland. He passed from the school at Kilkenny to Trinity College, Dublin (1700), where, owing to the peculiar subtlety of his mind and his determination to accept no doctrine on the evidence of authority or convention, he left the beaten track of study and was regarded by some as a dunce, by others as a genius. During his career at Dublin the works of Descartes and Newton were superseding the older text-books, and the doctrines of Locke's *Essay* were eagerly discussed. Thus he "entered on an atmosphere which was beginning to be charged with the elements of reaction against traditional scholasticism in physics and in metaphysics" (A.C. Fraser). He became a fellow in 1707. His interest in philosophy led him to take a prominent share in the foundation of a society for discussing the new doctrines, and is further shown by his *Common Place Book*, one of the most valuable autobiographical records in existence, which throws much light on the growth of his ideas, and enables us to understand the significance of his early writings. We find here the consciousness of creative thought focused in a new principle which is to revolutionize speculative science. There is no sign of any intimate knowledge of ancient or scholastic thought; to the doctrines of Spinoza, Leibnitz, Malebranche, Norris, the attitude is one of indifference or lack of appreciation, but the influence of Descartes and specially of Locke is evident throughout. The new principle (nowhere in the *Common Place Book* explicitly stated) may be expressed in the proposition that no existence is conceivable—and therefore possible—which is not either conscious spirit or the ideas (*i.e.* objects) of which such spirit is conscious. In the language of a later period this principle may be expressed as the absolute synthesis of subject and object; no object exists apart from Mind. Mind is, therefore, prior both in thought and in existence, if for the moment we assume the popular distinction. Berkeley thus diverted philosophy from its beaten track of discussion as to the meaning of matter, substance, cause, and preferred to ask first whether these have any significance apart from the conscious spirit. In the pursuit of this inquiry he rashly invaded other departments of science, and much of the *Common Place Book* is occupied with a polemic, as vigorous as it is ignorant, against the fundamental conceptions of the infinitesimal calculus.

In 1707 Berkeley published two short mathematical tracts; in 1709, in his *New Theory of Vision*, he applied his new principle for the first time, and in the following year stated it fully in the *Principles of Human Knowledge*. In these works he attacked the existing theories of

externality which to the unphilosophical mind is proved by visual evidence. He maintained that visual consciousness is merely a system of arbitrary signs which symbolize for us certain actual or possible tactual experience—in other words a purely conventional language.

The contents of the visual and the tactual consciousness have no element in common. The visible and visual signs are definitely connected with tactual experiences, and the association between them, which has grown up in our minds through custom or habit, rests upon, or is guaranteed by, the constant conjunction of the two by the will of the Universal Mind. But this synthesis is not brought forward prominently by Berkeley. It was evident that a similar analysis might have been applied to tactual consciousness which does not give externality in its deepest significance any more than the visual; but with deliberate purpose Berkeley at first drew out only one side of his argument. In the *Principles of Human Knowledge*, externality in its ultimate sense as independence of all mind is considered. Matter, as an abstract, unperceived substance or cause, is shown to be impossible, an unreal conception; true substance is affirmed to be conscious spirit, true causality the free activity of such a spirit, while physical substantiality and causality are held to be merely arbitrary, though constant, relations among phenomena connected subjectively by suggestion or association, objectively in the Universal Mind. In ultimate analysis, then, nature is conscious experience, and forms the sign or symbol of a divine, universal intelligence and will.

In 1711 Berkeley delivered his *Discourse on Passive Obedience*, in which he deduces moral rules from the intention of God to promote the general happiness, thus working out a theological utilitarianism, which may be compared with the later expositions of Austin and J.S. Mill. From 1707 he had been engaged as college tutor; in 1712 he paid a short visit to England, and in April 1713 he was presented by Swift at court. His abilities, his courtesy and his upright character made him a universal favourite. While in London he published his *Dialogues* (1713), a more popular exposition of his new theory; for exquisite facility of style these are among the finest philosophical writings in the English language. In November he became chaplain to Lord Peterborough, whom he accompanied on the continent, returning in August 1714. He travelled again in 1715-1720 as tutor to the only son of Dr St George Ashe (?1658-1718, bishop successively of Cloyne, Clogher and Derry). In 1721, during the disturbed state of social relations consequent on the bursting of the South Sea bubble he published an *Essay towards preventing the Ruin of Great Britain*, which shows the intense interest he took in practical affairs. In the same year he returned to Ireland as chaplain to the duke of Grafton, and was made divinity lecturer and university preacher. In 1722 he was appointed to the deanery of Dromore, a post which seems to have entailed no duties, as we find him holding the offices of Hebrew lecturer and senior proctor at the university. The following year Miss Vanhomrigh, Swift's Vanessa, left him half her property. It would appear that he had only met her once at dinner. In 1724 he was nominated to the rich deanery of Derry, but had hardly been appointed before he was using every effort to resign it in order to devote himself to his scheme of founding a college in the Bermudas, and extending its benefits to the Americans. With infinite exertion he succeeded in obtaining from government a promise of £20,000, and after four years spent in preparation, sailed in September 1728, accompanied by some friends and by his wife, daughter of Judge Forster, whom he had married in the preceding month. Three years of quiet retirement and study were spent in Rhode Island, but it gradually became apparent that government would never hand over the promised grant, and Berkeley was compelled to give up his cherished plan. Soon after his return he published the fruits of his studies in *Alciphron, or the Minute Philosopher* (1733), a finely written work in the form of dialogue, critically examining the various forms of free-thinking in the age, and bringing forward in antithesis to them his own theory, which shows all nature to be the language of God. In 1734 he was raised to the bishopric of Cloyne. The same year, in his *Analyst*, he attacked the higher mathematics as leading to freethinking; this involved him in a hot controversy. The *Querist*, a practical work in the form of questions on what would now be called social or economical philosophy, appeared in three parts, 1735, 1736, 1737. In 1744 was published the *Siris*, partly occasioned by the controversy as to the efficacy of tar-water in cases of small-pox, but rising far above the circumstance from which it took its rise, and revealing hidden depths in the Berkeleian metaphysics. In 1751 his eldest son died, and in 1752 he removed with his family to Oxford for the sake of his son George, who was studying there. He died suddenly in the midst of his family on the 14th of January 1753, and was buried in Christ Church, Oxford.

In the philosophies of Descartes and Locke a large share of attention had been directed to the idea of matter, which was held to be the abstract, unperceived background of real experience, and was supposed to give rise to our ideas of external things through its action on the sentient mind. Knowledge being limited to the ideas produced could never extend to the unperceived matter, or substance, or cause which produced them, and it became a problem for speculative science to determine the grounds for the very belief in its existence. Philosophy seemed about to end in scepticism or in materialism. Now Berkeley put this whole problem in a new light by pointing out a preliminary question. Before we deduce results from such abstract ideas as cause, substance, matter, we must ask what in reality do these mean—what is the actual content of

consciousness which corresponds to these words? Do not all these ideas, when held to represent something which exists absolutely apart from all knowledge of it, involve a contradiction? In putting this question, not less than in answering it, consists Berkeley's originality as a philosopher. The essence of the answer is that the universe is inconceivable apart from mind—that existence, as such, denotes conscious spirits and the objects of consciousness. Matter and external things, in so far as they are thought to have an existence beyond the circle of consciousness, are impossible, inconceivable. External things are things known to us in immediate perception. To this conclusion Berkeley seems, in the first place, to have been led by the train of reflection that naturally conducts to subjective or egoistic idealism. It is impossible to overstep the limits of self-consciousness; whatever words I use, whatever notions I have, must refer to and find their meaning in facts of consciousness. But this is by no means the whole or even the principal part of Berkeley's philosophy; it is essentially a theory of causality, and this is brought out gradually under the pressure of difficulties in the first solution of the early problem. To merely subjective idealism, sense percepts differ from ideas of imagination in degree, not in kind; both belong to the individual mind. To Berkeley, however, the difference is fundamental; sense ideas are not due to our own activity; they must therefore be produced by some other will-by the divine intelligence. Sense experience is thus the constant action upon our minds of supreme active intellect, and is not the consequence of dead inert matter. It might appear, therefore, that sensible things had an objective existence in the mind of God; that an idea so soon as it passes out of our consciousness passes into that of God. This is an interpretation, frequently and not without some justice, put upon Berkeley's own expression. But it is not a satisfactory account of his theory. Berkeley is compelled to see that an immediate perception is not a *thing*, and that what we consider permanent or substantial is not a sensation but a group of qualities, which in ultimate analysis means sensations either immediately felt or such as our experience has taught us would be felt in conjunction with these. Our belief in the reality of a thing may therefore be said to mean assurance that this association in our minds between actual and possible sensations is somehow guaranteed. Further, Berkeley's own theory would never permit him to speak of possible sensations, meaning by that the ideas of sensations called up to our minds by present experience. He could never have held that these afforded any explanation of the permanent existence of real objects. His theory is quite distinct from this, which really amounts to nothing more than subjective idealism. External things are produced by the will of the divine intelligence; they are caused, and caused in a regular order; there exists in the divine mind archetypes, of which sense experience may be said to be the realization in our finite minds. Our belief in the permanence of something which corresponds to the association in our minds of actual and possible sensations means belief in the orderliness of nature; and *that* is merely assurance that the universe is pervaded and regulated by mind. Physical science is occupied in endeavouring to decipher the divine ideas which find realization in our limited experience, in trying to interpret the divine language of which natural things are the words and letters, and in striving to bring human conceptions into harmony with the divine thoughts. Instead, therefore, of fate or necessity, or matter, or the unknown, a living, active mind is looked upon as the centre and spring of the universe, and this is the essence of the Berkeleian metaphysics.

The deeper aspects of Berkeley's new thought have been almost universally neglected or misunderstood. Of his spiritual empiricism one side only has been accepted by later thinkers, and looked upon as the whole. The subjective mechanism of association which with Berkeley is but part of the true explanation, and is dependent on the objective realization in the divine mind, has been received as in itself a satisfactory theory. *Suni Cogitationes* has been regarded by thinkers who profess themselves Berkeleians as the one proposition warranted by consciousness; the empiricism of his philosophy has been eagerly welcomed, while the spiritual intuition, without which the whole is to Berkeley meaningless, has been cast aside. For this he is himself in no small measure to blame. The deeper spiritual intuition, present from the first, was only brought into clear relief in order to meet difficulties in the earlier statements, and the extension of the intuition itself beyond the limits of our own consciousness, which completely removes his position from mere subjectivism, rests on foundations uncritically assumed, and at first sight irreconcilable with certain positions of his system. The necessity and universality of the judgments of causality and substantiality are taken for granted; and there is no investigation of the place held by these notions in the mental constitution. The relation between the divine mind and finite intelligence, at first thought as that of agent and recipient, is complicated and obscure when the necessity for explaining the permanence of real things comes forward. The divine archetypes, according to which sensible experience is regulated and in which it finds its real objectivity, are different in kind from mere sense ideas, and the question then arises whether in these we have not again the “things as they are,” which Berkeley at first so contemptuously dismissed. He leaves it undetermined whether or not our knowledge of sense things, which is never entirely presentative, involves some reference to this objective course of nature or thought of the divine mind. And if so, what is the nature of the notions necessarily implied in the simplest knowledge of a *thing*, as distinct from mere sense feeling? That in knowing objects certain thoughts are implied which are not presentations or their copies is at times dimly seen by Berkeley himself; but he was content to propound a question with regard to those notions, and to look upon them as merely Locke's ideas of relation. Such ideas of relation are in truth the stumbling-block in Locke's philosophy, and Berkeley's empiricism is equally far from accounting for them.

With all these defects, however, Berkeley's new conception marks a distinct stage of progress in human thought. His true place in the history of speculation may be seen from the simple observation that the difficulties or obscurities in his scheme are really the points on which later philosophy has turned. He once for all lifted the problem of metaphysics to a higher level, and, in conjunction with his successor, Hume, determined the form into which later metaphysical questions have been thrown.

Bibliography.—The standard edition of Berkeley's works is that of A. Campbell Eraser in 4 vols. (i.-iii. *Works*; iv. *Life*, *Letters and Dissertation*) published by the Clarendon Press (1871); this edition, revised throughout and largely re-written, was re-published by the same author (1901). Another complete edition edited by G. Sampson, with a biographical sketch by A.J. Balfour, and a useful bibliographical summary, appeared in 1897-1898. Prof. Fraser also published an excellent volume of selections (5th ed., 1899), and a short general account in a volume on Berkeley in the *Blackwood Philos. Class.* For Berkeley's theory of vision see manuals of psychology (*e.g.* G.F. Stout, Wm. James); for his ethical views H. Sidgwick, *Hist, of Ethics* (5th ed., 1902); A. Bain, *Mental and Moral Science* (1872). See also Sir L. Stephen, *English Thought in the 18th Century* (3rd ed., 1902); J.S. Mill's *Dissertations*, vols. ii. and iv.; T. Huxley, *Critiques and Addresses*, pp. 320 seq.; G.S. Fullerton, *System of Metaphysics* (New York, 1904); John Watson, *Outline of Philos.* (New York, 1898); J. McCosh, *Locke's Theory of Knowledge* (1884); T. Lorenz, *Ein Beitrag zur Lebensgeschichte G. Berkeleys* (1900) and *Weitere Beiträge z. Leb. G.B.'s* (1901); histories of modern philosophy generally.

(R. Ad.; J. M. M.)

BERKELEY, MILES JOSEPH (1803-1889), English botanist, was born on the 1st of April 1803, at Biggin Hall, Northamptonshire, and educated at Rugby and Christ's College, Cambridge, of which he became an honorary fellow. Taking holy orders, he became incumbent of Apethorpe in 1837, and vicar of Sibbertoft, near Market Harborough, in 1868. He acquired an enthusiastic love of cryptogamic botany in his early years, and soon was recognized as the leading British authority on fungi and plant pathology. He was especially famous as a systematist in mycology, some 6000 species of fungi being credited to him, but his *Introduction to Cryptogamic Botany*, published in 1857, and his papers on "Vegetable Pathology" in the *Gardener's Chronicle* in 1854 and onwards, show that he had a very broad grasp of the whole domain of physiology and morphology as understood in those days. Moreover, it should be pointed out that Berkeley began his work as a field naturalist and collector, his earliest objects of study having been the mollusca and other branches of zoology, as testified by his papers in the *Zoological Journal* and the *Magazine of Natural History*, between 1828 and 1836. As a microscopist he was an assiduous and accurate worker, as is shown by his numerous drawings of the smaller algae and fungi, and his admirable dissections of mosses and hepaticae. His investigations on the potato murrain, caused by *Phytophthora infestans*, on the grape mildew, to which he gave the name *Oidium Tuckeri*, and on the pathogenic fungi of wheat rust, hop mildew, and various diseases of cabbage, pears, coffee, onions, tomatoes, &c., were important in results bearing on the life-history of these pests, at a time when very little was known of such matters, and must always be considered in any historical account of the remarkable advances in the biology of these organisms which were made between 1850 and 1880; and when it is remembered that this work was done without any of the modern appliances or training of a properly equipped laboratory, the real significance of Berkeley's pioneer work becomes apparent. It is as the founder of British mycology, however, that his name will live in the history of botany, and his most important work is contained in the account of native British fungi in Sir W. Hooker's *British Flora* (1836), in his *Introduction to Cryptogamic Botany* (1857), and in his *Outlines of British Fungology* (1860). His magnificent herbarium at Kew, which contains over 9000 specimens, and is enriched by numerous notes and sketches, forms one of the most important type series in the world. Berkeley died at Sibbertoft on the 30th of July 1889. He was a man of refined and courteous bearing, an accomplished classical student, with the simple and modest habits that befit a man of true learning.

A list of his publications will be found in the *Catalogue of Scientific Papers* of the Royal Society, and sketches of his life in *Proc. Roy. Soc.*, 1890, 47, 9, by Sir Joseph Hooker, and *Annals of Botany*, 1897, 11, by Sir W.T. Thiselton-Dyer.

(H. M. W.)

BERKELEY, SIR WILLIAM (*c.* 1608-1677), British colonial governor in America, was born in or near London, England, about 1608, the youngest son of Sir Maurice Berkeley, an original member of the London Company of 1606, and brother of John, first Lord Berkeley of Stratton, one of the proprietors of the Carolinas. He graduated at Oxford in 1629, and in 1632 was appointed one of the royal commissioners for Canada, in which office he won the personal favour of Charles I., who appointed him a gentleman of the privy chamber. During this period he tried his hand at literary work, producing among other things a tragi-comedy entitled *The Lost Lady* (1638). In August 1641 he was appointed governor of Virginia, but did not take up his duties until the following year. His first term as governor, during which he seems to have been extremely popular with the majority of the colonists, was notable principally for his religious intolerance and his expulsion of the Puritans, who were in a great minority. During the Civil War in England he remained loyal to the king, and offered an asylum in Virginia to Charles II. and the loyalists. On the arrival of a parliamentary fleet in 1652, however, he retired from office and spent the following years quietly on his plantation. On the death, in 1660, of Samuel Matthews, the last parliamentary governor, he was chosen governor by the Virginia assembly, and was soon recommissioned by Charles II. His natural arrogance and tyranny seems to have increased with years, and the second period of his governorship was a stormy one. Serious frontier warfare with the Indians was followed (1676) by Bacon's Rebellion (see Virginia), brought on by Berkeley's misrule, and during its course all his worst traits became evident. His cruelty and barbarity in punishing the rebels did not meet with the approval of Charles II., who is said to have remarked that "the old fool has put to death more people in that naked country than I did here for the murder of my father." Berkeley was called to England in 1677 ostensibly to report on the condition of affairs in the colony, and a lieutenant-governor (Herbert Jeffreys) was put in his place. Berkeley sailed in May, but died soon after his arrival, at Twickenham, and was buried there on the 13th of July 1677. In addition to the play mentioned he wrote *A Discourse and View of Virginia* (London, 1663).

BERKELEY, a city of Alameda county, California, U.S.A., on the E. shore of San Francisco Bay, named after Bishop Berkeley on account of his line "Westward the course of empire takes its way." Pop. (1890) 5101; (1900) 13,214, of whom 3216 were foreign-born; (1910) 40,434. It is served by the Southern Pacific and the Santa Fé railway systems, both transcontinental; and is connected by electric lines (and ferry) with San Francisco, and by five electric lines with Oakland. Its attractive situation and pleasant outlooks have made it a favourite residential suburb of San Francisco, which lies at a distance of 7 m. across the bay. Berkeley is the seat of the California state university (see California, University of), opened in 1873; the inter-related Berkeley Bible Seminary (1896, Disciples of Christ); Pacific Theological Seminary (established in 1866 at Oakland, in 1901 at Berkeley, Congregational); Seminary of the Pacific Coast Baptist Theological Union, and Unitarian Theological School—all associated with the University of California; and the state institution for the deaf, dumb and blind. The site of Berkeley was a farming region until its selection for the home of the university. Berkeley was incorporated as a town in 1878.

BERKELEY, a market town of Gloucestershire, England, near the river Severn, in that portion of its valley known as the Vale of Berkeley, on a branch from the Midland railway. Pop. (1901) 774. It is pleasantly situated on a gentle eminence, in a rich pastoral vale to which it gives name, celebrated for its dairies, producing the famous cheese known as "double Gloucester." The town has a handsome church (Early English and Decorated), a grammar school, and some trade in coal, timber, malt and cheese. Berkeley was the birthplace of Dr Edward Jenner (1749), who is buried in the church. Berkeley Castle, on an eminence south-east of the town, is one of the noblest baronial castles existing in England, and one of the few inhabited. The Berkeley Ship Canal connects Gloucester with docks at Sharpness, avoiding the difficult navigation of the upper part of the Severn estuary.

The manor of Berkeley gives its name to the noble family of Berkeley (*q.v.*). According to tradition, a nunnery to which the manor belonged existed here before the Conquest, and Earl Godwin, by bringing about its dissolution, obtained the manor. All that is certainly known, however, is that in Domesday the manor is assigned to one Roger, who took his surname from it.

His descendants seem to have been ousted from their possessions during the 12th century by Robert fitz Harding, an Angevin partisan, who already held the castle when, in 1153, Henry, duke of Normandy (who became King Henry II. in the following year), granted him the manor. Under an agreement made in the same year, Maurice, son of Robert fitz Harding, married a daughter of Roger of Berkeley. Their descendants styled themselves of Berkeley, and in 1200 the town was confirmed to Robert of Berkeley with toll, soc, sac, &c., and a market on whatever day of the week he chose to hold it. This charter was confirmed to Thomas, Lord Berkeley, in 1330, and in 1395-1396 Lord Berkeley received a grant of another fair on the vigil and day of Holyrood. The descendants of the Berkeley family still hold the manor and town. Berkeley Castle was the scene of the death of Edward II. The king was at first entrusted to the care of Lord Berkeley, who, being considered too lenient, was obliged to give up his prisoner and castle to Sir John Mautravers and Thomas Gournay. The town has no charter, but is mentioned as a borough in 1284-1285. It was governed by a mayor and twelve aldermen, but by 1864 their privileges had become merely nominal, and the corporation was dissolved in 1885 under the Municipal Corporations Act. Berkeley was formerly noted for the manufacture of clothing, but the trade had decreased by the 16th century, for Leland, writing about 1520, says "the town of Berkeley is no great thing.... It hath very much occupied and yet somewhat doth clothing."

See John Fisher, *History of Berkeley* (1864).

BERKHAMPSTEAD (Great Berkhampstead), a market town in the Watford parliamentary division of Hertfordshire, England, 28 m. N.W. from London by the London & North-Western railway. Pop. of urban district (1901) 5140. It lies pleasantly in the narrow well-wooded valley of the Bulbourne, and is close to the Grand Junction canal. The church of St Peter, a large cruciform structure, exhibits all the Gothic styles, and earlier fragments are traceable. There are several brasses of interest. The poet William Cowper was born in the rectory in 1731. The large grammar school is a foundation of 1541. Straw-plaiting and the manufacture of small wooden wares are the principal industries, and there are large chemical works. Of the castle earthworks and fragments of walls remain. The name of the town is Great Berkhampstead (or Berkhamsted), in distinction from Little Berkhampstead near Hatfield in this county.

Berkhampstead (Beorhhamstede, Berchehamstede) was undoubtedly of some importance in Saxon times since there were fifty-two burgesses there at the time of the Conquest. In 1156 Henry II. granted the men and merchants of the town the same laws and customs as they had in the time of Edward the Confessor, and that they should be quit of toll throughout England, Normandy, Aquitaine and Anjou. Berkhampstead rose to importance with its castle, which is said to have been built by Robert, count of Mortain, and when the castle fell into ruin after 1496 the town also began to decay. In 1618, however, the burgesses received an incorporation charter; but after the civil wars the corporate body began to fail through poverty, and in the 18th century had ceased to exist. The burgesses returned two members to parliament in 1320 and again in 1338 and 1341, but were never represented again. Before the 13th century the burgesses held a weekly market on Sunday and a yearly fair on St James's day, but in 1218 Henry III. altered the market day to Monday. Roofing tiles were manufactured in Berkhampstead as early as the 13th century, and in Elizabeth's reign the making of malt was the chief industry.

BERKSHIRE, THOMAS HOWARD, 1st Earl of (1587-1669), 2nd son of Thomas Howard, 1st earl of Suffolk and of Catherine, daughter of Sir Henry Knevet, Kt., widow of Richard Rich, was baptized on the 8th of October 1587. He succeeded to his mother's estate of Charlton in Wiltshire, was created K.B. in 1605, became master of the horse to Prince Charles, and was created Lord Howard of Charlton and Viscount Andover in 1622, K.G. in 1625, and earl of Berkshire in 1626. In 1634 he was chosen high steward of the university of Oxford. He was a commissioner for negotiating the treaty of Ripon in 1640, and accompanied the king to York in 1642. While attempting to execute the king's commission of array in Oxfordshire in August he was taken prisoner by Hampden at Watlington and imprisoned in the Tower, but after being censured by the Lords was liberated in September. In 1643 he was made governor of the prince of Wales, a post for which he was in no way fitted, and in which he showed himself factious and obstructive. He accompanied the prince to Scilly and to Jersey, but on the latter's departure for France went to Holland. At the Restoration he was made a privy councillor and received

rewards. He died on the 16th of July 1669, and was buried in Westminster Abbey. According to Clarendon "his affection for the crown was good; his interest and reputation less than anything but his understanding." He married Elizabeth, daughter and co-heir of William, earl of Exeter, by whom he had nine sons and four daughters. Of these Charles succeeded him as 2nd earl of Berkshire; Thomas succeeded the latter; and Philip was ancestor of John, 15th earl of Suffolk and 8th earl of Berkshire, and so of the later earls of Suffolk and Berkshire.

BERKSHIRE [abbreviated *Berks*, pronounced *Barkshire*], a southern county of England, bounded N. by Oxfordshire and Buckinghamshire, E. by Surrey, S. by Hampshire, W. by Wiltshire, and N.W. for a short distance by Gloucestershire. Its area is 721.9 sq. m. Its entire northern boundary is formed by the river Thames, in the basin of which practically the whole county is included. In the north-west a narrow and broken line of hills, pierced in the west by the Cole stream, which here forms the county boundary, extends past Faringdon and culminates in a height over 500 ft. at Cumnor Hurst, which, with Wytham Hill, fills a deep northward bend of the Thames, and overlooks the city of Oxford from the west. The range separates the Thames valley from the Vale of White Horse which is traversed by the small river Ock, and bounded on the south by a line of hills known as the White Horse Hills or Berkshire Downs, richly wooded along their base, and rising sharply to bare rounded summits. In White Horse Hill on the western confines of the county a height of 856 ft. is reached. The line of these hills is continued north-eastward by the Chiltern Hills in Oxfordshire, but a division between the two is made by the Thames in a narrow valley or gap at Goring. Southward the Downs are scored with deep narrow valleys, the chief of which are those of the Lambourn and the Pang. The last stream runs eastward directly to the Thames; but the Lambourn and others join the Kennet, which drains a beautiful sylvan valley to the Thames at Reading. Another line of downs closely confines the vale of Kennet on the south from Newbury upwards, and although the greater part of these does not fall within the county, their highest point, Inkpen Beacon (1011 ft.), does so. The Enborne stream, rising here, and flowing parallel to the Kennet until turning north to join it, is for a considerable distance the county boundary. Between Reading and Windsor the Thames makes a northward bend, past Henley and Marlow, in the form of three sides of a square. Within the bend slight hills border the river, but south of these, and in the Loddon valley south of Reading, the county is low and flat. In the south-east of the county, however, there is a high sandy plateau, forming part of Bagshot Heath, over 400 ft. in elevation, and extending into Surrey. Fir-woods are characteristic of this district, and northward towards the Thames extends the royal park of Windsor, which is magnificently timbered. The proportion to the total area of the county which is under woods is, however, by no means so great as in the adjacent counties of Surrey and Hampshire. There is fine trout-fishing in the Kennet and some of its feeders.

Geology.—The dominant feature of the county, the Chiltern and White Horse Hills, owes its form to the Chalk, which spreads from Ashbury and Hungerford on the west to Henley and Maidenhead on the east. In the northern face of the escarpment we find the Lower Chalk with a hard bed, the Totternhoe Stone; on the southern slope lies the Chalk-with-Flints. At Kintbury it is quarried for the manufacture of whiting. At the foot of the Chalk escarpment is the Upper Greensand with a narrow crop towards the west which is broken up into patches eastwards. Looking northward from the Chalk hills, the low-lying ground is occupied successively by the Gault Clay, the Kimmeridge Clay, and finally by the Oxford Clay, which extends beyond the Thames into Oxfordshire. This low-lying tract is relieved by an elevated ridge of Corallian beds, between the Kimmeridge Clay and the Gault. It extends from near Faringdon past Abingdon to Cumnor and Wytham Hill. At Faringdon there are some interesting gravels of Lower Greensand age, full of the fossil remains of sponges. South of the Chalk, the county is occupied by Eocene rocks, mottled clays, well exposed in the brickfields about Reading, and hence called the Reading beds. At Finchampstead, Sunninghill and Ascot, these deposits are overlaid by the more sandy beds of the Bagshot series. Between the two last named formations is a broad outcrop of London Clay. Numerous outliers of Eocene rest on the Chalk beyond the main line of boundary. The Chalk of Inkpen Beacon is brought up to the south side of the Tertiary rocks by a synclinal fold; similarly, an anticline has brought up the small patch of Chalk in Windsor Park. Clay-with-Flints lies in patches and holes on the chalk, and flint gravels occur high up on either side of the Thames. Fairly thick beds of peat are found in the alluvium of the Kennet at Newbury.

Industries.—About seven-ninths of the total area is under cultivation; a large proportion of this being in permanent pasture, as much attention is paid to dairy-farming. Butter and cheese are largely produced, and the making of condensed milk is a branch of the industry. Many sheep are pastured on the Downs, important sheep-markets being held at the small town of East or Market Ilsley; and an excellent breed of pigs is named after the county. The parts about Faringdon are

specially noted for them. Oats are the principal grain crop; although a considerable acreage is under wheat. Turnips and swedes are largely cultivated, and apples and cherries are grown. Besides the royal castle of Windsor, fine county seats are especially numerous.

The only manufacturing centre of first importance is Reading, which is principally famous for its biscuit factories. The manufacture of clothing and carpets is carried on at Abingdon; but a woollen industry introduced into the county as early as the Tudor period is long extinct. Engineering works and paper mills are established at various places; and boat-building is carried on at Reading and other riverside stations. There are extensive seed warehouses and testing grounds near Reading; and the Kennet and Windsor ales are in high repute. Whiting is manufactured from chalk at Kintbury on the Kennet.

Communications.—Communications are provided principally by the Great Western railway, the main line of which crosses the county from east to west by Maidenhead, Reading and Didcot. A branch line serves the Kennet valley from Reading; and the northern line of the company leaves the main line at Didcot, a branch from it serving Abingdon. The Basingstoke branch runs south from Reading, and lines serve Wallingford from Cholsey, and Faringdon from Uffington. Communication with the south of England is maintained by a joint line of the South Western and South Eastern & Chatham companies terminating at Reading, and there are branches of the Great Western and South Western systems to Windsor. The Lambourn valley light railway runs north-west to Lambourn from Newbury. Wide water-communications are afforded by the Thames, and the Kennet is in part canalized, to form the eastern portion of the Kennet and Avon canal system, connecting with the Bristol Avon above Bath.

Population and Administration.—The area of the ancient county is 462,208 acres; with a population in 1891 of 239,138, and in 1901 of 256,509. The area of the administrative county is 462,367 acres. The county contains twenty hundreds. The municipal boroughs are Abingdon (pop. 6480), Maidenhead (12,980), Newbury (11,061), Reading, the county town and a county borough (72,217), Wallingford (2808), Windsor or New Windsor (14,130), Wokingham (3551). Wantage (3766) is an urban district. Among lesser towns may be mentioned Faringdon in the north-west (2900), Hungerford on the Kennet (2906), and Lambourn in the valley of that name (2071), the villages of Bray (2978), Cookham (3874) and Tilehurst (2545), which, like others on the banks of the Thames, have grown into residential towns; and Sandhurst (2386). The county is in the Oxford circuit, and assizes are held at Reading. It has one court of quarter sessions, and is divided into twelve petty sessional divisions. The boroughs of Abingdon, Newbury, Maidenhead, Reading, Wallingford and Windsor have separate commissions of the peace, and Abingdon, Newbury, Reading and Windsor have separate courts of quarter sessions. There are 198 civil parishes. Berkshire forms an archdeaconry in the diocese of Oxford; a small portion, however, falls within the diocese of Salisbury. There are 202 ecclesiastical parishes or districts, wholly or in part within the county. There are three parliamentary divisions, Northern or Abingdon, Southern or Newbury, and Eastern or Wokingham, each returning one member; while the parliamentary borough of Reading returns one member, and parts of the borough of Oxford and Windsor are included in the county. There are several important educational establishments in the county. Radley College near Abingdon, Wellington College near Sandhurst, and Bradfield College, at the village of that name, 8 m. west of Reading, are among the more important modern public schools for boys. Bradfield College was founded in 1850, and is well known for the realistic performances of classical Greek plays presented by the scholars in an open theatre designed for the purpose. Abingdon and Reading schools rank among the lesser public schools. At Reading is a university extension college, and in the south-east of the county is the Sandhurst Royal Military College.

History.—During the Heptarchy Berkshire formed part of the kingdom of Wessex, and interesting relics of Saxon occupation have been discovered in various parts of the county. Of these the most remarkable are the burial grounds at Long Wittenham and Frilford, and there is evidence that the Lambourn valley was occupied in early Saxon times. The cinerary urns found in Berkshire undoubtedly contain the ashes of the Anglians who came south under Penda in the 7th century. The fortification called Cherbury Castle, not far from Denchworth, is said to have been first made up by Canute.

At the time of the Norman invasion Berkshire formed part of the earldom of Harold, and supported him stanchly at the battle of Hastings. This loyalty was punished by very sweeping confiscations, and at the time of the Domesday survey no estates of any importance were in the hands of Englishmen. When Alfred divided the country into shires, this county received the name of Berrocscir, as Asser says, “from the wood of Berroc, where the box-tree grows most plentifully.”[1] At the time of the survey it comprised twenty-two hundreds; at the present day there are only twenty, of which eleven retain their ancient names. Many parishes have been transferred from one hundred to another, but the actual boundary of the county is practically unchanged. Part of the parishes of Shilton and Langford formed detached portions of the shire, until included in Oxfordshire in the reign of William IV. Portions of Combe and Shalbourne

parishes have also been restored to Hampshire and Wiltshire respectively, while the Wiltshire portion of Hungerford has been transferred to Berkshire. The county was originally included in the see of Winchester, but in A.D. 909 it was removed to the newly-formed see of "Wiltshire," afterwards united with Sherborne. In 1075 the seat of the bishopric was removed to Salisbury, and in 1836 by an order in council Berkshire was transferred to the diocese of Oxford. The archdeaconry is of very early origin and is co-extensive with the county. Formerly it comprised four rural deaneries, but the number has lately been increased to nine. Much of the early history of the county is recorded in the *Chronicles* of the abbey of Abingdon, which at the time of the survey was second only to the crown in the extent and number of its possessions. The abbot also exercised considerable judicial and administrative powers, and his court was endowed with the privileges of the hundred court and was freed from liability to interference by the sheriff. Berkshire and Oxfordshire had a common sheriff until the reign of Elizabeth, and the shire court was held at Grauntpont. The assizes were formerly held at Reading, Abingdon and Newbury, but are now held entirely at Reading.

At the time of the Domesday survey the chief lay-proprietor was Henry de Ferrers, ancestor of the earls of Derby, but it is remarkable that none of the great Berkshire estates has remained with the same family long. Thomas Fuller quaintly observes that "the lands of Berkshire are very skittish and apt to cast their owners." The De la Poles succeeded to large estates by a marriage with the heiress of Thomas Chaucer, son of the poet, but the family became extinct in the male line, and the estates were alienated. The same fate befell the estates of the Achards, the Fitzwarrens and later the families of Norris and Befils.

The natural advantages of this county have always encouraged agricultural rather than commercial pursuits. The soil is especially adapted for sheep-farming, and numerous documents testify to the importance and prosperity of the wool-trade in the 12th century. At first this trade was confined to the export of the raw material, but the reign of Edward III. saw the introduction of the clothing industry, for which the county afterwards became famous. This trade began to decline in the 17th century, and in 1641 the Berkshire clothiers complained of the deadness of their trade and the difficulty of getting ready money, attributing the same to delay in the execution of justice. The malting industry and the timber trade also flourished in the county until the 19th century. Agriculturally considered, the Vale of the White Horse is especially productive, and Camden speaks of the great crops of barley grown in the district.

Owing to its proximity to London, Berkshire has from early times been the scene of frequent military operations. The earliest recorded historical fact relating to the county is the occupation of the district between Wallingford and Ashbury by Offa in 758. In the 9th and 10th centuries the county was greatly impoverished by the ravages of the Danes, and in 871 the invaders were defeated by Æthelwulf at Englefield and again at Reading. During the disorders of Stephen's reign Wallingford was garrisoned for Matilda and was the scene of the final treaty in 1153. Meetings took place between John and his barons in 1213 at Wallingford and at Reading, and in 1216 Windsor was besieged by the barons. At the opening of the civil war of the 17th century, the sheriff, on behalf of the inhabitants of Berkshire, petitioned that the county might be put in a posture of defence, and here the royalists had some of their strongest garrisons. Reading endured a ten days' siege by the parliamentary forces in 1643, and Wallingford did not surrender until 1646. Newbury was the site of two battles in 1643 and 1644.

In 1295, Berkshire returned two members to parliament for the county and two for the borough of Reading. Later the boroughs of Newbury, Wallingford, Windsor and Abingdon secured representation, and from 1557 until the Reform Act of 1832 the county was represented by a total of ten members. By this act Abingdon and Wallingford were each deprived of a member, but the county returned three members instead of two. Since the Redistribution of Seats Act 1885 the county has returned three members for three divisions, and Windsor and Reading return one member each, the remaining boroughs having lost representation.

Antiquities.—The remains of two great Benedictine monasteries at Abingdon and Reading are scanty. The ecclesiastical architecture of the county is not remarkable, excepting a few individual churches. Thus for Norman work the churches of Shellingford and Cholsey may be noted, together with the very small chapel, of early date, at Upton near Didcot. The church of Blewbury in the same locality is in the main transitional Norman, and retains some of its original vaulting. Of Early English churches there are several good examples, notably at Uffington, with its unusual angular-headed windows, Buckland near Faringdon, and Wantage. The tower of St Helen's, Abingdon, well illustrates this period. The cruciform church of Shottesbrooke, with its central spire, is a beautiful and almost unaltered Decorated building; and St George's chapel in Windsor Castle is a superb specimen of Perpendicular work. Apart from Windsor, Berkshire retains no remarkable medieval castles or mansions.

AUTHORITIES.—Chief of the older works are: Elias Ashmole. *Antiquities of Berkshire* (3 vols., 1719, 2nd ed., London, 1723; 3rd ed., Reading, 1736); D. and S. Lysons, *Magna Britannia*, vol. i. Other works are: Marshall, *Topographical and Statistical Details of the County of Berkshire*

(London, 1830); Earl of Carnarvon, *Archaeology of Berkshire* (London, 1859); C. King, *History of Berkshire* (London, 1887); Lowsley, *Glossary of Berkshire Words* (London, 1888), and *Index to Wills in the Court of the Archdeacon of Berkshire, 1508-1652* (Oxford, 1893); *Victoria County History, Berkshire*. See also *The Berks Archaeological Society's Quarterly Journal*, and *Berkshire Notes and Queries*.

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1 The derivation from Bibroci, a British tribe in the time of Caesar, which probably inhabited Surrey or Middlesex, seems philologically impossible.

BÊRLAD, the capital of the department of Tutova, Rumania, on the river Bêrlad, which waters the high plains of Eastern Moldavia. Pop. (1900) 24,484, about one-fourth of whom are Jews. At Bêrlad the railway from Jassy diverges, one branch skirting the river Sereth, the other skirting the Pruth; both reunite at Galatz. Among a maze of narrow and winding streets Bêrlad possesses a few good modern buildings, including a fine hospital, administered by the St Spiridion Foundation of Jassy. Bêrlad has manufactures of soap and candles, and some trade in timber and farm-produce, while the annual horse-fairs are visited by dealers from all parts of the country. In the vicinity are traces of a Roman camp.

BERLICHINGEN, GOETZ or Gottfried **VON** (1480-1562), German knight, was born at the castle of Jagsthausen now in Württemberg. In 1497 he entered the service of Frederick IV., margrave of Brandenburg-Ansbach, and in 1498 fought for the emperor Maximilian I. in Burgundy, Lorraine and Brabant, and next year in Switzerland. About 1500 he raised a company of freelances, and at their head took part in various private wars. In 1505, whilst assisting Albert IV., duke of Bavaria, at the siege of Landshut, his right hand was shot away, and an iron one was substituted which is still shown at Jagsthausen. In spite of this "Goetz with the iron hand" continued his feuds, their motive being mainly booty and ransom. In 1512 an attack near Forchheim on some merchants returning from the great fair at Leipzig, caused him to be put under the ban of the empire by Maximilian, and he was only released from this in 1514 upon a promise to pay 14,000 gulden. In 1516 he made a raid into Hesse and captured Philip IV., count of Waldeck, whom he compelled to pay a ransom of 8400 gold gulden, and in 1518 was again placed under the ban. He fought for Ulrich I., duke of Württemberg, when he was attacked by the Swabian League in 1519, and after a spirited resistance was compelled, through want of ammunition and provisions, to surrender the town of Möckmuhl. In violation of the terms of the capitulation he was held prisoner, and handed over to the citizens of Heilbronn, but owing to the efforts of Sickingen and Georg von Frundsberg was released in 1522, upon paying 2000 gulden, and swearing not to take vengeance on the League. When the Peasants' War broke out in 1525 Goetz was compelled by the rebels of the Odenwald district to act as their leader. He accepted the position, according to his own account, partly because he had no choice, partly in the hope of curbing the excesses of the insurgents; but, finding himself in this respect powerless, after a month of nominal leadership, he took the first opportunity of escaping to his castle. For his part in the rebellion he was called to account before the diet of Speier, and on the 17th of October 1526 was acquitted by the imperial chamber. In spite of this the Swabian League seized the opportunity of paying off old scores against him. Lured to Augsburg, under promise of safe conduct, to clear himself of the charges made against him on behalf of the League, he was there treacherously seized on the 28th of November 1528, and kept a close prisoner for two years. In 1530 he was liberated on repeating his oath of 1522, and undertaking not to leave the neighbourhood of his castle of Hornberg on the Neckar. He appears to have remained there quietly until 1540 when the emperor Charles V. released him from his oath. In 1542 he fought against the Turks in Hungary, and in 1544 accompanied Charles when he invaded France. He returned to Hornberg, where he passed his time until his death on the 23rd of July 1562. He was twice married and left three daughters and seven sons. The counts von Berlichingen-Rossach, of Helmstadt near Heidelberg, one of the two surviving branches of the family, are his descendants. The other branch, that of the Freiherrn von Berlichingen-Jagsthausen, is descended from Goetz's brother Hans. "Goetz von Berlichingen" is the title of Goethe's play, which, published in 1773, marked an epoch in the history of German drama (see Goethe).

See R. Pallmann, *Der historische Goetz von Berlichingen* (Berlin, 1894); F.W.G. Graf von Berlichingen-Rossach, *Geschichte des Ritters Goetz von Berlichingen und seiner Familie*

(Leipzig, 1861). Goetz's *Autobiography*, valuable as a record of his times, was first published by Pistorius at Nuremberg (1731), and again at Halle (1886).

BERLIN, ISAIAH (1725-1799), an eminent rabbi of Breslau; he was the author of acute notes on the Talmud which had their influence in advancing the critical study of that work.

BERLIN, the largest city of the German empire, the capital of the kingdom of Prussia. It is the principal residence of the German emperor and king of Prussia, the seat of the imperial parliament (*Reichstag*) and the Prussian diet (*Landtag*) and of the state offices of the empire, except of the supreme court of justice (*Reichsgericht*), which is fixed at Leipzig. It lies in a flat, sandy plain, 110 ft. above sea-level, on both banks of the navigable Spree, which intersects it from S.E. to N.W. The highest elevation in the immediate neighbourhood is the Kreuzberg (200 ft.), a hill in the southern suburb of Schöneberg, which commands a fine view of the city. The situation of Berlin, midway between the Elbe and the Oder, with which rivers it is connected by a web of waterways, at the crossing of the main roads from Silesia and Poland to the North Sea ports and from Saxony, Bohemia and Thuringia to the Baltic, made it in medieval days a place of considerable commercial importance. In modern times the great network of railways, of which it is the centre and which mainly follow the lines of the old roads, further established its position. Almost equidistant from the remotest frontiers of Prussia, from north to south, and from east to west, 180 m. from Hamburg and 84 from Stettin, its situation, so far from being prejudicial to its growth and prosperity, as was formerly often asserted, has been, in fact, the principal determining factor in its rapid rise to the position of the greatest industrial and commercial city on the continent of Europe. In point of wealth and population it ranks immediately after London and Paris.

The boundaries of the city have not been essentially extended since 1860, and though large and important suburbs have crept up and practically merged with it, its administrative area remains unchanged. It occupies about 29 sq. m., and has a length from E. to W. of 6 and a breadth from N. to S. of 5½ m., contains nearly 1000 streets, has 87 squares and open spaces, 73 bridges and a population (1905) of 2,033,900 (including a garrison of about 22,000). If, however, the outer police district, known as "Greater Berlin," embracing an area of about 10 m. radius from the centre, be included, the population amounts to about 3¼ millions.

Berlin is essentially a modern city, the quaint two-storied houses, which formerly characterized it, having given place to palatial business blocks, which somewhat dwarf the streets and squares, which once had an air of stately spaciousness. The bustle of the modern commercial city has superseded the austere dignity of the old Prussian capital. Thus the stranger entering it for the first time will find little to remind him of its past history. The oldest part of Berlin, the city and Alt-Kölln, built along the arms of the Spree, is, together with that portion of the town lying immediately west, the centre of business activity. The west end and the south-west are the residential quarters, the north-west is largely occupied by academic, scientific and military institutions, the north is the seat of machinery works, the north-east of the woollen manufactures, the east and south-east of the dyeing, furniture and metal industries, while in the south are great barracks and railway works.

In 1870 Berlin was practically bounded on the south by the Landwehr Canal, but it has since extended far beyond, and the Tempelhofer Feld, where military reviews are held, then practically in the country, is now surrounded by a dense belt of houses. The Landwehr Canal, leaving the Spree near the Schlesische Tor (gate), and rejoining it at Charlottenburg, after a course of 6 m., adds not a little to the charm of the southern and western districts, being flanked by fine boulevards and crossed by many handsome bridges. The object of this canal was to relieve the congestion of the water traffic in the heart of Berlin. It was superseded, however, in its turn by a new broad and deep canal opened in 1906, lying from 3 to 4 m. farther south. This, the Teltow Canal, leaves the Spree above Berlin at Köpenick, and running south of Rixdorf, Südende and Gross-Lichterfelde, enters the Havel at Teltow. This important engineering work was planned not only to afford a more convenient waterway between the upper Spree and the Havel (and thus to the Elbe), but was to remove from the city to its banks and vicinity those factories of which the noxious gases and other poisonous emanations were regarded as

dangerous to the health of the community. A dislocation of the manufacturing factors has therefore been in progress, which with the creation of a “trans Tiberim” (as in ancient Rome) is, in many respects, altering the character and aspect of the metropolis.

The effect upon Berlin of the successful issue of the Franco-Prussian War of 1870-71 was electrical. The old Prussian capital girded itself at once to fulfil its new rôle. The concentration upon the city of a large garrison flushed with victory, and eager to emulate the vanquished foe in works of peace, and vie with them in luxury, was an incentive to Berliners to put forth all their energy. Besides the military, a tremendous immigration of civilian officials took place as the result of the new conditions, and, as accommodation was not readily available, rents rose to an enormous figure. Doubts were often expressed whether the capital would be able to bear the burden of empire, so enormous was the influx of new citizens. It is due to the magnificent services of the municipal council that the city was enabled to assimilate the hosts of newcomers, and it is to its indefatigable exertions that Berlin has in point of organization become the model city of Europe. In no other has public money been expended with such enlightened discretion, and in no other has the municipal system kept pace with such rapid growth and displayed greater resource in emergencies. In 1870 the sanitary conditions of Berlin were the worst of any city of Europe. It needed a Virchow to open the eyes of the municipality to the terrible waste of life such a state of things entailed. But open sewers, public pumps, cobble-paved roads, open market-places and overcrowded subterranean dwellings are now abolished. The city is excellently drained, well-paved, well-lighted and furnished with an abundant supply of filtered water, while the cellar dwellings have given place to light and airy tenements, and Berlin justly claims to rank among the cleanest and healthiest capitals in Europe. The year 1878 marks a fresh starting-point in the development of the city. In that year Berlin was the meeting-place of the congress which bears its name. The recognition of Germany as a leading factor in the world’s counsels had been given, and the people of Berlin could indulge in the task of embellishing the capital in a manner befitting its position. From this time forward, state, municipal and private enterprise have worked hand in hand to make the capital cosmopolitan. The position it has at length attained is due not alone to the enterprise of its citizens and the municipality. The brilliancy of the court and the triumph of the sense of unity in the German nation over the particularism of the smaller German states have conduced more than all else to bring about this result. It has become the chief pleasure town of Germany; and though the standard of morality, owing to the enormous influx of people bent on amusement, has become lower, yet there is so much healthy, strenuous activity in intellectual life and commercial rivalry as to entitle it, despite many moral deficiencies, to be regarded as the centre of life and learning in Germany. Dr A. Shadwell (*Industrial Efficiency*, London, 1906) describes it as representing “the most complete application of science, order and method of public life,” adding “it is a marvel of civic administration, the most modern and most perfectly organized city that there is.”

Streets.—The social and official life of the capital centres round Unter den Linden, which runs from the royal palace to the Brandenburger Tor. This street, one of the finest and most spacious in Europe, nearly a mile in length, its double avenue divided by a favourite promenade, planted with lime trees, presents Berlin life in all its varying aspects. Many historical events have taken place in this famous boulevard, notably the entry of the troops in 1871, and the funeral pageant of the emperor Willaim I. South of Unter den Linden lies the Friedrichstadt, with its parallel lines of straight streets, including the Behren-strasse—(the seat of finance)—the Wilhelm-strasse, with the palace of the imperial chancellor, the British embassy, and many government offices—the official quarter of the capital—and the busy Leipziger-strasse, running from the Potsdamer-platz to the Dönhoff-platz. This great artery and Unter den Linden are crossed at right angles by the Friedrich-strasse, 2 m. long, flanked by attractive shops and restaurants, among them the beer palaces of the great breweries. In the city proper, the König-strasse and the Kaiser-Wilhelm-strasse, the latter a continuation of Unter den Linden, are the chief streets; while in the fashionable south-west quarter Viktoria-strasse, Bellevue-strasse, Potsdamer-strasse and Kurfürsten-strasse and the Kurfürstendamm are the most imposing. Among the most important public squares are the Opern-platz, around or near which stand the opera house, the royal library, the university and the armoury; the Gendarmen-markt, with the royal theatre in its centre, the Schloss-platz; the Lustgarten, between the north side of the royal palace, the cathedral and the old and new museums; the Pariser-platz with the French embassy, at the Brandenburg Gate; the Königs-platz, with the column of Victory, the Reichstagsgebäude and the Bismarck and Moltke monuments; the Wilhelms-platz; the circular Belle-Alliance-platz, with a column commemorating the battle of Waterloo; and, in the western district, the spacious Lützow-platz.

Bridges.—Of the numerous bridges, the most remarkable are the Schloss-brücke, built after designs by Schinkel in 1822-1824, with eight colossal figures of white marble, representing ideal stages in a warrior’s life, the work of Drake, Albert Wolff and other eminent sculptors; the Kurfürsten—or Lange-brücke, built 1692-1695, and restored in 1895, with an equestrian statue of the great elector, and the Kaiser-Wilhelm-brücke (1886-1889) connecting the Lustgarten with the Kaiser-Wilhelm-strasse in the inner town. In the modern residential quarter are the

Potsdamer-Viktoria-brücke, which carries the traffic from two converging streets into the outer Potsdamer-strasse, and the Herkules-brucke connecting the Lützow-platz with the Tiergarten. The first three cross the Spree and the last two the Landwehr Canal.

Churches.—Berlin, until the last half of the 10th century, was in respect of its churches probably the poorest of the capitals of Christendom, and the number of worshippers on an average Sunday was then less than 2% of the population. The city now contains over a hundred places of worship, of which ten are Roman Catholic, and nine Jewish synagogues. Of the older Evangelical churches but four date from medieval days, and of them only the Marien-kirche, with a tomb of Field marshal O.C. von Sparr (1605-1665), and the Nikolai-kirche are particularly noteworthy. Of a later date, though of no great pretensions to architectural merit, are the Petri-kirche with a lofty spire, the Französische-kirche and the Neue-kirche with dome-capped towers, on the Gendarmen-markt, and the round, Roman Catholic St Hedwigs—kirche behind the Opera-house. The Garrison church in the centre of the city, which was erected in 1722 and contained numerous historical trophies, was destroyed by fire in 1908. Of modern erections the new cathedral (*Dom*), on the Spree, which replaces the old building pulled down in 1853, stands first. It is a clumsy, though somewhat imposing edifice of sandstone in Italian Renaissance style, and has a dome rising, with the lantern, to a height of 380 ft. The Kaiser-Wilhelm-Gedächtnis-kirche (in the suburb Charlottenburg) with a lofty spire, the Dankes-kirche (in commemoration of the emperor William I.'s escape from the hand of the assassin, Nobiling, in 1878) in Wedding, and the Kaiser-Friedrich-Gedächtnis-kirche on a grassy knoll in the north of the Tiergarten are also worthy of notice. In the Monbijou Park, on the north bank of the Spree, is the pretty English church of St George. The main Jewish synagogue, a fine building in oriental style, erected in 1866, stands in a commanding position in the Oranienburger-strasse and is remarkable for its stained glass. Berlin was a walled city until 1867-1868. Of the former nineteen city gates only one remains, the Brandenburg Gate (1789-1793), an imitation of the Propylaea at Athens. It is 201 ft. broad and nearly 65 ft. high, and is supported by twelve Doric columns, each 44 ft. in height, and surmounted by a car of victory (Auriga), which, taken by Napoleon to Paris in 1807, was brought back by the Prussians in 1814. The gate has been enlarged by two lateral colonnades, each supported by sixteen columns.

Public Buildings.—In secular buildings Berlin is very rich. Entering the city at the Potsdam Gate, traversing a few hundred yards of the Leipziger-strasse, turning into Wilhelm-strasse, and following it to Unter den Linden, then beginning at the Brandenburg Gate and proceeding down Unter den Linden to its end, one passes, among other buildings, the following, many of them of great architectural merit—the admiralty, the ministry of commerce, the ministry of war, the ministry of public works, the palace of Prince Frederick Leopold, the palace of the imperial chancellor, the foreign office, the ministry of justice, the residences of the ministers of the interior and of public worship, the French and the Russian embassies, the arcade, the palace of the emperor William I., the university, the royal library, the opera, the armoury, the palace of the emperor Frederick III., the Schloss-brücke, the royal palace, the old and new museums and the national gallery. At a short distance from this line are the new town-hall, the mint, the imperial bank and the royal theatre. Berlin differs from all other great capitals in this respect that with the exception of the royal palace, which dates from the 16th century, all its public buildings are modern. This palace, standing in the very heart of the city, is a huge quadrangular building, with four courts, and is surmounted by a dome 220 ft. high. It contains more than 600 rooms and halls; among the latter the Weisse-saal used for great court pageants, the halls of the chapters of the Black and the Red Eagle orders, a picture gallery and a chapel. The first floor overlooking the Schloss-platz is the Berlin residence of the emperor, and that square is embellished by a huge fountain (Neptuns-brunnen) by R. Begas. Facing the west portal is the monument to the emperor William I., and before the north gate, opening upon the Lustgarten, are the famous bronze groups, the "horse-tamers" by Clodt, the gift of the emperor Nicholas I. of Russia. The establishment of the imperial government in Berlin naturally brought with it the erection of a large number of public buildings, and the great prosperity of the country, as well as the enhanced national feeling, has enabled them to be built on a scale of splendour befitting the capital of an empire. First in importance is the Reichstagsgebäude (see Architecture, plate ix. fig. 47), in which the federal council (*Bundesrat*) and the imperial parliament (*Reichstag*) hold their sittings. A special feature is the library, which is exceedingly rich in works on constitutional law. A new house has also been built for the Prussian parliament (*Landtag*) in the Albrecht-strasse. Other new official buildings are the patent office on the site of the old ministry of the interior; the new ministry of posts (with post museum) at the corner of the Mauer-strasse and Leipziger-strasse; the central criminal court in Moabit; the courts of first instance on the Alexander-platz; the ministry of police, and the *Reichsversicherungsamt*, the centre for the great system of state insurance. In addition to these, many buildings have been restored and enlarged, chief among them being the armoury (*Zeughaus*), the war office and the ministry of public works, while the royal mews (*Marstall*) has been entirely rebuilt with an imposing façade.

Among the public monuments comes first, in excellence, Ranch's celebrated statue of Frederick the Great, which stands in Unter den Linden opposite the palace of the emperor

William I.; and in size the monument to the emperor William I. (by R. Begas), erected opposite the west portal of the royal palace. The space for the site was gained by pulling down the old houses composing the Schlossfreiheit and damming the Spree. The monument, which cost £200,000, is surmounted by an equestrian statue of the emperor in a martial cloak, his right hand resting on a field marshal's baton, reining in his charger, which is led by a female genius of peace. The high pedestal on which these figures stand is surrounded by an Ionic colonnade. The equestrian statue of the great elector on the Lange-brücke has been already mentioned. In the Lustgarten is a statue of Frederick William III., by Wolff; in the Tiergarten, Drake's marble monument to the same ruler; and in the mausoleum in the park in Charlottenburg he and his queen, Louisa, are sculptured in marble by Rauch. Here also lie the emperor William I. and the empress Augusta under marble effigies by Encke. A second group of monuments on the Wilhelms-platz commemorates the generals of the Seven Years' War; and a third in the neighbourhood of the opera-house the generals who fought against Napoleon I. On the Kreuzberg a Gothic monument in bronze was erected by Frederick William III. to commemorate the victories of 1813-1815; and in the centre of the Königs-platz stands a lofty column in honour of the triumphs of 1864, 1866 and 1870-1871, surmounted by a gilded figure of Victory. Literature, science and art are represented in different parts of the city by statues and busts of Rauch, Schinkel, Thaer, Beuth, Schadow, Winckelmann, Schiller, Hegel and Jahn. On the Königs-platz between the column of Victory and the Reichstagsgebäude, and immediately facing the western façade of the latter, is the bronze statue of Bismarck, unveiled in 1901, a figure 20 ft. in height standing on a granite base. From the south side of the Königs-platz crossing the Tiergarten and intersecting the avenue from the Brandenburg Gate to Charlottenburg runs the broad Sieges-allee adorned by thirty-two groups of marble statuary representing famous rulers of the house of Hohenzollern, the gift of the emperor William II. to the city. The Tiergarten, the beautiful west-end park with its thickets of dense undergrowth and winding lanes and lakes has lost somewhat of its sylvan character owing to building encroachments on the north side and the laying out of new rides and drives. It has, in addition to those above enumerated, statues of Queen Louisa, Goethe and Lessing.

Communications.—Berlin is the centre of the North German network of railways. No fewer than twelve main lines concentrate upon it. Internal communication is provided for by the Ringbahn, or outer circle, which was opened in 1871, and by a well-devised system connects the termini of the various main lines. The through traffic coming from east and west is carried by the Stadtbahn, or city railway, which also connects with and forms an integral part of the outer circle. This line runs through the heart of the city, and was originally a private enterprise. Owing, however, to the failure of the company, the work was taken in hand by the state, and the line opened in 1878. It has four tracks—two for the main-line through traffic, and two for local and suburban service, and is carried at a height of about 20 ft. above the streets. Its length is 12 m., the total cost 3¾ millions sterling. The chief stations are Zoologischer Garten, Friedrich-strasse, Alexander-platz and Schlesischer Bahnhof. Lying apart from the system are the Lehrter Bahnhof for Hamburg and Bremen, the Stettiner for Baltic ports, and the Görlitzer, Anhalter and Potsdamer termini for traffic to the south, of which the last two are fine specimens of railway architecture. Internal communication is also provided for by an excellent system of electric tram-lines, by an overhead electric railway running from the Zoologischer Garten to the Schlesische Tor with a branch to the Potsdam railway station, and by an underground railway laid at a shallow depth under the Leipziger-strasse. Most of the cabs (victorias and broughams) have fare-indicators. Steamboats ply above and below the city.

Industry, Trade and Commerce.—It is in respect of its manufacture and trade that Berlin has attained its present high pitch of economic prosperity. More than 50% of its working population are engaged in industry, which embraces almost all branches, of which new ones have lately sprung into existence, whilst most of the older have taken a new lease of life. The old wool industry, for example, has become much extended, and now embraces products such as shawls, carpets, hosiery, &c. Its silk manufactures, formerly so important, have, however, gradually gone back. It is particularly in the working of iron, steel and cloth, and in the by-products of these, that Berlin excels. The manufacture of machinery and steam-engines shows an enormous development. No fewer than 100 large firms, many of them of world-wide reputation, are engaged in this branch alone. Among the chief articles of manufacture and production are railway plant, sewing machines, bicycles, steel pens, chronometers, electric and electric-telegraph plant, bronze, chemicals, soap, lamps, linoleum, china, pianofortes, furniture, gloves, buttons, artificial flowers and ladies' mantles, the last of an annual value exceeding £5,000,000. It has extensive breweries and vies in the amount of the output of this production with Munich. Berlin is also the great centre and the chief market for speculation in corn and other cereals which reach it by water from Poland, Austria and South Russia, while in commerce in spirits it rivals Hamburg. It is also a large publishing centre, and has become a serious rival to Leipzig in this regard.

The Börse, where 4000 persons daily do business, is the chief market in Germany for stocks and shares, and its dealings are of great influence upon the gold market of the world. Numerous

banks of world-wide reputation, doing an extensive international business, have their seats in Berlin, chief among them, in addition to the Reichs-bank, being the Berliner Kassen-Verein, the Diskonto-Gesellschaft, the Deutsche Bank, and the Boden-Kredit Bank.

Learning and Art.—Berlin is becoming the centre of the intellectual life of the nation. The Friedrich Wilhelm University, although young in point of foundation, has long outstripped its great rival Leipzig in numbers, and can point with pride to the fact that its teaching staff has yielded to none in the number of illustrious names. It was founded in 1810, when Prussia had lost her celebrated university of Halle, which Napoleon had included in his newly created kingdom of Westphalia. It was as a weapon of war, as well as a nursery of learning, that Frederick William III. and the great men who are associated with its origin, called it into existence. Wilhelm von Humboldt was at that time at the head of the educational department of the kingdom, and men like Fichte and Schleiermacher worked on the popular mind. Within the first ten years of its existence it counted among its professors such names as Neander, Savigny, Eichhorn, Böckh, Bekker, Hegel, Raumer, Niebuhr and Buttmann. Later followed men like Hengstenberg, Homeyer, Bethmann-Hollweg, Puchta, Stahl and Heffter; Schelling, Trendelenburg, Bopp, the brothers Grimm, Zumpt, Carl Richter; later still, Twesten and Dorner, Gneist and Hinschius; Langenbeck, Bardeleben, Virchow, Du-Bois Reymond; von Ranke, Curtius, Lipsius, Hofmann the chemist, Kiepert the geographer; Helmholtz, van’t Hoff, Koch, E. Fischer, Waldeyer and von Bergmann among scientists and surgeons; Mommsen, Treitschke and Sybel among historians, Harnack among theologians, Brunner among jurists. Taking ordinary, honorary, extraordinary professors and licensed lecturers (*Privat-docenten*) together, its professorial strength consisted, in 1904-1905, of 23 teachers in the faculty of theology, 32 in that of law, 175 in that of medicine and 227 in that of philosophy—altogether 457. The number of matriculated students during the same period was 7154, as against 5488 in the preceding summer term. The number of matriculated students is usually greater in winter than in summer; the reason of the disproportion being that in the summer university towns having pleasant surroundings, such as Bonn, Heidelberg, Kiel and Jena, are more frequented. Berlin is essentially a Prussian university—of students from non-German states, Russia sends most, then the United States of America, while Great Britain is credited with comparatively few. It is, however, in the ugly palace of Prince Henry of Prussia, which was given for the purpose in the days of Prussian poverty and distress, that the university is still housed, and although some internal rearrangement has been effected, no substantial alterations have been made to meet the ever-increasing demand for lecture-room accommodation. The garden towards Unter den Linden is adorned by a bronze statue of Helmholtz; the marble statues of Wilhelm and Alexander von Humboldt, which were formerly placed on either side of the gate, have been removed to the adjacent garden. Technical education is provided in the magnificent buildings erected at a cost of £100,000 in Charlottenburg, which are equipped with all the apparatus for the teaching of science. Among other institutions of university rank and affiliated to it are the school of mines, the agricultural college, the veterinary college, the new seminary for oriental languages, and the high school for music. The geodetic institute has been removed to Potsdam. The university is, moreover, rich in institutions for the promotion of medical and chemical science, for the most part housed in buildings belonging to the governing body. There should also be mentioned the Royal Academy of Sciences, founded in 1700. The name of Leibnitz is associated with its foundation, and it was raised to the rank of a royal academy by Frederick the Great in 1743. The Royal Academy of Arts is under the immediate protection of the king, and is governed by a director and senate. There is also an academy of vocal music.

Schools.—Berlin possesses fifteen *Gymnasia* (classical schools, for the highest branches of the learned professions), of which four are under the direct supervision of the provincial authorities and have the prefix *königlich* (royal), while the remaining eleven are municipal and under the control of the civic authorities. They are attended by about 7000 scholars, of whom a fourth are Jews. There are also eight *Real-gymnasia* (or “modern” schools), numerous *Real-schulen* (commercial schools), public high schools for girls, and commodious and excellently organized elementary schools.

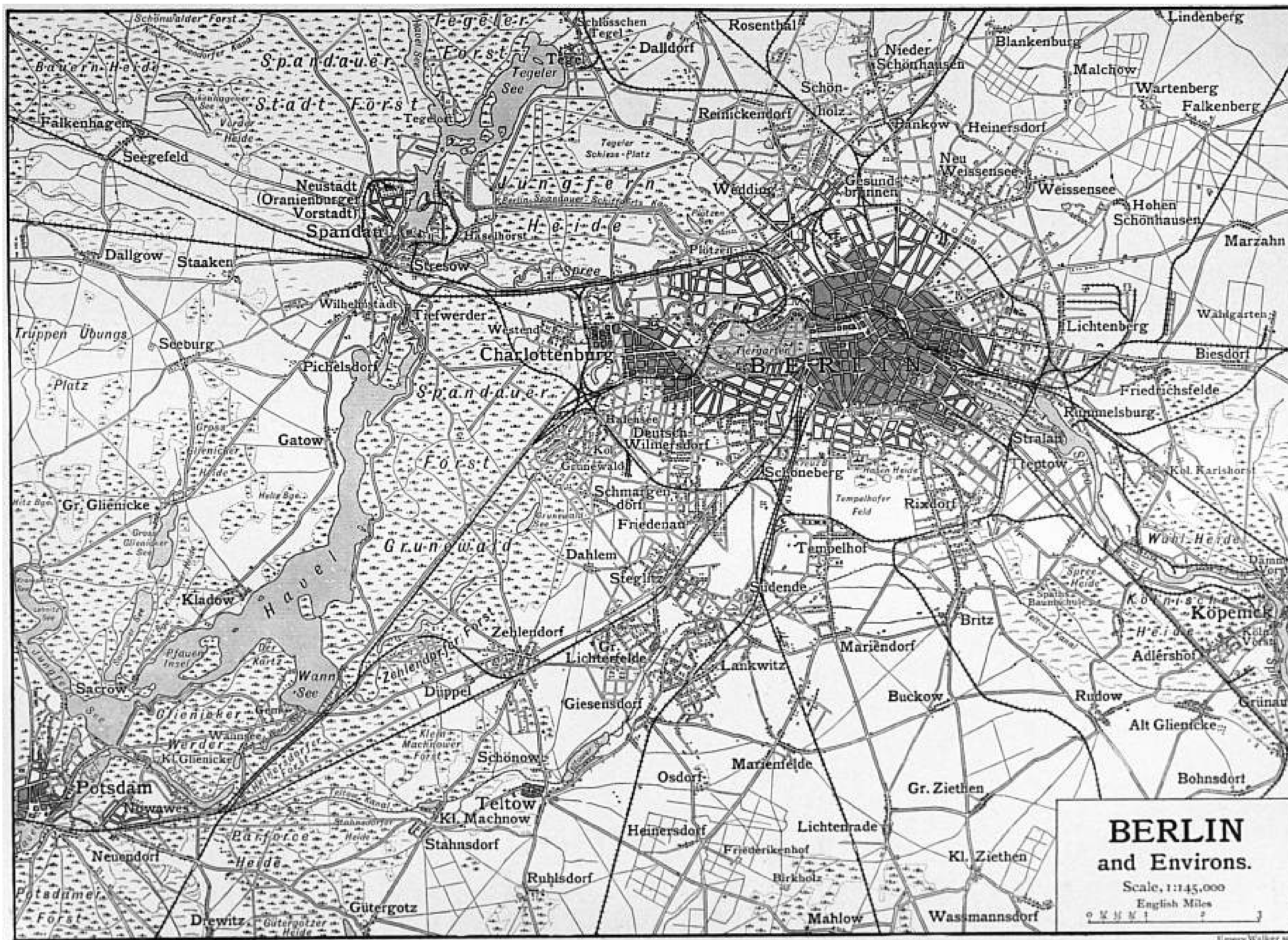
Museums.—The buildings of the royal museum are divided into the old and new museums. The former is an imposing edifice situated on the north-east side of the Lustgarten, facing the royal palace. It was built in the reign of Frederick William III. from designs by Schinkel. Its portico supported by eighteen colossal Ionic columns is reached by a wide flight of steps. The back and side walls of the portico are covered with frescoes, from designs by Schinkel, representing the world’s progress from chaos to organic and developed life. The sides of the flight of steps support equestrian bronze groups of the Amazon by Kiss, and the Lion-slayer by Albert Wolff. Under the portico are monuments of the sculptors Rauch and Schadow, the architect Schinkel, and the art critic Winckelmann. The interior consists of a souterrain, and of a first floor, entered from the portico through bronze doors, after designs by Stiller, weighing 7½ tons, and executed at a cost of £3600. This floor consists of a rotunda, and of halls and cabinets of sculpture. The second floor, which formerly contained the national gallery of paintings, is occupied by a collection of northern antiquities and by the Schliemann treasures.

The new museum, connected with the old museum by a covered corridor, is, in its internal arrangements and decorations, one of the finest structures in the capital. The lowest of its three floors contains the Egyptian museum; on the first floor plaster casts of ancient, medieval and modern sculpture are found, while the second contains a cabinet of engravings. On the walls of the grand marble staircase, which rises to the full height of the building, Kaulbach's cyclus of stereochromic pictures is painted, representing the six great epochs of human progress, from the confusion of tongues at the Tower of Babel and the dispersion of the nations to the Reformation.

The national gallery, a fine building surrounded by a Corinthian colonnade and lying between the royal museums and the Spree, contains a number of modern German paintings. Behind these buildings, again, is the Pergamum museum, which houses a unique collection, the result of the excavations at Pergamum. Still farther away, on a triangular plot of land enclosed by the two arms of the Spree and the metropolitan railway, stands the Kaiser Friedrich museum (1904). This edifice, in the Italian baroque style, surmounted by a dome, possesses but little architectural merit, and its position is so confined that great ingenuity had to be employed in its internal arrangements to meet the demands of space, but its collection of pictures is one of the finest in Europe. Hither were removed, from the old and new museums, the national gallery of pictures, the statuary of the Christian epoch and the numismatic collection. The gallery of paintings, on the first floor, is distributed into the separate schools of Germany, Italy, Flanders and Holland, while another of the central rooms embraces those of Spain, France and England. The collection, which in 1874 contained 1300 paintings, was then enriched by the purchase by the Prussian government for £51,000 of the Suermondt collection which, rich in pictures of the Dutch and Flemish schools, contained also a few by Spanish, Italian and French masters. The gallery as a whole has been happily arranged, and there are few great painters of whom it does not contain one or more examples. The Kunst-gewerbe museum, at the corner of the Königgrätzer-strasse and Albrecht-strasse, contains valuable specimens of applied art.

Theatres.—In nothing has the importance of Berlin become more conspicuous than in theatrical affairs. In addition to the old-established Opernhaus and Schauspielhaus, which are supported by the state, numerous private playhouses have been erected, notably the Lessing and the Deutsches theatres, and it is in these that the modern works by Wildenbruch, Sudermann, and Hauptmann have been produced, and it may be said that it is in Berlin that the modern school of German drama has its home. In music Berlin is not able to vie with Leipzig, Dresden or Munich, yet it is well represented by the Conservatorium, with which the name of Joachim is connected, while the more modern school is represented by Xaver Scharwenka.

Government, Administration and Politics.—On the 1st of April 1881 Berlin was divided off from the province of Brandenburg and since forms a separate administrative district. But the chief presidency (*Oberpräsidium*), the Consistory, the provincial school-board, and the board of health of the province of Brandenburg remain tribunals of last instance to which appeals lie from Berlin. The government is partly semi-military (police) and partly municipal. The ministry of police (a branch of the home office) consists of six departments: (1) general; (2) trade; (3) building; (4) criminal; (5) passports; (6) markets. It controls the fire brigade, has the general inspection over all strangers, and is responsible for public order. The civil authority (*Magistrat*) consists of a chief mayor (*Oberbürgermeister*), a mayor (*Bürgermeister*), and a city council (*Stadtrat*). The *Oberbürgermeister*, who is *ex officio* a member of the Prussian Upper House, and the *Bürgermeister* are elected by the common council (*Stadtverordnetenversammlung*) of 144 members, *i.e.* three delegates chosen by manhood suffrage for each ward of the city; but the election is subject to the veto of the king without reason given. The *Stadtrat* consists of 32 members, of whom 15 are paid officials (including 2 syndics, 2 councillors for building, and 2 for education), while 17 serve gratuitously. For general work the *Magistrat* and the *Stadtverordnetenversammlung* coalesce, and committees are appointed for various purposes out of the whole body, these being usually presided over by members of the *Magistrat*. Their jurisdiction extends to water-supply, the drainage, lighting and cleaning of the streets, the care of the poor, hospitals and schools. Politically the city is divided into six Reichstag and four Landtag constituencies, returning six and nine members respectively, and it must be noted that in the case of the Landtag the allocation of seats dated from 1860, so that the city, in proportion to its population, was in 1908 much under-represented. It should have had twenty-five members instead of nine.



(Click to enlarge.)

Population.—The stupendous growth of the population of Berlin during the last century is best illustrated by the following figures. In 1816 it contained 197,717 inhabitants; in 1849, 431,566; in 1871, 826,341; in 1880, 1,122,330; 1890, 1,578,794, and in 1905, 2,033,900. The birth-rate is about 30, and the death-rate 20 per 1000 inhabitants a year. Illegitimate births amount to about 15% of the whole. According to religion, about 84% are Protestants, 10% Roman Catholics and 5% Jews, but owing to the great number of Jews who for social and other reasons ostensibly embrace the Christian faith, these last figures do not actually represent the number of Jews by descent living in the city.

Environs.—Marvellous as has been the transformation in the city itself, no less surprising results have been effected since 1875 in the surroundings of Berlin. On the east, north and west, the city is surrounded at a distance of some 5 m. from its centre by a thick belt of pine woods, the Jungfernheide, the Spandauer Forst, and the Grunewald, the last named stretching away in a south-westerly direction as far as Potsdam, and fringing the beautiful chain of Havel lakes. These forests enjoyed until quite recent times an unenviable notoriety as the camping-ground and lurking-place of footpads and other disorderly characters. After the opening of the circular railway in 1871, private enterprise set to work to develop these districts, and a “villa colony” was built at the edge of the Grunewald between the station West-end and the Spandauer Bock. From these beginnings, owing mainly to the expansion of the important suburb of Charlottenburg, has resulted a complete transformation of the eastern part of the Grunewald into a picturesque and delightful villa suburb, which is connected by railway, steam-tramway and a magnificent boulevard—the Kurfürstendamm—with the city. Nowadays the little fishing villages on the shores of the lakes, notably the Wannsee, cater for the recreation of the Berliners, while palatial summer residences of wealthy merchants occupy the most prominent sites. Suburban Berlin may be said to extend practically to Potsdam.

Traffic.—The public streets have a total length of about 350 m., and a large staff of workmen is regularly employed in maintaining and cleaning the public roads and parks. The force is well controlled, and the work of cleaning and removing snow after a heavy fall is thoroughly and efficiently carried out. The less important thoroughfares are mostly paved with the so-called Vienna paving, granite bricks of medium size, while the principal streets, and especially those upon which the traffic is heavy, have either asphalt or wood paving.

Water-Supply and Drainage.—The water-supply is mainly derived from works on the Müggel and Tegeler lakes, the river water being carefully filtered through sand. The drainage system is elaborate, and has stood the test of time. The city is divided into twelve radial systems, each with a pumping station, and the drainage is forced through five mains to eighteen sewage farms, each of which is under careful sanitary supervision, in respect both of the persons employed thereon, and the products, mainly milk, passing thence to the city for human consumption. Only in a few isolated cases has any contamination been traced to fever or other zymotic germs. In this connexion it is worth noting that the infectious diseases hospital has a separate system of drainage which is carefully disinfected, and not allowed to be employed for the purposes of manure.

Hospitals.—In no other city of the world is the hospital organization so well appointed as in Berlin, or are the sick poor tended with greater solicitude. State, municipal and private charity here again join hands in the prompt relief of sickness and cases of urgency. The municipal hospitals are six in number, the largest of which is the Virchow hospital, situate in Moabit and opened in 1906. It is arranged on the pavilion system, contains 2000 beds, and is one of the most splendidly equipped hospitals in the world. The cost amounted to £900,000. Next comes that of Friedrichshain, also built on the pavilion system, while the state controls six (not including the prison infirmaries) of which the world-renowned Charité in the Luisen-strasse is the principal. The hospitals of the nursing sisters (Diakonissen Anstalten) number 8, while there are 60 registered private hospitals under the superintendence of responsible doctors and under the inspection of government.

Charities.—Berlin is also very richly endowed with charitable institutions for the relief of pauperism and distress. In addition to the municipal support of the poor-houses there are large funds derived from bequests for the relief of the necessitous and deserving poor; while night shelters and people’s kitchens have been organized on an extensive scale for the temporary relief of the indigent unemployed. For the former several of the arches of the city railway have been utilized, and correspond in internal arrangement to like shelters instituted by the Salvation Army in London and various other cities.

Markets.—Open market-places in Berlin are things of the past, and their place has been taken by airy and commodious market halls. Of these, 14 in number, the central market, close to the Alexander-platz station of the city railway with which it is connected by an admirable service of lifts for the rapid unloading of goods, is the finest. It has a ground area of about 17,000 sq. yds., and is fitted with more than 2000 stalls. The other markets are conveniently situated at various accessible places within the city, and the careful police supervision to which they are subjected, both in the matter of general cleanliness, and in the careful examination of all articles of food exposed for sale, has tended to the general health and comfort of the population.

The central cattle market and slaughter-houses for the inspection and supply of the fresh meat consumed in the metropolis occupy an extensive area in the north-east of the city on the Ringbahn, upon which a station has been erected for the accommodation of meat trains and passengers attending the market. The inspection is rigorously carried out, and only carcases which have been stamped as having been certified good are permitted to be taken away for human consumption.

History.—The etymology of the word “Berlin” is doubtful. Some derive it from Celtic roots —*ber*, small, short, and *lyn*, a lake; others regard it as a Wend word, meaning a free, open place; others, again, refer it to the word *werl*, a river island. Another authority derives it from the German word *Brühl*, a marshy district, and the Slavonic termination *in*; thus Brühl, by the regular transmutation Bührl (compare Ger. *bren*-nen and Eng. burn), Bürhlin. More recent research, however, seems to have established the derivation from *Wehr*, dam.

Similar obscurity rests on the origin of the city. The hypotheses which carried it back to the early years of the Christian era have been wholly abandoned. Even the margrave Albert the Bear (d. 1170) is no longer unquestionably regarded as its founder, and the tendency of opinion now is to date its origin from the time of his great-grandsons, Otto III. and John I. When first alluded to, what is now Berlin was spoken of as two towns, Kölln and Berlin. The first authentic document concerning the former is from the year 1237, concerning the latter from the year 1244, and it is with these dates that the trustworthy history of the city begins. In 1307 the first attempt was made to combine the councils of Kölln and Berlin, but the experiment was abandoned four years later, and the two towns continued their separate existence till 1432, when the establishment of a common council for both led to disturbances of which the outcome was that Frederick II. the Iron in 1442 abolished this arrangement, seriously curtailed the privileges of both towns, and began the building of a castle at Kölln. A feud between the elector and the Berliners ended in the defeat of the latter, who in 1448 were forced to accept the constitution of 1442. From this time Berlin became and continued to be the residence of the Hohenzollerns, the elector John Cicero (1486-1499) being the first to establish a permanent court inside the walls. It was not, however, until the time of King Frederick William I. that the

sovereigns ceased to date their official acts from Kölln. In 1539, under the elector Joachim II., Berlin embraced the Lutheran religion. Henceforth the history of Berlin was intimately bound up with the house of Hohenzollern. The conversion of the elector John Sigismund in 1613 to the Reformed (Calvinist) faith was hotly resented by the Berliners and led to bloody riots in the city. The Thirty Years' War all but ruined the city, the population of which sank from some 14,000 in 1600 to less than 8000 in 1650. It was restored and the foundations of its modern splendour were laid by the Great Elector, by the time of whose death (1688) the population had risen to some 20,000. During this period several suburbs had begun to grow up, Friedrichswerder in 1667 and the Dorotheenstadt, so named in 1676 after the electress Dorothea its founder. In 1688 Frederick III. (afterwards King Frederick I.) began the Friedrichstadt, completed by Frederick William I. Under Frederick I., who did much to embellish the city as the royal *Residenzsiadt*, the separate administrations of the quarters of Berlin, Kölln, Friedrichstadt, Friedrichswerder and Dorotheenstadt were combined, and the separate names were absorbed in that of Berlin. The fortifications begun in 1658 were finally demolished under Frederick the Great in 1745, and the Neue Friedrich-strasse, the Alexander-strasse and the Wall-strasse were laid out on their site.

Twice during the Seven Years' War Berlin was attacked by the enemy: in 1757 by the Austrians, who penetrated into the suburbs and levied a heavy contribution, and in 1760 by the Russians, who bombarded the city, penetrated into it, and only retired on payment of a ransom of 1,500,000 thalers (£225,000). After the disastrous campaign of Jena, Berlin suffered much during the French occupation (24th October 1806 to 1st December 1808). In spite of these misfortunes, however, the progress of the city was steady. In 1809 the present municipal government was instituted. In 1810 the university was founded. After the alliance of Prussia and Russia in 1812 Berlin was again occupied by the French, but in March 1813 they were finally driven out. The period following the close of the war saw great activity in building, especially in the erection of many noble monuments and public buildings, *e.g.* those by the architect Karl Friedrich Schinkel. The most notable event in the history of Berlin during the 19th century, prior to the Franco-German War, was the March revolution of 1848 (see Germany: *History*, and Frederick William IV., king of Prussia). The effect of the war of 1870-71 on the growth of Berlin has been sufficiently indicated already.

Authorities.—For the history of Berlin see the publications of the "Verein für die Geschichte Berlins"; the *Berlinische Chronik nebst Urkundenbuch*, and the periodicals *Der Bar* (1875, &c.) and *Mitteilungen* (1884, &c.). Of histories may be mentioned A. Streckfuss, *500 Jahre Berliner Geschichte* (new ed. by Fernbach, 1900); *Berlin im 19ten Jahrhundert* (4 vols., 1867-1869), and *Statistisches Jahrbuch der Stadt Berlin* (1904-1905); Fidiein, *Historisch-diplomatische Beiträge zur Geschichte der Stadt Berlin* (5 vols., 1837-1842); Brockhaus, *Konversations-Lexikon* (1904); Meyer, *Konversations-Lexikon* (1904); Baedeker, *Fuhrer durch Berlin*; Woeri, *Fuhrer durch Berlin*; J. Pollard, *The Corporation of Berlin* (Edinburgh, 1893); A. Shaclwell, *Industrial Efficiency* (London, 1906); *Berliner Jahrbuch für Handel und Industrie* (1905); and O. Schwebel, *Geschichte der Stadt Berlin* (Berlin, 1888).

(P. A. A.)

Berlin, Congress and Treaty of. The events that led up to the assembling of the congress of Berlin, the outcome of which was the treaty of the 13th of July 1878, are described elsewhere (see Europe: *History*; Turkey: *History*; Russo-Turkish War). Here it must suffice to say that the terms of the treaty of San Stefano (3rd March 1878), by which the Russo-Turkish War had been brought to a conclusion, seemed to those of the other powers who were most interested scarcely less fatal to the Ottoman dominion than that Russian occupation of Constantinople which Great Britain had risked a war to prevent. By this instrument Bulgaria was to become a practically independent state, under the nominal suzerainty of the sultan, bounded by the Danube, the Black Sea, the Aegean and Albania, and cutting off the latter from the remnant of Rumelia which, with Constantinople, was to be left to the Turks. At the same time the other Christian principalities, Servia and Montenegro, were largely increased in size and their independence definitively recognized; and the proposals of the powers with regard to Bosnia and Herzegovina, communicated to the Ottoman plenipotentiaries at the first sitting of the conference of Constantinople (23rd December 1876), were to be immediately executed. These provisions seemed to make Russia permanently arbiter of the fate of the Balkan peninsula, the more so since the vast war indemnity of 1,400,000,000 roubles exacted in the treaty promised to cripple the resources of the Ottoman government for years to come.

The two powers whose interests were most immediately threatened by the terms of the peace were Austria and Great Britain. The former especially, refusing to be bribed by the Russian offer of Bosnia and Herzegovina, saw herself cut off from all chance of expansion in the Balkan peninsula and threatened with the establishment there of the paramount power of Russia, a peril it had been her traditional policy to avert. On the 5th of February, accordingly, Count Andrássy issued a circular note, addressed to the signatory powers of the treaty of Paris of 1856 and the London protocol of 1871, suggesting a congress for the purpose of establishing "the agreement

of Europe on the modifications which it may become necessary to introduce into the above-mentioned treaties” in view of the preliminaries of peace signed by Russia and Turkey. This appeal to the sanctity of international engagements, traditional in the diplomatic armoury of Austria, and strengthened by so recent a precedent as that of 1871, met with an immediate response. On the 1st of April Lord Salisbury had already addressed a circular note to the British embassies refusing on behalf of the British government to recognize any arrangements made in the peace preliminaries, calculated to modify European treaties, “unless they were made the subject of a formal agreement among the parties to the treaty of Paris,” and quoting the “essential principle of the law of nations” promulgated in the London protocol. By Great Britain therefore the Austrian proposal was at once accepted. Germany was very willing to fall in with the views of her Austrian ally and share in a council in which, having no immediate interests of her own, Bismarck could win new laurels in his rôle of “honest broker.” In these circumstances Russia could not but accept the principle of a congress. She tried, however, to limit the scope of its powers by suggesting the exclusion of certain clauses of the treaty from its reference, and pointed out (circular of Prince Gorchakov, April 9th) that Russia had not been the first nor the only Power to violate the treaties in question. The answer of Lord Beaconsfield was to mobilize the militia and bring Indian troops to the Mediterranean; and finally Russia, finding that the diplomatic support which she had expected from Bismarck failed her, consented to submit the whole treaty without reserve to the congress.

On the 3rd of June Count Münster, in the name of the German government, issued the formal invitation to the congress. The congress met, under the presidency of Prince Bismarck, at Berlin on the 13th of June. Great Britain was represented by Lord Beaconsfield, Lord Salisbury and Lord Odo Russell, ambassador at Berlin; Germany by Prince Bismarck, Baron Ernst von Bülow and Prince Chlodwig von Hohenlohe-Schillingsfürst, ambassador at Paris; Austria by Count Andrássy, Count Louis Károlyi and Baron Heinrich Karl von Haymerle, ambassador at Rome; France by William H. Waddington, the Comte de Saint-Vallier, ambassador at Berlin, and Félix Hippolyte Desprez, director of political affairs in the department for foreign affairs; Russia by the chancellor, Prince Gorchakov, Count Peter Shuvalov, ambassador to the court of St James’s, and Paul d’Oubril, ambassador at Berlin; Turkey by Alexander Catheodory Pasha, minister of public works, All Pasha, *mushir* of the Ottoman armies, and Sadullah Bey, ambassador at Berlin. The bases of the conferences had, of course, been settled beforehand, and the final act of the congress was signed by the plenipotentiaries mentioned above exactly a month after the opening of the congress, on the 13th of July.

The treaty of Berlin consists in all of sixty-four articles, of which it will be sufficient to note those which have had a special bearing on subsequent international developments. So far as they affect the territorial boundaries fixed by the treaties of Paris and San Stefano it will be sufficient to refer to the sketch map in the article Europe: *History*. By Art. I. Bulgaria was “constituted an autonomous and tributary principality under the suzerainty of H.I.M. the Sultan”; it was to have “a Christian government and a national militia,” Art. II. fixed the boundaries of the new state and provided for their delimitation by a European commission, which was “to take into consideration the necessity for H.I.M. the Sultan to be able to defend the Balkan frontiers of Eastern Rumelia.” Arts. III. to XII. provide for the election of a prince for Bulgaria, the machinery for settling the new constitution, the adjustment of the relations of the new Bulgarian government to the Ottoman empire and its subjects (including the question of tribute, the amount of which was, according to Art. XII., to be settled by agreement of the signatory powers “at the close of the first year of the working of the new organization”). By Art. X. Bulgaria, so far as it was concerned, was to take the place of the Sublime Porte in the engagements which the latter had contracted, as well towards Austria-Hungary as towards the Rustchuck-Varna Railway Company, for working the railway of European Turkey in respect to the completion and connexion, as well as the working of the railways situated in its territory.

By Art. XIII. a province was formed south of the Balkans which was to take the name of “Eastern Rumelia,” and was to remain “under the direct military and political control of H.I.M. the Sultan, under conditions of administrative autonomy.” It was to have a Christian governor-general. Arts. XIV. to XXIII. define the frontiers and organization of the new province, questions arising out of the Russian occupation, and the rights of the sultan. Of the latter it is to be noted that the sultan retained the right of fortifying and occupying the Balkan passes (Art. XV.) and all his rights and obligations over the railways (Art. XXI.).

Art. XXV., which the events of 1908 afterwards brought into special prominence, runs as follows: “The provinces of Bosnia and Herzegovina shall be occupied and administered by Austria-Hungary. The government of Austria-Hungary, not desiring to undertake the administration of the sanjak of Novi-Bazar, ... the Ottoman administration will continue to exercise its functions there. Nevertheless, in order to assure the maintenance of the new political state of affairs, as well as freedom and security of communications, Austria-Hungary reserves the right of keeping garrisons and having military and commercial roads in the whole of this part of the ancient vilayet of Bosnia.”

By Art. XXVI. the independence of Montenegro was definitively recognized, and by Art. XVIII. she received certain accessions of territory, including a strip of coast on the Adriatic, but under conditions which tended to place her under the tutelage of Austria-Hungary. Thus, by Art. XXIX. she was to have neither ships of war nor a war flag, the port of Antivari and all Montenegrin waters were to be closed to the war-ships of all nations; the fortifications between the lake and the coast were to be razed; the administration of the maritime and sanitary police at Antivari and along the Montenegrin littoral was to be carried on by Austria-Hungary "by means of light coast-guard boats"; Montenegro was to adopt the maritime code in force in Dalmatia, while the Montenegrin merchant flag was to be under Austro-Hungarian consular protection. Finally, Montenegro was to "come to an understanding with Austria-Hungary on the right to construct and keep up across the new Montenegrin territory a road and a railway."

By Art. XXXIV. the independence of Servia was recognized, subject to conditions (as to religious liberty, &c.) set forth in Art. XXXV. Art. XXXVI. defined the new boundaries.

By Art. XLIII. the independence of Rumania, already proclaimed by the prince (May 22/June 3 1877), was recognized. Subsequent articles define the conditions and the boundaries.

Arts. LII. to LVII. deal with the question of the free navigation of the Danube. All fortifications between the mouths and the Iron Gates were to be razed, and no vessels of war, save those of light tonnage in the service of the river police and the customs, were to navigate the river below the Iron Gates (Art. LII.). The Danube commission, on which Rumania was to be represented, was maintained in its functions (Art. LIII.) and provision made for the further prolongation of its powers (Art. LIV.).

Art. LVIII. cedes to Russia the territories of Ardahan, Kars and Batoum, in Asiatic Turkey. By Art. LIX. "H.M. the emperor of Russia declares that it is his intention to constitute Batoum a free port, essentially commercial."

By Art. LXI. "the Sublime Porte undertakes to carry out, without further delay, the improvements and reforms demanded by local requirements in the provinces inhabited by the Armenians, and to guarantee their security against the Circassians and Kurds." It was to keep the powers informed periodically of "the steps taken to this effect."

Art. LXII. made provision for the securing religious liberty in the Ottoman dominions.

Finally, Art. LXIII. declares that "the treaty of Paris of 30th March 1856, as well as the treaty of London of 13th March 1871, are maintained in all such of their provisions as are not abrogated or modified by the preceding stipulations."

For the full text of the treaty in the English translation see E. Hertslet, *Map of Europe by Treaty*, vol. iv. p. 2759 (No. 530); for the French original see *State Papers*, vol. lxix. p. 749.

(W. A. P.)

BERLIN, a city of Coos county, New Hampshire, U.S.A., on the Androscoggin river, in the N. part of the state, about 98 m. N.W. of Portland, Maine. Pop. (1890) 3729; (1900) 8886, of whom 4643 were foreign-born; (1910 census) 11,780. The area of the city in 1906 was 57.81 sq. m. Berlin is served by the Grand Trunk and Boston & Maine railways. It is situated in the heart of the White Mountains and 16 m. from the base of Mt. Washington. Berlin Falls, on the picturesque Androscoggin river, furnishes an immense water-power, the development of which for manufacturing purposes accounts for the rapid growth of the city. The forests of northern New England and of the province of Quebec supply the raw material for the extensive saw-mills and planing-mills, the pulp- and paper-mills, and the sulphite fibre mills, said to be the largest in existence. In 1905 the city's factory products were valued at $5,989,119, of which 78.5% was the value of the paper and wood pulp manufactured. Berlin was first settled in 1821, was incorporated as a township in 1829, and was chartered as a city in 1897.

BERLIN, a city and port of entry, Ontario, Canada, and capital of Waterloo county, 58 m. W. of Toronto, on the Grand Trunk railway. It is the centre of a prosperous farming and manufacturing district, inhabited chiefly by German immigrants and their descendants. An electric railway connects it with the town of Waterloo (pop. 4100) 2 m. to the north, which has

important flour and woollen mills and distilleries. Berlin is a flourishing manufacturing town, and contains a beet sugar refinery, automobile, leather, furniture, shirt and collar, felt, glove, button and rubber factories. Pop. (1881) 4054; (1901) 9747.

BERLIN, a four-wheeled carriage with a separate hooded seat behind, detached from the body of the vehicle; so called from having been first used in Berlin. It was designed about 1670, by a Piedmontese architect in the service of the elector of Brandenburg. It was used as a travelling carriage, and Swift refers to it in his advice to authors "who scribble in a berlin." As an adjective, the word is used to indicate a special kind of goods, originally made in Berlin, of which the best known is Berlin wool. A Berlin warehouse is a shop for the sale of wools and fancy goods (cf. Italian warehouse). The spelling "berlin" is also used by Sir Walter Scott for the "birlinn," a large Gaelic rowing-boat.

BERLIOZ, HECTOR (1803-1869), French musical composer, was born on the 11th of December 1803 at Côte-Saint-André, a small town near Grenoble, in the department of Isère. His father, Louis Berlioz, was a physician of repute, and by his desire Hector for some time devoted himself to the study of medicine. At the same time he had music lessons, and, in secret, perused numerous theoretical works on counterpoint and harmony, with little profit it seems, till the hearing and subsequent careful analysis of one of Haydn's quartets opened a new vista to his unguided aspirations. A similar work written by Berlioz in imitation of Haydn's masterpiece was favorably received by his friends. From Paris, where he had been sent to complete his medical studies, he at last made known to his father the unalterable decision of devoting himself entirely to art, the answer to which confession was the withdrawal of all further pecuniary assistance. In order to support life Berlioz had to accept the humble engagement of a singer in the chorus of the Gymnase theatre. Soon, however, he became reconciled to his father and entered the Conservatoire, where he studied composition under Reicha and Lesueur. His first important composition was an opera called *Les Francs-Juges*, of which, however, only the overture remains extant. In 1825 he left the Conservatoire, and began a course of self-education, founded chiefly on the works of Beethoven, Gluck, Weber and other German masters. About this period Berlioz saw for the first time the talented Irish actress Henrietta Smithson, who was then charming Paris by her impersonations of Ophelia, Juliet and other Shakespearean characters. The enthusiastic young composer became deeply enamoured of her at first sight, and tried, for a long time in vain, to gain the love or even the attention of his idol. To an incident of this wild and persevering courtship Berlioz's first symphonic work, *Épisode de la vie d'un artiste*, owes its origin. By the advice of his friends Berlioz once more entered the Conservatoire, where, after several unsuccessful attempts, his cantata *Sardanapalus* gained him the first prize for foreign travel (1830), in spite of the strong personal antagonism of one of the umpires. During a stay in Italy Berlioz composed an overture to *King Lear*, and *Le Retour à la vie*—a sort of symphony, with intervening poetical declamation between the single movements, called by the composer a melologue, and written in continuation of the *Épisode de la vie d'un artiste*, along with which work it was performed at the Paris Conservatoire in 1832. Paganini on that occasion spoke to Berlioz the memorable words: "Vous commencez par où les autres ont fini." Miss Smithson, who also was present on the occasion, consented to become the wife of her ardent lover in 1833. The marriage was a tempestuous mistake. In 1840 he separated from his wife, who died in 1854. Six months later Berlioz married Mademoiselle Récio. His second wife did not live very long, nor was there much that was edifying in this marriage. Between the date of his first marriage and 1840 came out his dramatic symphonies *Harold en Italie*, *Funèbre et triomphale*, and *Roméo et Juliette*; his opera *Benvenuto Cellini* (1837); his *Requiem*, and other works. In the course of time Berlioz won his due share of the distinctions generally awarded to artistic merit, such as the ribbon of the Legion of Honour and the membership of the Institute. But these distinctions he owed, perhaps, less to a genuine admiration of his compositions than to his successes abroad and his influential position as the musical critic of the *Journal des Débats* (a position which he held from 1838 to 1864, and which he never used or abused to push his own works). In 1842 Berlioz went for the first time to Germany, where he was hailed with welcome by the leading musicians of the younger generation, Robert Schumann foremost amongst them. The latter paved the way for the French composer's success by a comprehensive analysis of the *Épisode* in his musical journal, the *Neue Zeitschrift für Musik*. In 1846 he produced his magnificent cantata

La Damnation de Faust. Berlioz gave successful concerts at Leipzig and other German cities, and repeated his visit on various later occasions—in 1852 by invitation of Liszt, to conduct his opera, *Benvenuto Cellini* (hissed off the stage in Paris), at Weimar; and in 1855 to produce his oratorio-trilogy, *L'Enfance du Christ*, in the same city. This latter work had been previously performed at Paris, where Berlioz mystified the critics by pretending to have found the last chorus amongst the manuscript scores of a composer of the 17th century, Pierre Ducré by name. In 1855 his *Te Deum* was written for the opening of the Paris exhibition. Berlioz also made journeys to Vienna (1866) and St Petersburg (1867), where his works were received with great enthusiasm. In 1861 he produced his work *Béatrice et Bénédict*, and in 1863 *Les Troyens*. He died in Paris on the 8th of March 1869.

It is not only as a composer that the life of Berlioz is full of interest, although in this respect his achievement is singularly significant for the comprehension of the modern spirit in music. But it is as the symbol of French romanticism in the whole domain of aesthetic perception that his pre-eminence has come to be recognized. His *Mémoires* (begun in London in 1848 and finished in 1865) illustrate this romantic spirit at its highest elevation as well as at its lowest depths. Victor Hugo was a romantic, Musset was a romantic, but Berlioz was romanticism itself. As a boy he is in despair over the despair of Dido, and his breath is taken away at Virgil's "Quaesivit coelo lucem ingemuitque reperta." At the age of twelve he is in love with "Estelle," whom he meets fifty years afterwards. The scene is described by himself (1865) with minute fidelity—a scene which Flaubert must have known by heart when he wrote its parallel in the novel *L'Éducation sentimentale*. The romance of this meeting between the man—old, isolated, unspeakably sad, with the halo of public fame burning round him—and the woman—old also, a mother, a widow, whose beauty he had worshipped when she was eighteen—is striking. In a frame of chastened melancholy and joy at the sight of Estelle, Berlioz goes to dine with Patti and her family. Patti, on the threshold of her career, pets Berlioz with such uncontrollable affection, that as the composer wrote a description of his feelings he was overwhelmed at the bitterness of fate. What would he not have given for Estelle to show him such affection! Patti seemed to him like a marvellous bird with diamond wings flitting round his head, resting on his shoulder, plucking his hair and singing her most joyous songs to the accompaniment of beating wings. "I was enchanted but not moved. The fact is that the young, beautiful, dazzling, famous virtuoso who at the age of twenty-two has already seen musical Europe and America at her feet, does not win the power of love in me; and the aged woman, sad, obscure, ignorant of art, possesses my soul as she did in the days gone by, as she will do until my last day." If this episode touches the sublime, it may be urged with almost equal truth that his description of the exhumation of his two wives and their reburial in a single tomb touches the ridiculous. And yet the scene is described with a perception of all the detail which would call for the highest praise in a novelist. Perhaps some parallel between the splendid and the ridiculous in this singular figure may be seen in the comparison of Nadar's caricature with Charpentier's portrait of the composer.

The profound admiration of Berlioz for Shakespeare, which rose at moments to such a pitch of folly that he set Shakespeare in the place of God and worshipped him, cannot be explained simply on the ground that Henrietta Smithson was a great Shakespearean actress. Unquestionably the great figures in English literature had a profound attraction for him, and while the romantic spirit is obvious in his selections from Byron and Scott, it can also be traced in the quality of his enthusiasm for Shakespeare. It is in his music more than in his literary attitude, however, that is disclosed something in addition to the pure romance of Schumann—something that places him nearer in kind to Wagner, who recognized in him a composer from whose works he might learn something useful for the cultivation of his own ideals. As a youth the power of Beethoven's symphonies made a deep impression on Berlioz, and what has been described as the "poetical idea" in Beethoven's creations ran riot in the young medical student's mind. He thus became one of the most ardent and enlightened originators of what is now known as "programme music." Technically he was a brilliant musical colourist, often extravagant, but with the extravagant emotionalism of genius. He was a master of the orchestra; indeed, his treatment of the orchestra and his invention of unprecedented effects of *timbre* give him a solitary position in musical history; he had an extraordinary gift for the use of the various instruments, and himself propounded a new ideal for the force to be employed, on an enormous scale.

His literary works include the *Traité d'instrumentation* (1844); *Voyage musical en Allemagne et en Italie* (1845); *Les Soirées d'orchestre* (1853); *Les Grotesques de la musique* (1859); *À travers chant* (1862); *Mémoires* (1870); *Lettres intimes* (1882). For a full list of his musical works, Grove's *Dictionary* should be consulted.

The new critical edition of the complete musical works (published by Breitkopf and Hartel) is in ten series. I. Symphonies: *Fantastique*, Op. 14; *Funébre et triomphale*, Op. 15, for military band and chorus; *Harold en Italie*, Op. 16, with viola solo; *Roméo et Juliette*, with chorus and soli. II. Overtures (ten, including the five belonging to larger works). III. Smaller instrumental works, of which only the Funeral March for *Hamlet* is important. IV. Sacred music: the *Grande*

Messe des morts, Op. 5; the *Te Deum*, Op. 22; *L’Enfance du Christ*, Op. 25, and four smaller pieces, V. Secular cantatas, including *Hunt scênes de Faust*, Op. I; *Lélio, ou le retour à la vie*, Op. 146 (sequel to *Symphonie fantastique*), and *La Damnation de Faust*, Op. 24. VI. Songs and lyric choruses with orchestra, two vols. VII. Songs and lyric choruses with pianoforte, 2 vols. including arrangements of the orchestral songs. VIII. Operas: *Benvenuto Cellini*; *Les Troyens* (five acts in two parts, *La Prise de Troie* and *Les Troyens à Carthage*); Recitatives for the dialogue in Weber’s *Freischutz*. IX. Arrangements, including the well-known orchestral version of Weber’s *Invitation à la danse*. X. Fragments and new discoveries.

Adolphe Julien’s biography of Berlioz (1888) first gave a careful account of the details of his life. See also the books by R. Pohl (1884), P. Galibert (1890), E. Hippeau (1890), G. Noufflard (1885), L. Mesnard (1888), Louise Pohl (1900), and D. Bernard (trans. by H.M. Dunstan, 1882). An illuminating essay on Berlioz is in Filson Young’s *Mastersingers* (1902). See also the essay in W.H. Hadow’s *Studies in Modern Music* (1st series, 1908). Berlioz’s *Traité d’instrumentation* has been translated into German and brought up to date by Richard Strauss (Peters’ edition [1906]).

BERM (probably a variant of “brim”), a narrow ledge of ground, generally the level banks of a river. In parts of Egypt the whole area reached by the Nile is included in the berm. Thus of the lands near Berber, Mr C. Dupuis writes (in Sir William Garstin’s *Report on the Upper Nile*, 1904), “In most places there is a well-defined alluvial berm of recent formation and varying width, up to perhaps a couple of kilometres.” In military phraseology the berm is the space of ground between the base of a rampart and the ditch.

BERMONDSEY, a south-eastern metropolitan borough of London, England, bounded N. and E. by the Thames, S.E. by Deptford, S.W. by Camberwell, and W. by Southwark. Pop. (1901) 130,760. It is a district of poor streets, inhabited by a labouring population employed in leather and other factories, and in the Surrey Commercial Docks and the wharves bordering the river. The parish of Rotherhithe or Redriff has long been associated with a seafaring population. A tunnel connecting it with the opposite shore of the river was opened in June 1908. The neighbouring Thames Tunnel was opened in 1843, but, as the tolls were insufficient to maintain it, was sold to the East London Railway Company in 1865. The Herold Institute, a branch of the Borough Polytechnic, Southwark, is devoted to instruction in connexion with the leather trade. Southwark Park in the centre of the borough is 63 acres in extent. Bermondsey is in the parliamentary borough of Southwark, including the whole of Rotherhithe and part of the Bermondsey division. The borough council consists of a mayor, 9 aldermen, and 54 councillors. Area 1499.6 acres.

The name appears in Domesday, the suffix designating the former insular, marshy character of the district; while the prefix is generally taken to indicate the name of a Saxon overlord, Beormund. Bermondsey was in favour with the Norman kings as a place of residence, and there was a palace here, perhaps from pre-Norman times. A Cluniac monastery was founded in 1082, and Bermondsey Cross became a favoured place of pilgrimage. The foundation was erected into an abbey in 1399, and Abbey Road recalls its site. Similarly, Spa Road points to the existence of a popular spring and pleasure grounds, maintained for some years at the close of the 18th century. Jacob Street marks Jacob’s Island, the scene of the death of Bill Sikes in Dickens’s *Oliver Twist*. Tooley Street, leading east from Southwark by London Bridge railway station, is well known in connexion with the story of three tailors of Tooley Street, who addressed a petition to parliament opening with the comprehensive expression “We, the people of England.” The name is a corruption of St Olave, or Olaf, the Christian king of Norway, who in 994 attacked London by way of the river, and broke down London Bridge.

See E.T. Clarke, *Bermondsey, its Historic Memories* (1901).

BERMUDAS, a group of islands in the Atlantic Ocean, forming a British colony, in 32° 15′ N.

and 64° 50′ W., about 580 m. E. by S. from Cape Hatteras on the American coast. The group, consisting of small islands and reefs (which mark the extreme northern range of the coral-building polyps), is of oval form, measuring 22 m. from N.E. to S.W., the area being 20 sq. m. The largest of the islands is Great Bermuda, or the Main Island, 14 m. long and about a mile in average width, enclosing on the east Harrington or Little Sound, and on the west the Great Sound, which is thickly studded with islets, and protected on the north by the islands of Watford, Boaz, Ireland and Somerset. The remaining members of the group, St George, Paget, Smith, St David, Cooper, Nonsuch, &c., lie N.E. of the Main Island, and form a semicircle round Castle Harbour. The fringing islands which encircle the islands, especially on the north and west, leave a few deep passages wide enough to admit the largest vessels.

Geology.—The Bermudas consist of aeolian limestones (cf. Bahamas) which in some of the larger islands form irregular hills attaining a height of some 200-250 ft. These limestones are composed chiefly of comminuted shells drifted and deposited by the wind, and they are very irregularly stratified, as is usually the case with wind-blown deposits. Where fresh the rock is soft, but where it has been exposed to the action of the sea it is covered by a hard crust and often loses all trace of stratification. The surface is frequently irregularly honeycombed. Even the reefs are not wholly formed of coral. They are ridges of aeolian limestone plastered over by a thin layer of corals and other calcareous organisms. The very remarkable "serpuline atolls" are covered by a solid crust made of the convoluted tubes of serpulae and *Vermetus*, together with barnacles, mussels, nullipores, corallines and some true incrusting corals. They probably rest upon a foundation of aeolian rock. The Bermudas were formerly much more extensive than at present, and they may possibly stand upon the summit of a hidden volcano. There are evidences of small oscillations of levels, but no proofs of great elevation or depression.

Soil, Climate, &c.—The surface soil is a curious kind of red earth, which is also found in ochre-like strata throughout the limestone. It is generally mixed with vegetable matter and coral sand. There is a total want of streams and wells of fresh water, and the inhabitants are dependent on the rain, which they collect and preserve in tanks. The climate is mild and healthy, although serious epidemics of yellow fever and typhus have occurred. The maximum reading of the thermometer is about 87° F. and its minimum 49°, the mean annual temperature being 70°. The islands attract a large number of visitors annually from America. Vegetation is very rapid, and the soil is clad in a mantle of almost perpetual green. The principal kind of tree is the so-called "Bermudas cedar," really a species of juniper, which furnishes timber for small vessels. The shores are fringed with the mangrove; the prickly pear grows luxuriantly in the most barren districts; and wherever the ground is left to itself the sage bush springs up profusely. The citron, sour orange, lemon and lime grow wild; but the apple and peach do not come to perfection. The loquat, an introduction from China, thrives admirably. The mild climate assists the growth of esculent plants and roots; and a considerable trade is carried on with New York, principally in onions, early potatoes, tomatoes, and beetroot, together with lily bulbs, cut flowers and some arrowroot. Medicinal plants, as the castor-oil plant and aloe, come to perfection without culture; and coffee, indigo, cotton and tobacco are also of spontaneous growth. Few oxen or sheep are reared in the colony, meat, as well as bread and most vegetables, being imported from America. The indigenous mammals are very few, and the only reptiles are a small lizard and the green turtle. Birds, however, especially aquatic species, are very numerous. Insects are comparatively few, but ants swarm destructively in the heat of the year. Fish are plentiful round the coasts, and the whale-fishery was once an important industry, but the fisheries as a whole have not been developed.

Towns, and Administration.—There are two towns in the Bermudas: St George, on the island of that name, founded in 1794 and incorporated in 1797; and Hamilton, on the Main Island, founded in 1790 and incorporated in 1793. St George was the capital till the senate and courts of justice were removed by Sir James Cockburn to Hamilton, which being centrally situated, is more convenient. Hamilton, which is situated on the inner part of the Great Sound, had a population in 1901 of 2246, that of St George being 985. In Ireland Island is situated the royal dockyard and naval establishment. The harbour of St George's has space enough to accommodate a vast fleet; yet, till deepened by blasting, the entrance was so narrow as to render it almost useless. The Bermudas became an important naval and coaling station in 1869, when a large iron dry dock was towed across the Atlantic and placed in a secure position in St George, while, owing to their important strategic position in mid-Atlantic, the British government maintains a strong garrison. The Bermudas are a British crown colony, with a governor resident at Hamilton, who is assisted by an executive council of 6 members appointed by the crown, a legislative council of 9 similarly appointed, and a representative assembly of 36 members, of whom four are returned by each of nine parishes. The currency of the colony, which had formerly twelve shillings to the pound sterling, was assimilated to that of England in 1842. The English language is universal. The colony is ecclesiastically attached to the bishopric of Newfoundland. In 1847 an educational board was established, and there are numerous schools; attendance is compulsory, but none of the schools is free. Government scholarships enable youths to be educated for competition in the Rhodes scholarships to Oxford University. The

revenue of the islands shows a fairly regular increase during the last years of the 19th century and the first of the 20th, as from £37,830 in 1895 to £63,457 in 1904; expenditure is normally rather less than revenue. In the year last named imports were valued at £589,979 and exports at £130,305, the annual averages since 1895 being about £426,300 and £112,500 respectively. The population shows a steady increase, as from 13,948 in 1881 to 17,535 in 1901; 6383 were whites and 11,152 coloured in the latter year.

History.—The discovery of the Bermudas resulted from the shipwreck of Juan Bermudez, a Spaniard (whose name they now bear), when on a voyage from Spain to Cuba with a cargo of hogs, early in the 16th century. Henry May, an Englishman, suffered the same fate in 1593; and lastly, Sir George Somers shared the destiny of the two preceding navigators in 1609. Sir George, from whom the islands took the alternative name of Somers, was the first who established a settlement upon them, but he died before he had fully accomplished his design. In 1612 the Bermudas were granted to an offshoot of the Virginia Company, which consisted of 120 persons, 60 of whom, under the command of Henry More, proceeded to the islands. The first source of colonial wealth was the growing of tobacco, but the curing industry ceased early in the 18th century. In 1726 Bishop George Berkeley chose the Bermudas as the seat of his projected missionary establishment. The first newspaper, the *Bermuda Gazette*, was published in 1784.

See Godet, *Bermuda, its History, Geology, Climate, &c.* (London, 1860); Lefroy, *Discovery and Settlement of the Bermudas* (London, 1877-1879); A. Heilprin, *Bermuda Islands* (Philadelphia, 1889); Stark, *Bermuda Guide* (London, 1898); Cole, *Bermuda ... Bibliography* (Boston, 1907); and for geology see also A. Agassíz, “Visit to the Bermudas in March 1894,” *Bull. Mus. Comp. Zool. Harvard*, vol. xxvi. No. 2, 1895; A.E. Verrill, “Notes on the Geology of the Bermudas,” *Amer. Journ. Sci.* ser. 4, vol. ix. (1900), pp. 313-340; “The Bermuda Islands; Their Scenery, &c.,” *Trans. Conn. Acad. Arts and Sci.* vol. xi. pt. 2 (1901-1902).

BERMUDEZ, a N.E. state of Venezuela, between the Caribbean Sea and the Orinoco river, bounded E. by the gulf of Paria and the Delta-Amacuro territory, and W. by the states of Guarico and Miranda. Pop. (est. 1905) 364,158. It was created in 1881 by the union of the states of Barcelona, Cumaná and Maturín, dissolved in 1901 into its three original states, and reorganized in 1904 with a slight modification of territory. The state includes the oldest settlements in Venezuela, and was once very prosperous, producing cattle and exporting hides, but wars and political disorders have partly destroyed its industries and impeded their development. Its principal productions are coffee, sugar, and cacáo, and—less important—cotton, tobacco, cocoanuts, timber, indigo and dyewoods. Its more important towns are the capital, Barcelona, Maturín (pop. 14,473), capital of a district of the same name, and Cumaná (10,000), on the gulf of Cariaco, founded in 1520 and one of the oldest towns of the continent.

BERN (Fr. *Berne*), after the Grisons, the largest of the Swiss cantons, but by far the most populous, though politically Bern ranks after that of Zürich. It extends right across Switzerland from beyond the Jura to the snow-clad ranges that separate Bern from the Valais. Its total area is 2641.9 sq. m., of which 2081 sq. m. are classed as “productive” (including 591 sq. m. of forests, and 2.1 m. of vineyards), while of the remainder 111.3 sq. m. are occupied by glaciers (the Valais and the Grisons alone surpass it in this respect). It is mainly watered by the river Aar (*q.v.*), with its affluents, the Kander (left), the Saane or Sarine (left) and the Emme (right); the Aar forms the two lakes of Brienz and Thun (*q.v.*). The great extent of this canton accounts for the different character of the regions therein comprised. Three are usually distinguished:—(1) The *Oberland* or Highlands, which is that best known to travellers, for it includes the snowy Alps of the Bernese Oberland (culminating in the Finsteraarhorn, 14,026 ft., and the Jungfrau, 13,669 ft.), as well as the famous summer resorts of Grindelwald, Mürren, Lauterbrunnen, Interlaken, Meiringen, Kandersteg, Adelboden, Thun and the fine pastoral valley of the Simme. (2) The *Mittelland* or Midlands, comprising the valley of the Aar below Thun, and that of the Emme, thus taking in the outliers of the high Alps and the open country on every side of the town of Bern. (3) The *Seeland* (Lakeland) and the Jura, extending from Bienne and its lake across the Jura to Porrentruy in the plains and to the upper course of the Birs. The Oberland and Mittelland form the “old” canton, the Jura having only been acquired in 1815, and differing from the rest of the canton by reason of its French-speaking and Romanist inhabitants.

In 1900 the total population of the canton was 589,433, of whom 483,388 were German-speaking, 97,789 French-speaking, and 7167 Italian-speaking; while there were 506,699 Protestants, 80,489 Romanists (including the Old Catholics), and 1543 Jews. The capital is Bern (*q.v.*), while the other important towns are Bienne (*q.v.*), Burgdorf (*q.v.*), Delémont or Delsberg (5053 inhabitants), Porrentruy or Pruntrut (6959 inhabitants), Thun (*q.v.*), and Langenthal (4799 inhabitants). There is a university (founded in 1834) in the town of Bern, as well as institutions for higher education in the principal towns. The canton is divided into 30 administrative districts, and contains 507 communes (the highest number in Switzerland). From 1803 to 1814 the canton was one of the six "Directorial" cantons of the Confederation. The existing cantonal constitution dates from 1893, but in 1906 the direct popular election of the executive of 9 members (hitherto named by the legislature) was introduced. The legislature or *Grossrath* is elected for four years (like the executive), in the proportion of 1 member to every 2500 (or fraction over 1250) of the resident population. The *obligatory Referendum* obtains in the case of all laws, and of decrees relating to an expenditure of over half a million francs, while 12,000 citizens have the right of *initiative* in the case of legislative projects, and 15,000 may demand the revision of the cantonal constitution. The 2 members sent by the canton to the federal *Ständerath* are elected by the *Grossrath*, while the 29 members sent to the federal *Nationalrath* are chosen by a popular vote. In the Alpine portions of the canton the breeding of cattle (those of the Simme valley are particularly famous) is the chief industry; next come the elaborate arrangements for summer travellers (the *Fremdenindustrie*). It is reckoned that there are 2430 "Alps" or mountain pastures in the canton, of which 1474 are in the Oberland, 627 in the Jura, and 280 in the Emme valley; they can maintain 95,478 cows and are of the estimated value of 46½ million francs. The cheese of the Emme valley is locally much esteemed. Other industries in the Alpine region are wood-carving (at Brienz) and wine manufacture (on the shores of the lakes of Bienne and of Thun). The Mittelland is the agricultural portion of the canton. Watchmaking is the principal industry of the Jura, Bienne and St Imier being the chief centres of this industry. Iron mines are also worked in the Jura, while the Heimberg potteries, near Thun, produce a locally famous ware, and there are both quarries of building stone and tile factories. The canton is well supplied with railway lines, the broad gauge lines being 228 m. in length, and the narrow gauge lines 157½ m.—in all 385½ m. Among these are many funicular cog-wheel lines, climbing up to considerable heights, so up to Mürren (5368 ft.), over the Wengern Alp (6772 ft.), up to the Schynige Platte (6463 ft.), and many others still in the state of projects. All these are in the Oberland where, too, is the so-called Jungfrau railway, which in 1906 attained a point (the Eismeer station) in the south wall of the Eiger (13,042 ft.) that was 10,371 ft. in height, the loftiest railway station in Switzerland.

The canton of Bern is composed of the various districts which the town of Bern acquired by conquest or by purchase in the course of time. The more important, with dates of acquisition, are the following:—Laupen (1324), Hasli and Meiringen (1334), Thun and Burgdorf (1384), Unterseen and the Upper Simme valley (1386), Frutigen, &c. (1400), Lower Simme valley (1439-1449), Interlaken, with Grindelwald, Lauterbrunnen and Brienz (1528, on the suppression of the Austin Canons of Interlaken), Saanen or Gessenay (1555), Köniz (1729), and the Bernese Jura with Bienne (1815, from the bishopric of Basel). But certain regions previously won were lost in 1798—Aargau (1415), Aigle and Grandson (1475), Vaud (1536), and the Pays d'En-Haut or Château d'Oex (1555). From 1798 to 1802 the Oberland formed a separate canton (capital, Thun) of the Helvetic Republic.

(W. A. B. C.)

BERN (Fr. *Berne*), the capital of the Swiss canton of the same name, and, by a Federal law of 1848, the political capital of the Swiss confederation. It is most picturesquely situated on a high bluff or peninsula, round the base of which flows the river Aar, thus completely cutting off the old town, save to the west. Five lofty bridges have been thrown over the Aar, the two most modern being the Kirchfeld and Kornhaus bridges which have greatly contributed to create new residential quarters near the old town. Within the town the arcades (or *Lauben*) on either side of the main street, and the numerous elaborately ornamented fountains attract the eye, as well as the two remaining towers that formerly stood on the old walls but are now in the centre of the town; the *Zeilglockenthurm* (famous for its singular 16th-century clock, with its mechanical contrivances, set in motion when the hour strikes) and the *Käficthurm*. The principal medieval building in Bern is the (now Protestant) Münster, begun in 1421 though not completed till 1573. The tower, rising conspicuously above the town, has recently been well restored, but the church was never a cathedral church (as is often stated), for there has never yet been a bishop of Bern. The federal Houses of Parliament (*Bundeshaus*) were much enlarged in 1888-1892, the older portions dating from 1852-1857, and also contain the offices of the federal executive and

administration. The town-hall dates from 1406, while some of the houses belonging to the old gilds contain much of interest. The town library (with which that of the university was incorporated in 1905) contains a vast store of MSS. and rare printed books, but should be carefully distinguished from the national Swiss library, which, with the building for the federal archives, is built in the new Kirchfeld quarter. There are a number of museums; the historical (archaeological and medieval), the natural history (in which the skin of Barry, the famous St Bernard dog, is preserved), the art (mainly modern Swiss pictures), and the Alpine (in which are collections of all kinds relating to the Swiss Alps). Bern possesses a university (founded in 1834) and two admirably organized hospitals. The old fortifications (*Schanzen*) have been converted into promenades, which command wonderful views of the snowy Alps of the Bernese Oberland. Just across the Nydeck bridge is the famous bear pit in which live bears are kept, as they are supposed to have given the name to the town; certainly a bear is shown on the earliest known town seal (1224), while live bears have been maintained at the charges of the town since 1513. There is comparatively little industrial activity in the town, the importance of which is mainly political, though of late years it has been selected as the seat of various international associations (postal, telegraph, railway, copyright, &c.). The climate is severe, as the town is much exposed to cold winds blowing from the snowy Alps. In point of population it is exceeded in Switzerland by Zürich, Basel and Geneva, though the number of inhabitants has risen from 27,558 in 1850 and 43,197 in 1880 to 64,227 in 1900. In 1900, 59,698 inhabitants were German-speaking; while 57,144 were Protestants, 6087 Romanists (including Old Catholics) and 655 Jews. The height of the town above the sea-level is 1788 ft.

The ancient castle of Nydeck, at the eastern end of the peninsula, guarded the passage over the Aar, and it was probably its existence that induced Berchtold V., duke of Zäringen, to found Bern in 1191 as a military post on the frontier between the Alamannians (German-speaking) and the Burgundians (French-speaking). Thrice the walls which protected the town were moved westwards, about 1250, in 1346 and in 1622, though even at the last-named date the town only stretched a little way to the west of (or beyond) the present railway station. After the extinction of the Zäringen dynasty (1218) Bern became a free imperial city, but it had to fight hard for its independence, which was finally secured by the victories of Dornbühl (1298) over Fribourg and the Habsburgs, and of Laupen (1339) over the neighbouring Burgundian nobles. In the second battle Bern received help from the three forest cantons with which it had become allied in 1323, while in 1353 it entered the Swiss confederation as its eighth member. It soon took the lead in the confederation, though always aiming at enlarging its own borders, even at great risks (see the article on the canton). In 1528 Bern accepted the religious reformation, and henceforth became one of its chief champions in Switzerland. In the 17th century the number of families by which high offices of state could be held was diminished, so that in 1605 there were 152 thus qualified, but in 1691 only 104, while towards the end of the 18th century there were only 69 such families. Meanwhile the rule of the town was extending over more and more territory, so that finally it governed 52 bailiwicks (acquired between 1324 and 1729), the Bernese patricians being thus extremely powerful and forming an oligarchy that administered affairs like a benevolent and well-ordered despotism. In 1723 Major Davel, at Lausanne, and in 1749 Henzi, in Bern itself, tried to break down this monopoly, but in each case paid the penalty of failure on the scaffold. The whole system was swept away by the French in 1798, and though partially revived in 1815, came to an end in 1831, since which time Bern has been in the van of political progress. From 1815 to 1848 it shared with Zürich and Lucerne the supreme rule (which shifted from one to the other every two years) in the Swiss confederation, while in 1848 a federal law made Bern the sole political capital, where the federal government is permanently fixed and where the ministers of foreign powers reside.

Authorities.—*Die Alp- und Weidewirthschaft im Kant. Bern* (Bern, 1903); *Archiv d. hist. Vereins d. Kant. Bern*, from 1848, and *Blätter für bernische Geschichte*, from 1905; *Bernische Biographien* (Bern, 1898-1906); E. Friedli, *Bärndutsch als Spiegel bernischen Volkstums*. vol. i. (*Lützelflüh*, Bern, 1905), and vol. ii. (Grindelwald, Bern, 1908); *Festschrift zur 7ten Säkularfeier d. Gründung Berns*, 1191 (Bern, 1891); *Fontes Rerum Bernensium* (to 1378), (9 vols., Bern, 1883-1908); K. Geiser, *Geschichte d. bernischen Verfassung*, 1191-1471 (Bern, 1888); B. Haller, *Bern in seinen Rathsmanualen*, 1465-1565 (3 vols., Bern, 1900-1902); E.F. and W.F. von Mülinen, *Beiträge zur Heimathskunde d. Kantons Bern, deulschen Theils* (3 vols., Bern, 1879-1894); W.F. von Mülinen, *Berns Geschichte*, 1191-1891 (Bern, 1891); E. von Rodt, *Bernische Stadtgeschichte* (Bern, 1888), and 6 finely illustrated vols. on Bern in the 13th to 19th centuries (Bern, 1898-1907); L.S. von Tscharner, *Rechtsgeschichte des Obersimmenthales bis zum Jahre 1798* (Bern, 1908); E. von Wattenwyl, *Geschichte d. Stadt u. Landschaft Bern* (to 1400), (2 vols.); Schaffhausen and Bern (1867-1872); F.E. Welti, *Die Rechtsquellen d. Kant. Bern*, vol. i. (Aarau, 1902); Gertrud Züricher, *Kinderspiel u. Kinderlied im Kant. Bern* (Zürich, 1902).

(W. A. B. C.)

BERNARD, SAINT (1090-1153), abbot of Clairvaux one of the most illustrious preachers and monks of the middle ages, was born at Fontaines, near Dijon, in France. His father, a knight named Tecelin, perished on crusade; and his mother Aleth, a daughter of the noble house of Mon-Bar, and a woman distinguished for her piety, died while Bernard was yet a boy. The lad was constitutionally unfitted for the career of arms, and his own disposition, as well as his mother's early influence, directed him to the church. His desire to enter a monastery was opposed by his relations, who sent him to study at Châlons in order to qualify for high ecclesiastical preferment. Bernard's resolution to become a monk was not, however, shaken, and when he at last definitely decided to join the community which Robert of Molesmes had founded at Citeaux in 1198, he carried with him his brothers and many of his relations and friends. The little community of reformed Benedictines, which was to produce so profound an influence on Western monachism (see Cistercians and Monasticism) and had seemed on the point of extinction for lack of novices, gained a sudden new life through this accession of some thirty young men of the best families of the neighbourhood. Others followed their example; and the community grew so rapidly that it was soon able to send off offshoots. One of these daughter monasteries, Clairvaux, was founded in 1115, in a wild valley branching from that of the Aube, on land given by Count Hugh of Troyes, and of this Bernard was appointed abbot.

By the new constitution of the Cistercians Clairvaux became the chief monastery of the five branches into which the order was divided under the supreme direction of the abbot of Citeaux. Though nominally subject to Citeaux, however, Clairvaux soon became the most important Cistercian house, owing to the fame and influence of Bernard.[1] His saintly character, his self-mortification—of so severe a character that his friend, William of Champeaux, bishop of Châlons, thought it right to remonstrate with him—and above all, his marvellous power as a preacher, soon made him famous, and drew crowds of pilgrims to Clairvaux. His miracles were noised abroad, and sick folk were brought from near and far to be healed by his touch. Before long the abbot, who had intended to devote his life to the work of his monastery, was drawn into the affairs of the great world. When in 1124 Pope Honorius II. mounted the chair of St Peter, Bernard was already reckoned among the greatest of French churchmen; he now shared in the most important ecclesiastical discussions, and papal legates sought his counsel. Thus in 1128 he was invited by Cardinal Matthew of Albano to the synod of Troyes, where he was instrumental in obtaining the recognition of the new order of Knights Templars, the rules of which he is said to have drawn up; and in the following year, at the synod of Châlons-sur-Marne, he ended the crisis arising out of certain charges brought against Henry, bishop of Verdun, by persuading the bishop to resign. The European importance of Bernard, however, began with the death of Pope Honorius II. (1130) and the disputed election that followed. In the synod convoked by Louis the Fat at Etampes in April 1130 Bernard successfully asserted the claims of Innocent II. against those of Anacletus II., and from this moment became the most influential supporter of his cause. He threw himself into the contest with characteristic ardour. While Rome itself was held by Anacletus, France, England, Spain and Germany declared for Innocent, who, though banished from Rome, was—in Bernard's phrase—"accepted by the world." The pope travelled from place to place, with the powerful abbot of Clairvaux at his side; he stayed at Clairvaux itself, humble still, so far as its buildings were concerned; and he went with Bernard to parley with the emperor Lothair III. at Liége.

In 1133, the year of the emperor's first expedition to Rome, Bernard was in Italy persuading the Genoese to make peace with the men of Pisa, since the pope had need of both. He accompanied Innocent to Rome, successfully resisting the proposal to reopen negotiations with Anacletus, who held the castle of Sant' Angelo and, with the support of Roger of Sicily, was too strong to be subdued by force. Lothair, though crowned by Innocent in St Peter's, could do nothing to establish him in the Holy See so long as his own power was sapped by his quarrel with the house of Hohenstaufen. Again Bernard came to the rescue; in the spring of 1135 he was at Bamberg successfully persuading Frederick of Hohenstaufen to submit to the emperor. In June he was back in Italy, taking a leading part in the council of Pisa, by which Anacletus was excommunicated. In northern Italy the effect of his personality and of his preaching was immense; Milan itself, of all the Lombard cities most jealous of the imperial claims, surrendered to his eloquence, submitted to Lothair and to Innocent, and tried to force Bernard against his will into the vacant see of St Ambrose. In 1137, the year of Lothair's last journey to Rome, Bernard was back in Italy again; at Monte Cassino, setting the affairs of the monastery in order, at Salerno, trying in vain to induce Roger of Sicily to declare against Anacletus, in Rome itself, agitating with success against the antipope. Anacletus died on the 25th of January 1138; on the 13th of March the cardinal Gregory was elected his successor, assuming the name of Victor. Bernard's crowning triumph in the long contest was the abdication of the new antipope, the result of his personal influence. The schism of the church was healed, and the abbot of Clairvaux was free to return to the peace of his monastery.

Clairvaux itself had meanwhile (1135-1136) been transformed outwardly—in spite of the reluctance of Bernard, who preferred the rough simplicity of the original buildings—into a more

suitable seat for an influence that overshadowed that of Rome itself. How great this influence was is shown by the outcome of Bernard's contest with Abelard (*q.v.*). In intellectual and dialectical power the abbot was no match for the great schoolman; yet at Sens in 1141 Abelard feared to face him, and when he appealed to Rome Bernard's word was enough to secure his condemnation.

One result of Bernard's fame was the marvellous growth of the Cistercian order. Between 1130 and 1145 no less than ninety-three monasteries in connexion with Clairvaux were either founded or affiliated from other rules, three being established in England and one in Ireland. In 1145 a Cistercian monk, once a member of the community of Clairvaux—another Bernard, abbot of Aquae Silviae near Rome, was elected pope as Eugenius III. This was a triumph for the order; to the world it was a triumph for Bernard, who complained that all who had suits to press at Rome applied to him, as though he himself had mounted the chair of St Peter (*Ep.* 239).

Having healed the schism within the church, Bernard was next called upon to attack the enemy without. Languedoc especially had become a hotbed of heresy, and at this time the preaching of Henry of Lausanne (*q.v.*) was drawing thousands from the orthodox faith. In June 1145, at the invitation of Cardinal Alberic of Ostia, Bernard travelled in the south, and by his preaching did something to stem the flood of heresy for a while. Far more important, however, was his activity in the following year, when, in obedience to the pope's command, he preached a crusade. The effect of his eloquence was extraordinary. At the great meeting at Vezelay, on the 21st of March, as the result of his sermon, King Louis VII. of France and his queen, Eleanor of Guienne, took the cross, together with a host of all classes, so numerous that the stock of crosses was soon exhausted; Bernard next travelled through northern France, Flanders and the Rhine provinces, everywhere rousing the wildest enthusiasm; and at Spires on Christmas day he succeeded in persuading Conrad, king of the Romans, to join the crusade.

The lamentable outcome of the movement (see Crusades) was a hard blow to Bernard, who found it difficult to understand this manifestation of the hidden counsels of God, but ascribed it to the sins of the crusaders (*Ep.* 288; *de Consid.* ii. 1). The news of the disasters to the crusading host first reached Bernard at Clairvaux, where Pope Eugenius, driven from Rome by the revolution associated with the name of Arnold of Brescia, was his guest. Bernard had in March and April 1148 accompanied the pope to the council of Reims, where he led the attack on certain propositions of the scholastic theologian Gilbert de la Porrée (*q.v.*). From whatever cause—whether the growing jealousy of the cardinals, or the loss of prestige owing to the rumoured failure of the crusade, the success of which he had so confidently predicted—Bernard's influence, hitherto so ruinous to those suspected of heterodoxy, on this occasion failed of its full effect. On the news of the full extent of the disaster that had overtaken the crusaders, an effort was made to retrieve it by organizing another expedition. At the invitation of Suger, abbot of St Denis, now the virtual ruler of France, Bernard attended the meeting of Chartres convened for this purpose, where he himself was elected to conduct the new crusade, the choice being confirmed by the pope. He was saved from this task, for which he was physically and constitutionally unfit, by the intervention of the Cistercian abbots, who forbade him to undertake it.

Bernard was now ageing, broken by his austerities and by ceaseless work, and saddened by the loss of several of his early friends. But his intellectual energy remained undimmed. He continued to take an active interest in ecclesiastical affairs, and his last work, the *De Consideratione*, shows no sign of failing power. He died on the 20th of August 1153.

The greatness of St Bernard lay not in the qualities of his intellect, but of his character. Intellectually he was the child of his age, inferior to those subtle minds whom the world, fired by his contagious zeal, conspired to crush. Morally he was their superior; and in this moral superiority lay the secret of his power. The age recognized in him the embodiment of its ideal: that of medieval monasticism at its highest development. The world had no meaning for him save as a place of banishment and trial, in which men are but "strangers and pilgrims" (Serm. i., Epiph. n. 1; Serm. vii., Lent. n. 1); the way of grace, back to the lost inheritance, had been marked out once for all, and the function of theology was but to maintain the landmarks inherited from the past. With the subtleties of the schools he had no sympathy, and the dialectics of the schoolmen quavered into silence before his terrible invective. Yet, within the limits of his mental horizon, Bernard's vision was clear enough. His very life proves with what merciless logic he followed out the principles of the Christian faith as he conceived it; and it is impossible to say that he conceived it amiss. For all his overmastering zeal he was by nature neither a bigot nor a persecutor. Even when he was preaching the crusade he interfered at Mainz to stop the persecution of the Jews, stirred up by the monk Radulf. As for heretics, "the little foxes that spoil the vines," these "should be taken, not by force of arms, but by force of argument," though, if any heretic refused to be thus taken, he considered "that he should be driven away, or even a restraint put upon his liberty, rather than that he should be allowed to spoil the vines" (Serm. lxiv.). He was evidently troubled by the mob violence which made the

heretics "martyrs to their unbelief." He approved the zeal of the people, but could not advise the imitation of their action, "because faith is to be produced by persuasion, not imposed by force"; adding, however, in the true spirit of his age and of his church, "it would without doubt be better that they should be coerced by the sword than that they should be allowed to draw away many other persons into their error." Finally, oblivious of the precedent of the Pharisees, he ascribes the steadfastness of these "dogs" in facing death to the power of the devil (Serm. lxvi. on Canticles ii. 15).

This is Bernard at his worst. At his best—and, fortunately, this is what is mainly characteristic of the man and his writings—he displays a nobility of nature, a wise charity and tenderness in his dealings with others, and a genuine humility, with no touch of servility, that make him one of the most complete exponents of the Christian life. His broadly Christian character is, indeed, witnessed to by the enduring quality of his influence. The author of the *Imitatio* drew inspiration from his writings; the reformers saw in him a medieval champion of their favourite doctrine of the supremacy of the divine grace; his works, down to the present day, have been reprinted in countless editions. This is perhaps due to the fact that the chief fountain of his own inspiration was the Bible. He was saturated in its language and in its spirit; and though he read it, as might be expected, uncritically, and interpreted its plain meanings allegorically—as the fashion of the day was—it saved him from the grosser aberrations of medieval Catholicism. He accepted the teaching of the church as to the reverence due to our Lady and the saints, and on feast-days and festivals these receive their due meed in his sermons; but in his letters and sermons their names are at other times seldom invoked. They were overshadowed completely in his mind by his idea of the grace of God and the moral splendour of Christ; "from Him do the Saints derive the odour of sanctity; from Him also do they shine as lights" (*Ep.* 464).

The cause of Bernard's extraordinary popular success as a preacher can only imperfectly be judged by the sermons that survive. These were all delivered in Latin, evidently to congregations more or less on his own intellectual level. Like his letters, they are full of quotations from and reference to the Bible, and they have all the qualities likely to appeal to men of culture at all times. "Bernard," wrote Erasmus in his *Art of Preaching*, "is an eloquent preacher, much more by nature than by art; he is full of charm and vivacity and knows how to reach and move the affections." The same is true of the letters and to an even more striking degree. They are written on a large variety of subjects, great and small, to people of the most diverse stations and types; and they help us to understand the adaptable nature of the man, which enabled him to appeal as successfully to the unlearned as to the learned.

Bernard's works fall into three categories:—(1) *Letters*, of which over five hundred have been preserved, of great interest and value for the history of the period. (2) *Treatises*: (*a*) dogmatic and polemical, *De gratia el libero arbitrio*, written about 1127, and following closely the lines laid down by St Augustine; *De baptismo aliisque quaestionibus ad mag. Hugonem de S. Victore; Contra quaedam capitala errorum Abaelardi ad Innocentem II.* (in justification of the action of the synod of Sens); (*b*) ascetic and mystical, *De gradibus humilitatis et superbiae*, his first work, written perhaps about 1121; *De diligendo Deo* (about 1126); *De conversione ad clericos*, an address to candidates for the priesthood; *De Consideratione*, Bernard's last work, written about 1148 at the pope's request for the edification and guidance of Eugenius III.; (*c*) about monasticism, *Apologia ad Guilelmum*, written about 1127 to William, abbot of St Thierry; *De laude novae militiae ad milites templi* (*c.* 1132-1136); *De precepto et dispensatione*, an answer to various questions on monastic conduct and discipline addressed to him by the monks of St Peter at Chartres (some time before 1143); (*d*) on ecclesiastical government, *De moribus et officio episcoporum*, written about 1126 for Henry, bishop of Sens; the *De Consideratione* mentioned above; (*e*) a biography, *De vita et rebus gestis S. Malachiae, Hiberniae episcopi*, written at the request of the Irish abbot Congan and with the aid of materials supplied by him; it is of importance for the ecclesiastical history of Ireland in the 12th century; (*f*) sermons—divided into *Sermones de tempore; de sanctis; de diversis*; and eighty-six sermons, *in Cantica Canticorum*, an allegorical and mystical exposition of the Song of Solomon; (*g*) hymns. Many hymns ascribed to Bernard survive, *e.g. Jesu dulcis memoria, Jesus rex admirabilis. Jesu decus angelicum, Salve caput cruentatum*. Of these the three first are included in the Roman breviary. Many have been translated and are used in Protestant churches.

St Bernard's works were first published in anything like a complete edition at Paris in 1508, under the title *Seraphica melliflui devotique doctoris S. Bernardi scripta*, edited by André Bocard; the first really critical and complete edition is that of Dom J. Mabillon *Sancti Bernardi opp. &c.* (Paris, 1667, improved and enlarged in 1690, and again, by Massuet and Texier, in 1719), reprinted by J.P. Migne, *Patrolog. lat.* (Paris, 1859). There is an English translation of Mabillon's edition, including, however, only the letters and the sermons on the Song of Songs, with the biographical and other prefaces, by Samuel J. Eales (4 vols., London, 1889-1895). See further Leopold Janauschek, *Bibliographia Bernardina* (Vienna, 1891), which includes 2761 entries, including 120 works wrongly ascribed to Bernard.

Authorities.—The principal source for the life of St Bernard is the *Vita Prima*, compiled, in six books, by various contemporary writers: book i. by William, abbot of St Thierry near Reims; book ii. by Ernald, or Arnald, abbot of Bonnevalle; books iii., iv. and v. by Geoffrey (Gaufrid), monk of Clairvaux and Bernard's secretary; book vi., on Bernard's miracles, by Geoffrey and Philip, another monk of Clairvaux, &c. A MS. is preserved, *int. al.*, in the library of Lambeth Palace (§ xiv. No. 163). The *Vita* was first published in *Bernardi op. omn.* by Mabillon (Paris, 1690), ii. pp. 1061 ff.; it was included in Migne, *Patrolog. lat.* clxxxv. pp. 225-416, which also contains the abridgments or amplifications, by later hands, of the *Vita Prima*, known as the *Vita Secunda*, *Tertia* and *Quarta*. For a critical study of these sources see G. Hüffer, *Der heilige Bernhard von Clairvaux* (2 vols., Münster, 1886), and E. Vacandard, *Vie de Saint Bernard* (2 vols., Paris, 1895).

Among the numerous modern works on St Bernard may be mentioned, besides the above, J.C. Morison, *The Life and Times of St Bernard* (London, 1863); G. Chevallier, *Histoire de Saint Bernard* (2 vols., Lille, 1888); S.J. Eales, *St Bernard, abbot of Clairvaux* (London, 1890, "Fathers for English Readers" series); ib. *Life and Works of St Bernard* (London, 1889); R.S. Storrs, *Bernard of Clairvaux: the Times, the Man and His Work* (New York, 1893); Comte d'Haussonville, *Saint Bernard* (Paris, 1906). See also the article by Vacandart in A. Vacant's *Dictionnaire de théologie* (with full bibliography), and that by S.M. Deutsch in Herzog-Hauck, *Realencyklopädie* (3rd ed.), vol. ii. (bibliography). Further works, monographs, &c., are given *s.* "Vita S. Bernardi" in Potthast. *Bibliotheca Historica Medii Aevi* (Berlin, 1896).

(W. A. P.)

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1 The Cistercians of this branch of the order were commonly known as Bernardines.

BERNARD OF CHARTRES (1080?-1167), surnamed Sylvestris, scholastic philosopher, described by John of Salisbury as *perfectissimus inter Platonicos nostri saeculi*. He and his brother Theodore were among the chief members of the school of Chartres (France), founded in the early part of the 11th century by Fulbert, the great disciple of Gerbert. This school flourished at a time when medieval thought was directed to the ancient philosophy of Plato and Aristotle, and had perversely come to regard Aristotle as merely the founder of abstract logic and formal intellectualism, as opposed to Plato whose doctrine of Ideas seemed to tend in a naturalistic direction. Thus Bernard is a Platonist and yet the representative of a "return to Nature" which curiously anticipates the humanism of the early Renaissance. John of Salisbury (*Metalogicus*, iv. 35) attributes to him two treatises, of which one contrasts the eternity of ideas with the finite nature of things, and the other is an attempt to reconcile Plato and Aristotle. The only extant fragments of Bernard's writings are from a treatise *Megacosmus and Microcosmus* (edited by C.S. Barach at Innsbruck, 1876). The source of Bernard's inspiration was Plato's *Timaeus*. He maintained that ideas are really existent and are laid up for ever in the mind of God. He further attempted to build up a symbolism of numbers with the view of elaborating the doctrine of the Trinity, and explaining the meaning of unity, plurality and likeness.

See Scholasticism; also V. Cousin, *Œuvres inédites* of Abelard (Paris, 1836); Hauréau, *Philosophie scolastique*, i. 396 foll.

BERNARD, CHARLES DE, whose full name was Pierre Marie Charles de Bernard du Grail de la Villette (1804-1850), French writer, was born at Besançon on the 25th of February 1804. After studying for the law, and then taking to journalism, he was encouraged by Balzac (whose *Peau de chagrin* he had reviewed) to settle in Paris and devote himself to authorship; and the result was a series of volumes of fiction, remarkable for their picture of provincial society and the Parisian *bourgeoisie*. The best of these are *Le Nœud gordien* (1838), containing among other short stories *Une Aventure de magistrat*, from which Sardou drew his comedy of the *Pommes du voisin; Gerfaut* (1838), considered his masterpiece; *Les Ailes d'Icare* (1840), *La Peau du lion* (1841) and *Le Gentilhomme campagnard* (1847).

His *Œuvres complètes* (12 vols.), which appeared after his death on the 6th of March 1850, include also his poetry and two comedies written in collaboration with "Léonce" (C.H.L. Laurençot, 1805-1862). A flattering appreciation by Armand de Pontmartin is prefixed to *Un Beau-père* in this collection. In W.M. Thackeray's *Paris Sketch-book* ("On some fashionable French novels") there is an admirable criticism of Bernard. See also an essay by Henry James in *French Poets and Novelists* (1884).

BERNARD, CLAUDE (1813-1878), French physiologist, was born on the 12th of July 1813 in the village of Saint-Julien near Villefranche. He received his early education in the Jesuit school of that town, and then proceeded to the college at Lyons, which, however, he soon left to become assistant in a druggist's shop. His leisure hours were devoted to the composition of a vaudeville comedy, *La Rose du Rhône*, and the success it achieved moved him to attempt a prose drama in five acts, *Arthur de Bretagne*. At the age of twenty-one he went to Paris, armed with this play and an introduction to Saint-Marc Girardin, but the critic dissuaded him from adopting literature as a profession, and urged him rather to take up the study of medicine. This advice he followed, and in due course became interne at the Hôtel Dieu. In this way he was brought into contact with the great physiologist, F. Magendie, who was physician to the hospital, and whose official *préparateur* at the Collège de France he became in 1841. Six years afterwards he was appointed his deputy-professor at the collège, and in 1855 he succeeded him as full professor. Some time previously he had been chosen the first occupant of the newly-instituted chair of physiology at the Sorbonne. There no laboratory was provided for his use, but Louis Napoleon, after an interview with him in 1864, supplied the deficiency, at the same time building a laboratory at the natural history museum in the Jardin des Plantes, and establishing a professorship, which Bernard left the Sorbonne to accept in 1868—the year in which he was admitted a member of the Institute. He died in Paris on the 10th of February 1878 and was accorded a public funeral—an honour which had never before been bestowed by France on a man of science.

Claude Bernard's first important work was on the functions of the pancreas gland, the juice of which he proved to be of great significance in the process of digestion; this achievement won him the prize for experimental physiology from the Academy of Sciences. A second investigation —perhaps his most famous—was on the glycogenic function of the liver; in the course of this he was led to the conclusion, which throws light on the causation of diabetes, that the liver, in addition to secreting bile, is the seat of an "internal secretion," by which it prepares sugar at the expense of the elements of the blood passing through it. A third research resulted in the discovery of the vaso-motor system. While engaged, about 1851, in examining the effects produced in the temperature of various parts of the body by section of the nerve or nerves belonging to them, he noticed that division of the cervical sympathetic gave rise to more active circulation and more forcible pulsation of the arteries in certain parts of the head, and a few months afterwards he observed that electrical excitation of the upper portion of the divided nerve had the contrary effect. In this way he established the existence of vaso-motor nerves—both vaso-dilatator and vaso-constrictor. The study of the physiological action of poisons was also a favourite one with him, his attention being devoted in particular to curare and carbon monoxide gas. The earliest announcements of his results, the most striking of which were obtained in the ten years from about 1850 to 1860, were generally made in the recognized scientific publications; but the full exposition of his views, and even the statement of some of the original facts, can only be found in his published lectures. The various series of these *Leçons* fill seventeen octavo volumes. He also published *Introduction à la médecine expérimentale* (1865), and *Physiologie générale* (1872).

An English *Life of Bernard*, by Sir Michael Foster, was published in London in 1899.

BERNARD, JACQUES (1658-1718), French theologian and publicist, was born at Nions in Dauphiné on the 1st of September 1658. Having studied at Geneva, he returned to France in 1679, and was chosen minister of Venterol in Dauphiné, whence he afterwards removed to the church of Vinsobres. As he continued to preach the reformed doctrines in opposition to the royal ordinance, he was obliged to leave the country and retired to Holland, where he was well received and appointed one of the pensionary ministers of Gouda. In July 1686 he commenced his *Histoire abrégée de l'Europe*, which he continued monthly till December 1688. In 1692 he began his *Lettres historiques*, containing an account of the most important transactions in Europe; he carried on this work till the end of 1698, after which it was continued by others. When Le Clerc discontinued his *Bibliothèque universelle* in 1691. Bernard wrote the greater part of the twentieth volume and the five following volumes. In 1698 he collected and published *Actes et négotiations de la paix de Ryswic*, in four volumes 12mo. In 1699 he began a continuation of Bayle's *Nouvelles de la république des lettres*, which continued till December

1710. In 1705 he was unanimously elected one of the ministers of the Walloon church at Leiden; and about the same time he succeeded M. de Valder in the chair of philosophy and mathematics at Leiden. In 1716 he published a supplement to Moreri’s dictionary, in two volumes folio. The same year he resumed his *Nouvelles de la république des lettres*, and continued it till his death, on the 27th of April 1718. Besides the works above mentioned, he was the author of two practical treatises, one on late repentance (1712), the other on the excellence of religion (1714).

BERNARD, MOUNTAGUE (1820-1882), English international lawyer, the third son of Charles Bernard of Jamaica, the descendant of a Huguenot family, was born at Tibberton Court, Gloucestershire, on the 28th of January 1820. He was educated at Sherborne school, and Trinity College, Oxford. Graduating B.A. in 1842, he took his B.C.L., was elected Vinerian scholar and fellow, and having read in chambers with Roundell Palmer (afterwards Lord Selborne), was called to the bar at Lincoln’s Inn in 1846. He was specially interested in legal history and in church questions, and was one of the founders of the *Guardian*. In 1852 he was elected to the new professorship of international law and diplomacy at Oxford, attached to All Souls’ College, of which he afterwards was made a fellow. But besides his duties at Oxford he undertook a good deal of non-collegiate work; he was a member of several royal commissions; in 1871 he went as one of the high commissioners to the United States, and signed the treaty of Washington, and in 1872 he assisted Sir Roundell Palmer before the tribunal of arbitration at Geneva. In 1874 he resigned his professorship at Oxford, but as member of the university of Oxford commission of 1876 he was mainly responsible for bringing about the compromise ultimately adopted between the university and the colleges. Bernard’s reputation as an international lawyer was widespread, and he was an original member of the Institut de Droit International (1873). His published works include *An Historical Account of the Neutrality of Great Britain during the American Civil War* (London, 1870), and many lectures on international law and diplomacy.

BERNARD, SIMON (1779-1839), French general of engineers, was born at Dôle, educated at the École Polytechnique, and entered the army in the corps of engineers. He rose rapidly, and served (1805-1812) as aide-de-camp to Napoleon. He was wounded in the retreat after Leipzig, and distinguished himself the same year (1813) in the gallant defence of Torgau against the allies. After the emperor’s fall he emigrated to the United States, where, being made a brigadier-general of engineers, he executed a number of extensive military works for the government, notably at Fortress Monroe, Va., and around New York, and did a large amount of the civil engineering connected with the Chesapeake and Ohio Canal and the Delaware Breakwater. He returned to France after the revolution of 1830, was made a lieu tenant-general by Louis Philippe, and in 1836 served as minister of war.

BERNARD, SIR THOMAS, Bart. (1750-1818), English social reformer, was born at Lincoln on the 27th of April 1750, the younger son of Sir Francis Bernard, 1st bart. (1711-1779), who as governor of Massachusetts Bay (1760-1770) played a responsible part in directing the British policy which led to the revolt of the American colonies. On the death of his elder brother in 1810, Bernard succeeded to the baronetcy conferred on his father in 1769. His early education was obtained in America, partly at Harvard, in which college his father took a great interest. He then acted as confidential secretary to his father during the troubles which led (1769) to the governor’s recall, and accompanied Sir Francis to England, where he was called to the bar, and practised as a conveyancer. He married a rich wife, and acquired a considerable fortune, and then devoted most of his time to social work for the benefit of the poor. He was treasurer of the Foundling Hospital, in the concerns of which he took an important part. He helped to establish in 1796 the “Society for Bettering the Condition and Increasing the Comforts of the Poor,” in 1800 a school for indigent blind, and in 1801 a fever institution. He was active in promoting vaccination, improving the conditions of child labour, advocating rural allotments, and agitating against the salt duties. He took great interest in education, and with Count Rumford he was an

originator of the Royal Institution in London. He died without issue on the 1st of July 1818.

BERNARDIN OF SIENA, ST (1380-1444), Franciscan friar and preacher, was born of a noble family in 1380. His parents died in his childhood, and on the completion of his education he spent some years in the service of the sick in the hospitals, and thus caught the plague, of which he nearly died. In 1402 he entered the Franciscan order in the strict branch called Observant, of which he became one of the chief promoters (see Franciscans). Shortly after his profession the work of preaching was laid upon him, and for more than thirty years he preached with wonderful effect all over Italy, and played a great part in the religious revival of the beginning of the 15th century. In 1437 he became vicar-general of the Observant branch of the Franciscans. He refused three bishoprics. He died in 1444 at Aquila in the Abruzzi, and was canonized in 1450.

The first edition of his works, for the most part elaborate sermons, was printed at Lyons in 1501; later ones in 1636, 1650 and 1745. His Life will be found in the Bollandists and in *Lives of the Saints* on the 20th of May: a good modern biography has been written by Paul Thureau-Dangin (1896), and translated into English by Gertrude von Hügel (1906).

(E. C. B.)

BERNAUER, AGNES (d. 1435), daughter of an Augsburg baker, was secretly married about 1432 to Albert (1401-1460), son of Ernest, duke of Bavaria-Munich. Ignorant of the fact that this union was a lawful one, Ernest urged his son to marry, and reproached him with his connexion with Agnes. Albert then declared she was his lawful wife; and subsequently, during his absence, she was seized by order of Duke Ernest and condemned to death for witchcraft. On the 12th of October 1435 she was drowned in the Danube near Straubing, in which town her remains were afterwards buried by Albert. This story lived long in the memory of the people, and its chief interest lies in its literary associations. It has afforded material for several dramas, and Adolf Böttger, Friedrich Hebbel and Otto Ludwig have each written one entitled *Agnes Bernauer*.

BERNAY, a town of north-western France, capital of an arrondissement in the department of Eure, on the left bank of the Charentonne, 31 m. W.N.W. of Evreux, on the Western railway between that town and Lisieux. Pop. (1906) 5973. It is beautifully situated in the midst of green wooded hills, and still justifies Madame de Stael’s description of it as “a basket of flowers.” Of great antiquity, it possesses numerous quaint wooden houses and ancient ecclesiastical buildings of considerable interest. The abbey church is now used as a market, and the abbey, which was founded by Judith of Brittany early in the 11th century, and underwent a restoration in the 17th century, serves for municipal and legal purposes. The church of Ste Croix, which has a remarkable marble figure of the infant Jesus, dates from the 14th and 15th centuries, that of Notre-Dame de la Couture, which preserves some good stained glass, from the 14th, 15th and 16th centuries, Bernay has a sub-prefecture, a communal college, tribunals of commerce and of first instance, and a board of trade-arbitrators. Among the industrial establishments of the place are manufactories of cotton and woollen goods, bleacheries and dye-works. Large numbers of Norman horses are sold in Lent, at the fair known as the *Foire fleurie*, and there is also a trade in grain. Bernay grew up round the Benedictine abbey mentioned above, and early in the 13th century was the seat of a viscount. The town, formerly fortified was besieged by Bertrand du Guesclin, constable of France, in 1378; it was taken several times by the English during the first half of the 15th century, and by Admiral de Coligny in 1563. The fortress was razed in 1589.

BERNAYS, JAKOB (1824-1881), German philologist and philosophical writer, was born at Hamburg of Jewish parents on the 11th of September 1824. His father, Isaac Bernays (1792-1849), a man of wide culture, was the first orthodox German rabbi to preach in the vernacular. Jakob studied from 1844 to 1848 at the university of Bonn, the philological school of which, under Welcker and Ritschl (whose favourite pupil Bernays became), was the best in Germany. In 1853 he accepted the chair of classical philology at the newly founded Jewish theological college (the Fränkel seminary) at Breslau, where he formed a close friendship with Mommsen. In 1866, when Ritschl left Bonn for Leipzig, Bernays returned to his old university as extraordinary professor and chief librarian. He remained at Bonn until his death on the 28th of May 1881. His chief works, which deal mainly with the Greek philosophers, are:—*Die Lebensbeschreibung des J.J. Scaliger* (1855); *Über das Phokylidische Gedicht* (1856); *Die Chronik des Sulpicius Severus* (1861); *Die Dialoge des Aristoteles im Verhältniss zu seinen übrigen Werken* (1863); *Theophrastos’ Schrift über Frömmigkeit* (1866); *Die Heraklitischen Briefe* (1869); *Lucian und die Cyniker* (1879); *Zwei Abhandlungen über die Aristolelische Theorie des Dramas* (1880). The last of these was a republication of his *Grundzüge der verlorenen Abhandlungen des Aristoteles über die Wirkung der Tragödie* (1857), which aroused considerable controversy.

See notices in *Biographisches Jahrbuch für Alterthumskunde* (1881), and *Allgemeine deutsche Biographie*, xlvi. (1902); art. in *Jewish Encyclopaedia*; also Sandys, *Hist. of Class. Schol.* iii. 176 (1908).

His brother, Michael Bernays (1834-1897), was born in Hamburg on the 27th of November 1834. He studied first law and then literature at Bonn and Heidelberg, and obtained a considerable reputation by his lectures on Shakespeare at Leipzig and an explanatory text to Beethoven’s music to *Egmont*. Having refused an invitation to take part in the editorship of the *Preussiche Jahrbücher*, in the same year (1866) he published his celebrated *Zur Kritik und Geschichte des Goetheschen-Textes.* He confirmed his reputation by his lectures at the university of Leipzig, and in 1873 accepted the post of extraordinary professor of German literature at Munich specially created for him by Louis II. of Bavaria. In 1874 he became an ordinary professor, a position which he only resigned in 1889 when he settled at Carlsruhe. He died at Carlsruhe on the 25th of February 1897. At an early age he had embraced Christianity, whereas his brother Jakob remained a Jew. Among his other publications were: *Briefe Goethes an F.A. Wolf* (1868); *Zur Enstehungsgeschichte des Schlegelschen Shakespeare* (1872); an introduction to Hirzel’s collection entitled *Der junge Goethe* (1875); and he edited a revised edition of Voss’s translation of the *Odyssey*. From his literary remains were published *Schriften zur Kritik und Litteraturgeschichte* (1895-1899).

BERNBURG, a town in the duchy of Anhalt, Germany, on the Saale, 29 m. N. by W. from Halle by rail, formerly the capital of the new incorporated duchy of Anhalt-Bernburg. Pop. (1900) 34,427; (1905) 34,929. It consists of four parts, the Altstadt or old town, the Bergstadt or hill town, the Neustadt or new town, and the suburb of Waldau—the Bergstadt on the right and the other three on the left of the river Saale, which is crossed by a massive stone bridge. It is a well-built city, the principal public buildings being the government house, the church of St Mary, the gymnasium and the house of correction. The castle, formerly the ducal residence, is in the Bergstadt, defended by moats, and surrounded by beautiful gardens. Bernburg is the seat of considerable industry, manufacturing machinery and boilers, sugar, pottery and chemicals, and has lead and zinc smelting. Market-gardening is also extensively carried on, and there is a large river traffic in grain and agricultural produce.

Bernburg is of great antiquity. The Bergstadt was fortified by Otto III. in the 10th century, and the new town was founded in the 13th. For a long period the different parts were under separate municipalities, the new town uniting with the old in 1560, and the Bergstadt with both in 1824. Prince Frederick removed the ducal residence to Ballenstedt in 1765.

BERNERS, JOHN BOURCHIER, 2nd Baron (1469-1533), English translator, was born probably at Tharfield, Hertfordshire, about 1469. His father was killed at Barnet in 1471, and he inherited his title in 1474 from his grandfather, John Bourchier, who was a descendant of Edward III. It is supposed that he was educated at Oxford, perhaps at Balliol. His political life

began early, for in 1484 he was implicated in a premature attempt to place Henry, duke of Richmond (afterwards Henry VII.), on the throne, and fled in consequence to Brittany. In 1497 he helped to put down an insurrection in Cornwall and Devonshire, raised by Michael Joseph, a blacksmith, and from this time was in high favour at court. He accompanied Henry VIII. to Calais in 1513, and was a captain of pioneers at the siege of Therouanne. In the next year he was again sent to France as chamberlain to the king's sister Mary on her marriage with Louis XII., but he soon returned to England. He had been given the reversion of the office of lord chancellor, and in 1516 he received the actual appointment. In 1518 he was sent to Madrid to negotiate an alliance with Charles of Spain. He sent letters to Henry chronicling the bull-fights and other doings of the Spanish court, and to Wolsey complaining of the expense to which he was put in his position as ambassador. In the next year he returned to England, and with his wife Catherine Howard, daughter of the duke of Norfolk, was present in 1520 at the Field of the Cloth of Gold. But his affairs were greatly embarrassed. He was harassed by lawsuits about his Hertfordshire property and owed the king sums he was unable to repay. Perhaps in the hope of repairing his fortune, he accepted the office of deputy of Calais, where he spent the rest of his life in comparative leisure, though still harassed by his debts, and died on the 16th of March 1533.

His translation of *Syr Johan Froyssart of the Cronycles of England, France, Spayne, Portyngale, Scotland, Bretayne, Flaunders: and other places adjoynynge*, was undertaken at the request of Henry VIII., and was printed by Richard Pynson in two volumes dated 1523 and 1525. It was the most considerable historical work that had yet appeared in English, and exercised great influence on 16th-century chroniclers. Berners tells us in his prefaces of his own love of histories of all kinds, and in the introduction to his story of Arthur of Little Britain he excuses its "fayned mater" and "many unpossybylytees" on the ground that other well reputed histories are equally incredible. He goes on to excuse his deficiencies by saying that he knew himself to be unskilled in the "facundyous arte of retoryke," and that he was but a "lerner of the language of Frensshe." The want of rhetoric is not to be deplored. The style of his translation is clear and simple, and he rarely introduces French words or idioms. Two romances from the French followed: *The Boke of Duke Huon of Burdeux* (printed 1534? by Wynkyn de Worde), and *The Hystory of the Moost noble and valyaunt knight Arthur of lytell brytayne*. His other two translations, *The Castell of Love* (printed 1540), from the *Carcel de Amor* of Diego de San Pedro, and *The Golden Boke of Marcus Aurelius* (completed six days before his death, printed 1534), from a French version of Antonio Guevara's book, are in a different manner. The *Golden Boke* gives Berners a claim to be a pioneer of Euphuism, although Lyly was probably acquainted with Guevara not through his version, but through Sir Thomas North's *Dial of Princes*. Berners is also credited with a book on the duties of the inhabitants of Calais, which Mr Sidney Lee thinks may be identical with the ordinance for watch and ward of Calais preserved in the Cotton MSS. and with a lost comedy, *Ite in vineam meam*, which used to be acted at Calais after vespers.

A biographical account of Berners is to be found in Mr Sidney Lee's introduction to *Huon of Bourdeaux* (Early English Text Society 1882-1883). Among the many editions of his translation of Froissart may be mentioned that in the "Tudor Translations" (1901), with an introductory critical note by Professor W.P. Ker.

BERNERS, Barnes or Bernes, **JULIANA** (b. 1388?), English writer on hawking and hunting, is said to have been prioress of Sopwell nunnery near St Albans, and daughter of Sir James Berners, who was beheaded in 1388. She was probably brought up at court, and when she adopted the religious life, she still retained her love of hawking, hunting and fishing, and her passion for field sports. The only documentary evidence regarding her, however, is the statement at the end of her treatise on hunting in the *Boke of St Albans*, "Explicit Dam Julyans Barnes in her boke of huntyng" (edition of 1486), and the name is changed by Wynkyn de Worde to "dame Julyans Bernes." There is no such person to be found in the pedigree of the Berners family, and there is a gap in the records of the priory of Sopwell between 1430 and 1480. Juliana Berners is the supposed author of the work generally known as the *Boke of St Albans*. The first and rarest edition was printed in 1486 by an unknown schoolmaster at St Albans. It has no title-page. Wynkyn de Worde's edition (fol. 1496), also without a title-page, begins:—"This present boke shewyth the manere of hawkynge and huntynge: and also of diuysynge of Cote armours. It shewyth also a good matere belongynge to horses: wyth other comendable treatyses. And ferdermore of the blasynge of armys: as hereafter it maye appere." This edition was adorned by three woodcuts, and included a "Treatyse of fysshynge wyth an Angle," not contained in the St Albans edition. J. Haslewood, who published a facsimile of that of Wynkyn de Worde (London, 1811, folio), with a biographical and bibliographical notice, examined with the greatest care the

author’s claims to figure as the earliest woman author in the English language. He assigned to her little else in the *Boke* except part of the treatise on hawking and the section on hunting. It is expressly stated at the end of the “Blasynge of Armys” that the section was “translatyd and compylyt,” and it is likely that the other treatises are translations, probably from the French. An older form of the treatise on fishing was edited in 1883 by Mr T. Satchell from a MS. in possession of Mr A. Denison. This treatise probably dates from about 1450, and formed the foundation of that section in the book of 1496. Only three perfect copies of the first edition are known to exist. A facsimile, entitled *The Book of St Albans*, with an introduction by William Blades, appeared in 1881. During the 16th century the work was very popular, and was many times reprinted. It was edited by Gervase Markham in 1595 as *The Gentleman’s Academie*.

BERNHARD OF SAXE-WEIMAR, Duke (1604-1639), a celebrated general in the Thirty Years’ War, was the eleventh son of John, duke of Saxe-Weimar. He received an unusually good education, and studied at Jena, but soon went to the court of the Saxon elector to engage in knightly exercises. At the outbreak of the Thirty Years’ War he took the field on the Protestant side, and served under Mansfeld at Wiesloch (1622), under the margrave of Baden at Wimpfen (1622), and with his brother William at Stadtlohn (1623). Undismayed by these defeats, he took part in the campaigns of the king of Denmark; and when Christian withdrew from the struggle Bernhard went to Holland and was present at the famous siege of Hertogenbosch (Bois-le-Duc) in 1629. When Gustavus Adolphus landed in Germany Bernhard quickly joined him, and for a short time he was colonel of the Swedish life guards. After the battle of Breitenfeld he accompanied Gustavus in his march to the Rhine and, between this event and the battle of the Alte Veste, Bernhard commanded numerous expeditions in almost every district from the Moselle to Tirol. At the Alte Veste he displayed the greatest courage, and at Lützen, when Gustavus was killed, Bernhard immediately assumed the command, killed a colonel who refused to lead his men to the charge, and finally by his furious energy won the victory at sundown. At first as a subordinate to his brother William, who as a Swedish lieutenant-general succeeded to the command, but later as an independent commander, Bernhard continued to push his forays over southern Germany; and with the Swedish General Horn he made in 1633 a successful invasion into Bavaria, which was defended by the imperialist general Arldinger. In this year he acquired the duchy of Würzburg, installing one of his brothers as *Stadthalter*, and returning to the wars. A stern Protestant, he exacted heavy contributions from the Catholic cities which he took, and his repeated victories caused him to be regarded by German Protestants as the saviour of their religion. But in 1634 Bernhard suffered the great defeat of Nördlingen, in which the flower of the Swedish army perished. In 1635 he entered the service of France, which had now intervened in the war. He was now at the same time general-in-chief of the forces maintained by the Heilbronn union of Protestant princes, and a general officer in the pay of France. This double position was very difficult; in the following campaigns, ably and resolutely conducted as they were, Bernhard sometimes pursued a purely French policy, whilst at other times he used the French mercenaries to forward the cause of the princes. From a military point of view his most notable achievements were on the common ground of the upper Rhine, in the Breisgau. In his great campaign of 1638 he won the battles of Rheinfelden, Wittenweiher and Thann, and captured successively Rheinfelden, Fieiburg and Breisach, the last reputed one of the strongest fortresses in Europe. Bernhard had in the first instance received definite assurances from France that he should be given Alsace and Hagenau, Würzburg having been lost in the *débâcle* of 1634; he now hoped to make Breisach the capital of his new duchy. But his health was now broken. He died on the 8/18th of July 1639 at the beginning of the campaign, and the governor of Breisach was bribed to transfer the fortress to France. The duke was buried at Breisach, his remains being subsequently removed to Weimar.

See J.A.C. Hellfeld, *Geschichte Bernhards des Grossen, Herzogs v. Saxe-Weimar* (Jena, 1747); B. Rose, *Herzog Bernhard d. Grosse von Saxe-Weimar* (Weimar, 1828-1829); Droysen, *Bernhard v. Weimar* (Leipzig, 1885).

BERNHARDT, SARAH (Rosine Bernard) (1845-), French actress, was born in Paris on the 22nd of October 1845, of mixed French and Dutch parentage, and of Jewish descent. She was, however, baptized at the age of twelve and brought up in a convent. At thirteen she entered the Conservatoire, where she gained the second prize for tragedy in 1861 and for comedy in 1862.

Her *début* was made at the Comédie Française on the 11th of August 1862, in a minor part in Racine's *Iphigénie en Aulide*, without any marked success, nor did she do much better in burlesque at the Porte St-Martin and Gymnase. In 1867 she became a member of the company at the Odéon, where she made her first definite successes as Cordelia in a French translation of *King Lear*, as the queen in Victor Hugo's *Ruy Blas*, and, above all, as Zanetto in François Coppée's *Le Passant* (1869). When peace was restored after the Franco-German War she left the Odéon for the Comédie Française, thereby incurring a considerable monetary forfeit. From that time she steadily increased her reputation, two of the most definite steps in her progress being her performances of Phèdre in Racine's play (1874) and of Dona Sol in Victor Hugo's *Hernani* (1877). In 1879 she had a famous season at the Gaiety in London. By this time her position as the greatest actress of her day was securely established. Her amazing power of emotional acting, the extraordinary realism and pathos of her death-scenes, the magnetism of her personality, and the beauty of her "*voix d'or*," made the public tolerant of her occasional caprices. She had developed some skill as a sculptor, and exhibited at the Salon at various times between 1876 (honourable mention) and 1881. She also exhibited a painting there in 1880. In 1878 she published a prose sketch, *Dans les nuages; les impressions d'une chaise*. Her comedy *L'Aveu* was produced in 1888 at the Odéon without much success. Her relations with the other *sociétaires* of the Comédie Française having become somewhat strained, a crisis arrived in 1880, when, enraged by an unfavourable criticism of her acting, she threw up her position on the day following the first performance of Emile Augier's *L'Aventurière*. This obliged her to pay a forfeit of £4000 for breach of contract. Immediately after the rupture she gave a series of performances in London, relying chiefly upon Scribe and Legouvé's *Adrienne Lecouvreur* and Meilhac and Halévy's *Frou Frou*. These were followed by tours in Denmark, America and Russia, during 1880 and 1881, with *La Dame aux camélias* as the principal attraction. In 1882 she married Jacques Damala, a Greek, in London, but separated from him at the end of the following year. After a fresh triumph in Paris with Sardou's *Fédora* at the Vaudeville she became proprietress of the Porte St-Martin. Jean Richepin's *Nana Sahib* (1883), Sardou's *Théodora* (1884) and *La Tosca* (1887), Jules Barbier's *Jeanne d'Arc* (1890) and Sardou and Moreau's *Cléopâtre* (1890) were among her most conspicuous successes here, where she remained till she became proprietress of the Renaissance theatre in 1893. During those ten years she made several extended tours, including visits to America in 1886-1887 and 1888-1889. Between 1891 and 1893 she again visited America (North and South), Australia, and the chief European capitals. In November 1893 she opened the Renaissance with *Les Rois* by Jules Lemaitre, which was followed by *Sylvestre* and Morand's *Izeyl* (1894), Sardou's *Gismonda* (1894) and Edmond Rostand's *La Princesse lointaine* (1895). In 1895 she also appeared with conspicuous success as Magda in a French translation of Sudermann's *Heimat*. For the next few years she visited London almost annually, and America in 1896. In that year she made a success with an adaptation of Alfred de Musset's *Lorenzaccio*. In Easter week of 1897 she played in a religious drama, *La Samaritaine*, by Rostand. In December 1896 an elaborate fête was organized in Paris in her honour; and the value of this public recognition of her position at the head of her profession was enhanced by cordial greetings from all parts of the world. By this time she had played one hundred and twelve parts, thirty-eight of which she had created. Early in 1899 she removed from the Renaissance to the Théâtre des Nations, a larger house, which she opened with a revival of *La Tosca*. In the same year she made the bold experiment of a French production of *Hamlet*, in which she played the title part. She repeated the impersonation in London not long afterwards, where she also appeared (1901) as the fate-ridden son of Napoleon I., in Rostand's *L'Aiglon*, which had been produced in Paris the year before. Of the successful productions of her later years perhaps none was more remarkable than her impersonation of La Tisbé in Victor Hugo's romantic drama *Angelo* (1905).

See Jules Huret, *Sarah Bernhardt* (1889); and her own volume of autobiography (1907).

BERNHARDY, GOTTFRIED (1800-1875), German philologist and literary historian, was born on the 20th of March 1800, at Landsberg on the Wartia, in Brandenburg. He was the son of Jewish parents in reduced circumstances. Two well-to-do uncles provided the means for his education, and in 1811 he entered the Joachimsthal gymnasium at Berlin. In 1817 he went to Berlin University to study philology, where he had the advantage of hearing F.A. Wolf (then advanced in years), August Böckh and P. Buttmann. In 1822 he took the degree of doctor of philosophy at Berlin, and in 1825 became extraordinary professor. In 1829 he succeeded C. Reisig as ordinary professor and director of the philological seminary at Halle, and in 1844 was appointed chief librarian of the university. He died suddenly on the 14th of May 1875. The most important of Bernhardy's works were his histories (or sketches) of Greek and Roman literature; *Grundriss der römischen Litteratur* (5th ed., 1872); *Grundriss der griechischcn Litteratur* (pt. i.,

Introduction and General View, 1836; pt. ii, Greek Poetry, 1845; pt. iii., Greek Prose Literature, was never published). A fifth edition of pts. i. and ii., by R. Volkmann, began in 1892. Other works by Bernhardy are: *Eratosthenica* (1822); *Wissenschaftliche Syntax der griechischen Sprache* (1829, suppts. 1854, 1862); *Grundlinien zur Encyclopädie der Philologie* (1832); the monumental edition of the Lexicon of Suidas (1834-1853); and an edition of F.A. Wolf's *Kleine Schriften* (1869).

See Volkmann, *G. Bernhardy* (1887).

BERNI, FRANCESCO (1497-1536), Italian poet, was born about 1497 at Lamporecchio, in Bibbiena, a district lying along the Upper Arno. His family was of good descent, but excessively poor. At an early age he was sent to Florence, where he remained till his 19th year. He then set out for Rome, trusting to obtain some assistance from his uncle, the Cardinal Bibbiena. The cardinal, however, did nothing for him, and he was obliged to accept a situation as clerk or secretary to Ghiberti, datary to Clement VII. The duties of his office, for which Berni was in every way unfit, were exceedingly irksome to the poet, who, however, made himself celebrated at Rome as the most witty and inventive of a certain club of literary men, who devoted themselves to light and sparkling effusions. So strong was the admiration for Berni's verses, that mocking or burlesque poems have since been called *poesie bernesca*. About the year 1530 he was relieved from his servitude by obtaining a canonry in the cathedral of Florence. In that city he died in 1536, according to tradition poisoned by Duke Alessandro de' Medici, for having refused to poison the duke's cousin, Ippolito de' Medici; but considerable obscurity rests over this story. Berni stands at the head of Italian comic or burlesque poets. For lightness, sparkling wit, variety of form and fluent diction, his verses are unsurpassed. Perhaps, however, he owes his greatest fame to the recasting (*Rifacimento*) of Boiardo's *Orlando Innamorato*. The enormous success of Ariosto's *Orlando Furioso* had directed fresh attention to the older poem, from which it took its characters, and of which it is the continuation. But Boiardo's work, though good in plan, could never have achieved wide popularity on account of the extreme ruggedness of its style. Berni undertook the revision of the whole poem, avowedly altering no sentiment, removing or adding no incident, but simply giving to each line and stanza due gracefulness and polish. His task he completed with marvellous success; scarcely a line remains as it was, and the general opinion has pronounced decisively in favour of the revision over the original. To each canto he prefixed a few stanzas of reflective verse in the manner of Ariosto, and in one of these introductions he gives us the only certain information we have concerning his own life. Berni appears to have been favourably disposed towards the Reformation principles at that time introduced into Italy, and this may explain the bitterness of some remarks of his upon the church. The first edition of the *Rifacimento* was printed posthumously in 1541, and it has been supposed that a few passages either did not receive the author's final revision, or have been retouched by another hand.

A partial translation of Berni's *Orlando* was published by W.S. Rose (1823).

BERNICIA, the northern of the two English kingdoms which were eventually united in the kingdom of Northumbria. Its territory is said to have stretched from the Tyne northwards, ultimately reaching the Forth, while its western frontier was gradually extended at the expense of the Welsh. The chief royal residence was Bamburgh, and near it was the island of Lindisfarne, afterwards the see of a bishop. The first king of whom we have any record is Ida, who is said to have obtained the throne about 547. Æthelfrith, king of Bernicia, united Deira to his own kingdom, probably about 605, and the union continued under his successor Edwin, son of Ella or Ælle, king of Deira. Bernicia was again separate from Deira under Eanfrith, son of Æthelfrith (633-634), after which date the kings of Bernicia were supreme in Northumbria, though for a short time under Oswio Deira had a king of its own.

See Bede, *Hist. Eccles.* ii. 14, iii. 1, 14; Nennius, § 63; Simeon of Durham, i. 339.

(F. G. M. B.)

BERNICIAN SERIES, in geology, a term proposed by S.P. Woodward in 1856 (*Manual of Mollusca*, p. 409) for the lower portion of the Carboniferous System, below the Millstone Grit. The name was suggested by that of the ancient province of Bernicia on the Anglo-Scottish borderland. It is practically equivalent to the “Dinantien” of A. de Lapparent and Munier-Chalmas (1893). In 1875 G. Tate’s “Calcareous and Carbonaceous” groups of the Carboniferous Limestone series of Northumberland were united by Professor Lebour into a single series, to which he applied the name “Bernician”; but later he speaks of the whole of the Carboniferous rocks of Northumberland and its borders as of the “Bernician type,” which is the most satisfactory way in which the term may now be used (*Report of the Brit. Sub-committee on Classification and Nomenclature*, 2nd ed., Cambridge, 1888). “Demetian” was the corresponding designation proposed by Woodward for the Upper Carboniferous rocks.

BERNINI, GIOVANNI LORENZO (1598-1680), Italian artist, was born at Naples. He was more celebrated as an architect and a sculptor than as a painter. At a very early age his great skill in modelling introduced him to court favour at Rome, and he was specially patronized by Maffeo Barberini, afterwards Pope Urban VIII., whose palace he designed. None of his sculptured groups at all come up to the promised excellence of his first effort, the Apollo and Daphne, nor are any of his paintings of particular merit. His busts were in so much request that Charles I. of England, being unable to have a personal interview with Bernini, sent him three portraits by Vandyck, from which the artist was enabled to complete his model. His architectural designs, including the great colonnade of St Peter’s, brought him perhaps his greatest celebrity. Louis XIV., when he contemplated the restoration of the Louvre, sent for Bernini, but did not adopt his designs. The artist’s progress through France was a triumphal procession, and he was most liberally rewarded by the great monarch. He left a fortune of over £100,000.

BERNIS, FRANÇOIS JOACHIM DE PIERRE DE (1715-1794), French cardinal and statesman, was born at St Marcel-d’Ardèche on the 22nd of May 1715. He was of a noble but impoverished family, and, being a younger son, was intended for the church. He was educated at the Louis-le-Grand college and the seminary of Saint-Sulpice, Paris, but did not take orders till 1755. He became known as one of the most expert epigrammatists in the gay society of Louis XV.’s court, and by his verses won the friendship of Madame de Pompadour, the royal mistress, who obtained for him an apartment, furnished at her expense, in the Tuileries, and a yearly pension of 1500 livres (about £60). In 1751 he was appointed to the French embassy at Venice, where he acted, to the satisfaction of both parties, as mediator between the republic and Pope Benedict XIV. During his stay in Venice he received subdeacon’s orders, and on his return to France in 1755 was made a papal councillor of state. He took an important part in the delicate negotiations between France and Austria which preceded the Seven Years’ War. He regarded the alliance purely as a temporary expedient, and did not propose to employ the whole forces of France in a general war. But he was overruled by his colleagues. He became secretary for foreign affairs on the 27th of June 1757, but owing to his attempts to counteract the spendthrift policy of the marquise de Pompadour and her creatures, he fell into disgrace and was in December 1758 banished to Soissons by Louis XV., where he remained in retirement for six years. In the previous November he had been created cardinal by Clement XIII. On the death of the royal mistress in 1764, Bernis was recalled and once more offered the seals of office, but declined them, and was appointed archbishop of Albi. His occupancy of the see was not of long duration. In 1769 he went to Rome to assist at the conclave which resulted in the election of Clement XIV., and the talent which he displayed on that occasion procured him the appointment of ambassador in Rome, where he spent the remainder of his life. He was partly instrumental in bringing about the suppression of the Jesuits, and acted with greater moderation than is generally allowed. He lost his influence under Pius VI., who was friendly to the Jesuits, and the French Revolution, to which he was hostile, reduced him almost to penury; the court of Spain, however, mindful of the support he had given to their ambassador in obtaining the condemnation of the Jesuits, came to his relief with a handsome pension. He died at Rome on the 3rd of November 1794, and was buried in the church of S. Luigi de’ Francesi. In 1803 his remains were transferred to the cathedral at Nîmes. His poems, the longest of which is *La Religion vengée* (Parma, 1794), have no merit; they were collected and published after his death (Paris, 1797, &c.); his *Mémoires et lettres 1715-58* (2 vols., Paris, 1878) are still interesting to

the historian.

See Frédéric Masson’s prefaces to the *Mémoires et lettres*, and *Le Cardinal de Bernis depuis son ministère;* (Paris, 1884); E. et J. de Goncourt, *Mme de Pompadour* (Paris, 1888), and Sainte-Beuve, *Causeries du lundi*, t. viii.

BERNKASTEL, a town of Germany, in the Prussian Rhine province, on the Mosel, in a deep and romantic valley, connected by a branch to Wengerohr with the main Trier-Coblenz railway. Pop. 2300. It has some unimportant manufactures; the chief industry is in wine, of which Berncastler Doctor enjoys great repute. Above the town lie the ruins of the castle Landshut. Bernkastel originally belonged to the chapter of Trier, and received its name from one of the provosts of the cathedral, Adalbero of Luxemburg (hence *Adalberonis castellum*).

BERNOULLI, or Bernouilli, the name of an illustrious family in the annals of science, who came originally from Antwerp. Driven from their country during the oppressive government of Spain for their attachment to the Reformed religion, the Bernoullis sought first an asylum at Frankfort (1583), and afterwards at Basel, where they ultimately obtained the highest distinctions. In the course of a century eight of its members successfully cultivated various branches of mathematics, and contributed powerfully to the advance of science. The most celebrated were Jacques (James), Jean (John) and Daniel, the first, second and fourth as dealt with below; but, for the sake of perspicuity they may be considered as nearly as possible in the order of family succession. A complete summary of the great developments of mathematical learning, which the members of this family effected, lies outside the scope of this notice. More detailed accounts are to be found in the various mathematical articles.

I. Jacques Bernoulli (1654-1705), mathematician, was born at Basel on the 27th of December 1654. He was educated at the public school of Basel, and also received private instruction from the learned Hoffmann, then professor of Greek. At the conclusion of his philosophical studies at the university, some geometrical figures, which fell in his way, excited in him a passion for mathematical pursuits, and in spite of the opposition of his father, who wished him to be a clergyman, he applied himself in secret to his favourite science. In 1676 he visited Geneva on his way to France, and subsequently travelled to England and Holland. While at Geneva he taught a blind girl several branches of science, and also how to write; and this led him to publish *A Method of Teaching Mathematics to the Blind*. At Bordeaux his *Universal Tables on Dialling* were constructed; and in London he was admitted to the meetings of Robert Boyle, Robert Hooke and other learned and scientific men. On his final return to Basel in 1682, he devoted himself to physical and mathematical investigations, and opened a public seminary for experimental physics. In the same year he published his essay on comets, *Conamen Novi Systematis Cometarum*, which was occasioned by the appearance of the comet of 1680. This essay, and his next publication, entitled *De Gravitate Aetheris*, were deeply tinged with the philosophy of René Descartes, but they contain truths not unworthy of the philosophy of Sir Isaac Newton’s *Principia*.

Jacques Bernoulli cannot be strictly called an independent discoverer; but, from his extensive and successful application of the calculus and other mathematical methods, he is deserving of a place by the side of Newton and Leibnitz. As an additional claim to remembrance, he was the first to solve Leibnitz’s problem of the isochronous curve (*Acta Eruditorum*, 1690). He proposed the problem of the catenary (*q.v.*) or curve formed by a chain suspended by its two extremities, accepted Leibnitz’s construction of the curve and solved more complicated problems relating to it. He determined the “elastic curve,” which is formed by an elastic plate or rod fixed at one end and bent by a weight applied to the other, and which he showed to be the same as the curvature of an impervious sail filled with a liquid (*lintearia*). In his investigations respecting cycloidal lines and various spiral curves, his attention was directed to the loxodromic and logarithmic spirals, in the last of which he took particular interest from its remarkable property of reproducing itself under a variety of conditions.

In 1696 he proposed the famous problem of isoperimetrical figures, and offered a reward for its solution. This problem engaged the attention of British as well as continental mathematicians; and its proposal gave rise to a painful quarrel with his brother Jean. Jean

offered a solution of the problem; his brother pronounced it to be wrong. Jean then amended his solution, and again offered it, and claimed the reward. Jacques still declared it to be no solution, and soon after published his own. In 1701 he published also the demonstration of his solution, which was accepted by the marquis de l’Hôpital and Leibnitz. Jean, however, held his peace for several years, and then dishonestly published, after the death of Jacques, another incorrect solution; and not until 1718 did he admit that he had been in error. Even then he set forth as his own his brother’s solution purposely disguised.

In 1687 the mathematical chair of the university of Basel was conferred upon Jacques. He was once made rector of his university, and had other distinctions bestowed on him. He and his brother Jean were the first two foreign associates of the Academy of Sciences of Paris; and, at the request of Leibnitz, they were both received as members of the academy of Berlin. In 1684 he had been offered a professorship at Heidelberg; but his marriage with a lady of his native city led him to decline the invitation. Intense application brought on infirmities and a slow fever, of which he died on the 16th of August 1705. Like another Archimedes, he requested that the logarithmic spiral should be engraven on his tombstone, with these words, *Eadem mutata resurgo*.

Jacques Bernoulli wrote elegant verses in Latin, German and French; but although these were held in high estimation in his own time, it is on his mathematical works that his fame now rests. These are:—*Jacobi Bernoulli Basiliensis Opera* (Genevae, 1744), 2 tom. 4to; *Ars Conjectandi, opus posthumum: accedunt tractatus de Seriebus Infinitis, et epistola* (*Gallice scripta*) *de Ludo Pilae Reticularis* (Basiliae, 1713), 1 tom. 4to.

II. Jean Bernoulli (1667-1748), brother of the preceding, was born at Basel on the 27th of July 1667. After finishing his literary studies he was sent to Neuchâtel to learn commerce and acquire the French language. But at the end of a year he renounced the pursuits of commerce, returned to the university of Basel, and was admitted to the degree of bachelor in philosophy, and a year later, at the age of 18, to that of master of arts. In his studies he was aided by his elder brother Jacques. Chemistry, as well as mathematics, seems to have been the object of his early attention; and in the year 1690 he published a dissertation on effervescence and fermentation. The same year he went to Geneva, where he gave instruction in the differential calculus to Nicolas Fatio de Duillier, and afterwards proceeded to Paris, where he enjoyed the society of N. Malebranche, J.D. Cassini, Philip de Lahire and Pierre Varignon. With the marquis de l’Hôpital he spent four months studying higher geometry and the resources of the new calculus. His independent discoveries in mathematics are numerous and important. Among these were the exponential calculus, and the curve called by him the *linea brachistochrona*, or line of swiftest descent, which he was the first to determine, pointing out at the same time the relation which this curve bears to the path described by a ray of light passing through strata of variable density. On his return to his native city he studied medicine, and in 1694 took the degree of M.D. Although he had declined a professorship in Germany, he now accepted an invitation to the chair of mathematics at Groningen (*Commercium Philosophicum*, epist. xi. and xii.). There, in addition to the learned lectures by which he endeavoured to revive mathematical science in the university, he gave a public course of experimental physics. During a residence of ten years in Groningen, his controversies were almost as numerous as his discoveries. His dissertation on the “barometric light,” first observed by Jean Picard, and discussed by Jean Bernoulli under the name of mercurial phosphorus, or mercury shining in vacuo (*Diss. physica de mercurio lucente in vacuo*), procured him the notice of royalty, and engaged him in controversy. Through the influence of Leibnitz he received from the king of Prussia a gold medal for his supposed discoveries; but Nicolaus Hartsoeker and some of the French academicians disputed the fact. The family quarrel about the problem of isoperimetrical figures above mentioned began about this time. In his dispute with his brother, in his controversies with the English and Scottish mathematicians, and in his harsh and jealous bearing to his son Daniel, he showed a mean, unfair and violent temper. He had declined, during his residence at Groningen, an invitation to Utrecht, but accepted in 1705 the mathematical chair in the university of his native city, vacant by the death of his brother Jacques; and here he remained till his death. His inaugural discourse was on the “new analysis,” which he so successfully applied in investigating various problems both in pure and applied mathematics.

He was several times a successful competitor for the prizes given by the Academy of Sciences of Paris; the subjects of his essays being:—the laws of motion (*Discours sur les lois de la communication du mouvement*, 1727), the elliptical orbits of the planets, and the inclinations of the planetary orbits (*Essai d’une nouvelle physique céleste*, 1735). In the last case his son Daniel divided the prize with him. Some years after his return to Basel he published an essay, entitled *Nouvelle Théorie de la manœuvre des vaisseaux*. It is, however, his works in pure mathematics that are the permanent monuments of his fame. Jean le Rond d’Alembert acknowledges with gratitude, that “whatever he knew of mathematics he owed to the works of Jean Bernoulli.” He was a member of almost every learned society in Europe, and one of the first mathematicians of a mathematical age. He was as keen in his resentments as he was ardent in his friendships;

fondly attached to his family, he yet disliked a deserving son; he gave full praise to Leibnitz and Leonhard Euler, yet was blind to the excellence of Sir Isaac Newton. Such was the vigour of his constitution that he continued to pursue his usual mathematical studies till the age of eighty. He was then attacked by a complaint at first apparently trifling; but his strength daily and rapidly declined till the 1st of January 1748, when he died peacefully in his sleep.

His writings were collected under his own eye by Gabriel Cramer, professor of mathematics at Geneva, and published under the title of *Johannis Bernoulli Operi Omnia* (Lausan. et Genev.), 4 tom. 4to; his interesting correspondence with Leibnitz appeared under the title of *Gul. Leibnitii et Johannis Bernoulli Commercium Philosophicum et Mathematicum* (Lausan. et Genev. 1745), 2 tom. 4to.

III. Nicolas Bernoulli (1695-1726), the eldest of the three sons of Jean Bernoulli, was born on the 27th of January 1695. At the age of eight he could speak German, Dutch, French and Latin. When his father returned to Basel he went to the university of that city, where, at the age of sixteen, he took the degree of doctor in philosophy, and four years later the highest degree in law. Meanwhile the study of mathematics was not neglected, as appears not only from his giving instruction in geometry to his younger brother Daniel, but from his writings on the differential, integral, and exponential calculus, and from his father considering him, at the age of twenty-one, worthy of receiving the torch of science from his own hands. ("Lampada nunc tradam filio meo natu maximo, juveni xxi. annorum, ingenio mathematico aliisque dotibus satis instructo," *Com. Phil.* ep. 223.) With his father's permission he visited Italy and France, and during his travels formed friendship with Pierre Varignon and Count Riccati. The invitation of a Venetian nobleman induced him again to visit Italy, where he resided two years, till his return to be a candidate for the chair of jurisprudence at Basel. He was unsuccessful, but was soon afterwards appointed to a similar office in the university of Bern. Here he resided three years, his happiness only marred by regret on account of his separation from his brother Daniel. Both were appointed at the same time professors of mathematics in the academy of St Petersburg; but this office Nicolas enjoyed for little more then eight months. He died on the 26th of July 1726 of a lingering fever. Sensible of the loss which the nation had sustained by his death, the empress Catherine ordered him a funeral at the public expense.

Some of his papers are published in his father's works, and others in the *Acta Eruditorum* and the *Comment. Acad. Petropol.*

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IV. Daniel Bernoulli (1700-1782), the second son of Jean Bernoulli, was born on the 29th of January 1700, at Groningen. He studied medicine and became a physician, but his attention was early directed also to geometrical studies. The severity of his father's manner was ill-calculated to encourage the first efforts of one so sensitive; but fortunately, at the age of eleven, he became the pupil of his brother Nicolas. He afterwards studied in Italy under Francesco Domenico Michelotti and Giambattista Morgagni. After his return, though only twenty-four years of age, he was invited to become president of an academy then projected at Genoa; but, declining this honour, he was, in the following year, appointed professor of mathematics at St Petersburg. In consequence of the state of his health, however, he returned to Basel in 1733, where he was appointed professor of anatomy and botany, and afterwards of experimental and speculative philosophy. In the labours of this office he spent the remaining years of his life. He had previously published some medical and botanical dissertations, besides his *Exercitationes quaedam Mathematicae*, containing a solution of the differential equation proposed by Riccati and now known by his name. In 1738 appeared his *Hydrodynamica*, in which the equilibrium, the pressure, the reaction and varied velocities of fluids are considered both theoretically and practically. One of these problems, illustrated by experiment, deals with an ingenious mode of propelling vessels by the reaction of water ejected from the stern. Some of his experiments on this subject were performed before Pierre Louis M. de Maupertuis and Alexis Claude Clairaut, whom the fame of the Bernoullis had attracted to Basel. With a success equalled only by Leonhard Euler, Daniel Bernoulli gained or shared no less than ten prizes of the Academy of Sciences of Paris. The first, for a memoir on the construction of a clepsydra for measuring time exactly at sea, he gained at the age of twenty-four; the second, for one on the physical cause of the inclination of the planetary orbits, he divided with his father; and the third, for a communication on the tides, he shared with Euler, Colin Maclaurin and another competitor. The problem of vibrating cords, which had been some time before resolved by Brook Taylor (1685-1731) and d'Alembert, became the subject of a long discussion conducted in a generous spirit between Bernoulli and his friend Euler. In one of his early investigations he gave an ingenious though indirect demonstration of the problem of the parallelogram of forces. His labours in the decline of life were chiefly directed to the doctrine of probabilities in reference to practical purposes, and in particular to economical subjects, as, for example, to inoculation, and to the duration of married life in the two sexes, as well as to the relative proportion of male and female births. He retained his usual vigour of understanding till near the age of eighty, when his nephew Jacques relieved him of his public duties. He was afflicted with asthma, and his retirement was relieved only by the society of a few chosen friends. He died on the 17th of

March 1782 at Basel. Excluded by his professional character from the councils of the republic, he nevertheless received all the deference and honour due to a first magistrate. He was wont to mention the following as the two incidents in his life which had afforded him the greatest pleasure,—that a stranger, whom he had met as a travelling companion in his youth, made to his declaration "I am Daniel Bernoulli" the incredulous and mocking reply, "And I am Isaac Newton"; and that, while entertaining König and other guests, he solved without rising from table a problem which that mathematician had submitted as difficult and lengthy. Like his father, he was a member of almost every learned society of Europe, and he succeeded him as foreign associate of the Academy of Paris.

Several of his investigations are contained in the earlier volumes of the *Comment. Acad. Petropol.*; and his separately published works are:—*Dissertatio Inaugur. Phys. Med. de Respiratione* (Basil. 1721), 4to; *Positiones Anatomico-Botanicae* (Basil. 1721), 4to; *Exercitationes quaedam Mathematicae* (Venetiis, 1724), 4to; *Hydrodynamica* (Argentorati, 1738), 4to.

V. Jean Bernoulli (1710-1790), the youngest of the three sons of Jean Bernoulli, was born at Basel on the 18th of May 1710. He studied law and mathematics, and, after travelling in France, was for five years professor of eloquence in the university of his native city. On the death of his father he succeeded him as professor of mathematics. He was thrice a successful competitor for the prizes of the Academy of Sciences of Paris. His prize subjects were, the capstan, the propagation of light, and the magnet. He enjoyed the friendship of P.L.M. de Maupertuis, who died under his roof while on his way to Berlin. He himself died in 1790. His two sons, Jean and Jacques, are the last noted mathematicians of the family.

VI. Nicolas Bernoulli (1687-1759), cousin of the three preceding, and son of Nicolas Bernoulli, one of the senators of Basel, was born in that city on the 10th of October 1687. He visited England, where he was kindly received by Sir Isaac Newton and Edmund Halley (*Com. Phil.* ep. 199), held for a time the mathematical chair at Padua, and was successively professor of logic and of law at Basel, where he died on the 29th of November 1759. He was editor of the *Ars Conjectandi* of his uncle Jacques. His own works are contained in the *Acta Eruditorum*, the *Giornale de' letterati d' Italia*, and the *Commercium Philosophicum*.

VII. Jean Bernoulli (1744-1807), grandson of the first Jean Bernoulli, and son of the second of that name, was born at Basel on the 4th of November 1744. He studied at Basel and at Neuchâtel, and when thirteen years of age took the degree of doctor in philosophy. At nineteen he was appointed astronomer royal of Berlin. Some years after, he visited Germany, France and England, and subsequently Italy, Russia and Poland. On his return to Berlin he was appointed director of the mathematical department of the academy. Here he died on the 13th of July 1807. His writings consist of travels and astronomical, geographical and mathematical works. In 1774 he published a French translation of Leonhard Euler's *Elements of Algebra*. He contributed several papers to the Academy of Berlin.

VIII. Jacques Bernoulli (1759-1789), younger brother of the preceding, and the second of this name, was born at Basel on the 17th of October 1759. Having finished his literary studies, he was, according to custom, sent to Neuchâtel to learn French. On his return he graduated in law. This study, however, did not check his hereditary taste for geometry. The early lessons which he had received from his father were continued by his uncle Daniel, and such was his progress that at the age of twenty-one he was called to undertake the duties of the chair of experimental physics, which his uncle's advanced years rendered him unable to discharge. He afterwards accepted the situation of secretary to count de Brenner, which afforded him an opportunity of seeing Germany and Italy. In Italy he formed a friendship with Lorgna, professor of mathematics at Verona, and one of the founders of the *Società Italiana* for the encouragement of the sciences. He was also made corresponding member of the royal society of Turin; and, while residing at Venice, he was, through the friendly representation of Nicolaus von Fuss, admitted into the academy of St Petersburg. In 1788 he was named one of its mathematical professors.

He was tragically drowned while bathing in the Neva in July 1789, a few months after his marriage with a daughter of Albert Euler, son of Leonhard Euler.

Several of his papers are contained in the first six volumes of *Nova Acta Acad. Scien. Imper. Petropol.*, in the *Acta Helvetica*, in the *Memoirs of the Academies of Berlin and Turin*, and in his brother John's publications. He also published separately some juridical and physical theses, and a German translation of *Mémoires du philosophe de Merian*. See generally M. Cantor, *Geschichte der Mathematik*; J.C. Poggendorff, *Biographisch-literarisches Handwörterbuch* (1863-1904).

BERNSTEIN, AARON (1812-1884), Jewish scientist, author and reformer. In the middle of the 19th century Bernstein took an active share in the movement for synagogue reform in Germany. He was the author of two delightful Ghetto stories, *Vögele der Maggid* and *Mendel Gibbor*, being one of the originators of this *genre* of modern fiction. He was also a publicist, and his *History of Revolution and Reaction in Germany* (3 vols., 1883-1884) was a collection of important political essays.

BERNSTORFF, ANDREAS PETER, Count von (1735-1797), Danish statesman, was born at Hanover on the 28th of August 1735. His career was determined by his uncle, Johann Hartwig Ernst Bernstorff, who early discerned the talents of his nephew and induced him to study in the German and Swiss universities and travel for some years in Italy, France, England and Holland, to prepare himself for a statesman's career. During these *Wanderjahre* he made the acquaintance of the poets Gellert and Jacobi, the learned Jean-Jacques Barthélemy, the duc de Choiseul, and Gottfried Achenwall, the statistician. At his uncle's desire he rejected the Hanoverian for the Danish service, and in 1759 took his seat in the German chancery at Copenhagen. In 1767, at the same time as his uncle, he was created a count, and in 1769 was made a privy-councillor. He is described at this period as intellectual, upright and absolutely trustworthy, but obstinate and self-opinionated to the highest degree, arguing with antiquaries about coins, with equerries about horses, and with foreigners about their own countries, always certain that he was right and they wrong, whatever the discussion might be. He shared the disgrace of his uncle when Struensee came into power, but re-entered the Danish service after Struensee's fall at the end of 1772, working at first in the financial and economical departments, and taking an especial interest in agriculture. The improvements he introduced in the tenures of his peasantry anticipated in some respects the agricultural reforms of the next generation.

In April 1773 Bernstorff was transferred to the position for which he was especially fitted, the ministry of foreign affairs, with which he combined the presidency of the German chancery (for Schleswig-Holstein). His predecessor, Adolf Siegfried Osten, had been dismissed because he was not *persona grata* at St Petersburg, and Bernstorff's first official act was to conclude the negotiations which had long been pending with the grand-duke Paul as duke of Holstein-Gottorp. The result was the exchange-treaty of the 1st of June (May 21 O.S.) 1773, confirming the previous treaty of 1767 (see Bernstorff, J.H.E.). This was followed by the treaty of alliance between Denmark and Russia of the 12th of August 1773, which was partly a mutually defensive league, and partly an engagement between the two states to upset the new constitution recently established in Sweden by Gustavus III., when the right moment for doing so should arrive. For this mischievous and immoral alliance, which bound Denmark to the wheels of the Russian empress's chariot and sought to interfere in the internal affairs of a neighbouring state, Bernstorff was scarcely responsible, for the preliminaries had been definitely settled in his uncle's time and he merely concluded them. But there can be no doubt that he regarded this anti-Swedish policy as the correct one for Denmark, especially with a monarch like Gustavus III. on the Swedish throne. It is also pretty certain that the anti-Swedish alliance was Russia's price for compounding the Gottorp difficulty.

Starting from the hypothesis that Sweden was "Denmark-Norway's most active and irreconcilable enemy," Bernstorff logically included France, the secular ally of Sweden, among the hostile powers with whom an alliance was to be avoided, and drew near to Great Britain as the natural foe of France, especially during the American War of Independence, and this too despite the irritation occasioned in Denmark-Norway by Great Britain's masterful interpretation of the expression "contraband." Bernstorff's sympathy with England grew stronger still when in 1779 Spain joined her enemies; and he was much inclined, the same winter, to join a triple alliance between Great Britain, Russia and Denmark-Norway, proposed by England for the purpose of compelling the Bourbon powers to accept reasonable terms of peace. But he was overruled by the crown prince Frederick, who thought such a policy too hazardous, when Russia declined to have anything to do with it. Instead of this the Russian chancellor Nikita Panin proposed an armed league to embrace all the neutral powers, for the purpose of protecting neutral shipping in time of war. This league was very similar to one proposed by Bernstorff himself in September 1778 for enforcing the principle "a free ship makes the cargo free"; but as now presented by Russia, he rightly regarded it as directed exclusively against England. He acceded to it indeed (9th of July 1780) because he could not help doing so; but he had previously, by a separate treaty with England, on the 4th of July, come to an understanding with that power as to the meaning of the expression "contraband of war." This independence caused great wrath at St Petersburg, where Bernstorff was accused of disloyalty, and ultimately sacrificed to the resentment of the Russian government (13th of November 1780), the more

readily as he already disagreed on many important points of domestic administration with the prime minister Höegh Guldberg. He retired to his Mecklenburg estates, but on the fall of Guldberg four years later, was recalled to office (April 1784). The ensuing thirteen years were perhaps the best days of the old Danish absolutism. The government, under the direction of such enlightened ministers as Bernstorff, Reventlow and others, held the mean between Struensee's extravagant cosmopolitanism and Guldberg's stiff conservatism. In such noble projects of reform as the emancipation of the serfs (see Reventlow) Bernstorff took a leading part, and so closely did he associate himself with everything Danish, so popular did he become in the Danish capital, that a Swedish diplomatist expressed the opinion that henceforth Bernstorff could not be removed without danger. Liberal-minded as he was, he held that "the will of the nation should be a law to the king," and he boldly upheld the freedom of the press as the surest of safety-valves.

Meanwhile foreign complications were again endangering the position of Denmark-Norway. As Bernstorff had predicted, Panin's neutrality project had resulted in a breach between Great Britain and Russia. Then came Gustavus III.'s sudden war with Russia in 1788. Bernstorff was bound by treaty to assist Russia in such a contingency, but he took care that the assistance so rendered should be as trifling as possible, to avoid offending Great Britain and Prussia. Still more menacing became the political situation on the outbreak of the French Revolution. Ill-disposed as Bernstorff was towards the Jacobins, he now condemned on principle any interference in the domestic affairs of France, and he was persuaded that Denmark's safest policy was to keep clear of every anti-French coalition. From this unassailable standpoint he never swerved, despite the promises and even the menaces both of the eastern and the western powers. He was rewarded with complete success and the respect of all the diplomatists in Europe. His neutrality treaty with Sweden (17th of March 1794), for protecting their merchantmen by combined squadrons, was also extremely beneficial to the Scandinavian powers, both commercially and politically. Taught by the lesson of Poland, he had, in fact, long since abandoned his former policy of weakening Sweden. Bernstorff's great faculties appeared, indeed, to mature and increase with age, and his death, on the 21st of June 1797, was regarded in Denmark as a national calamity.

Count Bernstorff was twice married, his wives being the two sisters of the writers Counts Christian and Friedrich Leopold zu Stolberg. He left seven sons and three daughters. Of his sons the best known is Christian Günther, count von Bernstorff. Another, Count Joachim, was attached to his brother's fortunes so long as he remained in the Danish service, was associated with him in representing Denmark at the congress of Vienna, and in 1815 was appointed ambassador at that court.

See Rasmus Nyerup, *Bernstorffs Eftermaele* (Kjobenhavn, 1799); Peter Edward Holm, *Danmark-Norges udenrigske Historie* (Copenhagen, 1875); *Danmarks Riges Historie V.* (Copenhagen, 1897-1905); Christian Ulrich Detlev von Eggers, *Denkwurdigskeiten aus dem Leben des Grafen A.P. Bernstorff* (Copenhagen, 1800); Aage Frus, *A.P. Bernstorff og O. Hoegh-Guldberg* (Copenhagen, 1899); and *Bernstorfferne og Danmark* (Copenhagen, 1903).

(R. N. B.)

BERNSTORFF, CHRISTIAN GÜNTHER, Count von (1769-1835), Danish and Prussian statesman and diplomatist, son of Count Andreas Peter von Bernstorff, was born at Copenhagen on the 3rd of April 1769. Educated for the diplomatic service under his father's direction, he began his career in 1787, as attaché to the representative of Denmark at the opening of the Swedish diet. In 1789 he went as secretary of legation to Berlin, where his maternal uncle, Count Leopold Friedrich zu Stolberg, was Danish ambassador. His uncle's influence, as well as his own social qualities, obtained him rapid promotion; he was soon chargé d'affaires, and in 1791 minister plenipotentiary. In 1794 he exchanged this post for the important one of ambassador at Stockholm, where he remained until May 1797, when he was summoned to Copenhagen to act as substitute for his father during his illness. On the death of the latter (21st June), he succeeded him as secretary of state for foreign affairs and privy councillor. In 1800 he became head of the ministry. He remained responsible for the foreign policy of Denmark until May 1810, a fateful period which saw the battle of Copenhagen (2nd of April 1801), the bombardment of Copenhagen and capture of the Danish fleet in 1807. After his retirement he remained without office until his appointment in 1811 as Danish ambassador at Vienna. He remained here, in spite of the fact that for a while Denmark was nominally at war with Austria, until, in January 1814, on the accession of Denmark to the coalition against Napoleon, he publicly resumed his functions as ambassador. He accompanied the emperor Francis to Paris, and was present at the signature of the first peace of Paris. With his brother Joachim, he

represented Denmark at the congress of Vienna and, as a member for the commission for the regulation of the affairs of Germany, was responsible for some of that confusion of Danish and German interests which was to bear bitter fruit later in the Schleswig-Holstein question (*q.v.*). He again accompanied the allied sovereigns to Paris in 1815, returning to Copenhagen the same year. In 1817 he was appointed Danish ambassador at Berlin, his brother Joachim going at the same time to Vienna. In the following year Prince Hardenberg made him the formal proposition that he should transfer his services to Prussia, which, with the consent of his sovereign, he did.

It was, therefore, as a Prussian diplomat that Bernstorff attended the congress of Aix-la-Chapelle (October 1818), at the close of which he returned to Berlin as minister of state and head of the department for foreign affairs. Bernstorff's management of Prussian policy during the many years that he remained in office has been variously judged. He was by training and temperament opposed to the Revolution, and he was initiated into his new duties as a Prussian minister by the reactionary Ancillon. He is accused of having subordinated the particular interests of Prussia to the European policy of Metternich and the "Holy Alliance." Whether any other policy would in the long run have served Prussia better is a matter for speculation. It is true that Bernstorff supported the Carlsbad decrees, and the Vienna Final Act; he was also the faithful henchman of Metternich at the congresses of Laibach, Troppau and Verona. On the other hand, he took a considerable share in laying the foundations of the customs union (*Zollverein*), which was destined to be the foundation of the Prussian hegemony in Germany. In his support of Russia's action against Turkey in 1828 also he showed that he was no blind follower of Metternich's views. In the crisis of 1830 his moderation in face of the warlike clamour of the military party at Berlin did much to prevent the troubles in Belgium and Poland from ending in a universal European conflagration.

From 1824 onward Bernstorff had been a constant sufferer from hereditary gout, intensified and complicated by the results of overwork. In the spring of 1832 the state of his health compelled him to resign the ministry of foreign affairs to Ancillon, who had already acted as his deputy for a year. He died on the 18th of March 1835.

See J. Caro in *Allgem. Deutsch. Biog.* s.v.; also H. von Treitschke, *Deutsche Geschichte* (Leipzig, 1874-1894).

(R. N. B.)

BERNSTORFF, JOHANN HARTWIG ERNST, Count von (1712-1772), Danish statesman, who came of a very ancient Mecklenburg family, was the son of Joachim Engelke, Freiherr von Bernstorff, chamberlain to the elector of Hanover, and was born on the 13th of May 1712. His maternal grandfather, Andreas Gottlieb Bernstorff (1640-1726), had been one of the ablest ministers of George I., and under his guidance Johann was very carefully educated, acquiring amongst other things that intimate knowledge of the leading European languages, especially French, which ever afterwards distinguished him. He was introduced into the Danish service by his relations, the brothers Plessen, who were ministers of state under Christian VI. In 1732 he was sent on a diplomatic mission to the court of Dresden; and from 1738 he represented Holstein at the diet of Regensburg, from 1744 to 1750 he represented Denmark at Paris, whence he returned in 1754 to Denmark as minister of foreign affairs. Supported by the powerful favourite A.G. Moltke, and highly respected by Frederick V., he occupied for twenty-one years the highest position in the government, and in the council of state his opinion was decisive. But his chief concern was with foreign affairs. Ever since the conclusion of the Great Northern War, Danish statesmen had been occupied in harvesting its fruits, namely, the Gottorp portions of Schleswig definitely annexed to Denmark in 1721 by the treaty of Nystad, and endeavouring to bring about a definitive general understanding with the house of Gottorp as to their remaining possessions in Holstein. With the head of the Swedish branch of the Gottorps, the crown prince Adolphus Frederick, things had been arranged by the exchange of 1750; but an attempt to make a similar arrangement with the chief of the elder Gottorp line, the cesarevitch Peter Feodorovich, had failed. In intimate connexion with the Gottorp affair stood the question of the political equilibrium of the north. Ever since Russia had become the dominant Baltic power, as well as the state to which the Gottorpers looked primarily for help, the necessity for a better understanding between the two Scandinavian kingdoms had clearly been recognized by the best statesmen of both, especially in Denmark from Christian VI.'s time; but unfortunately this sound and sensible policy was seriously impeded by the survival of the old national hatred on both sides of the Sound, still further complicated by Gottorp's hatred of Denmark. Moreover, it was a diplomatic axiom in Denmark, founded on experience, that an absolute monarchy in Sweden was incomparably more dangerous to her neighbour than a limited monarchy, and after the collapse of Swedish absolutism with Charles XII., the upholding of the comparatively feeble, and

ultimately anarchical, parliamentary government of Sweden became a question of principle with Danish statesmen throughout the 18th century. A friendly alliance with a relatively weak Sweden was the cardinal point of Bernstorff's policy. But his plans were traversed again and again by unforeseen complications, the failure of the most promising presumptions, the perpetual shifting of apparently stable alliances; and again and again he had to modify his means to attain his ends. Amidst all these perplexities Bernstorff approved himself a consummate statesman. It seemed almost as if his wits were sharpened into a keener edge by his very difficulties; but since he condemned on principle every war which was not strictly defensive, and it had fallen to his lot to guide a comparatively small power, he always preferred the way of negotiation, even sometimes where the diplomatic tangle would perhaps best have been severed boldly by the sword. The first difficult problem he had to face was the Seven Years' War. He was determined to preserve the neutrality of Denmark at any cost, and this he succeeded in doing, despite the existence of a subsidy-treaty with the king of Prussia, and the suspicions of England and Sweden. It was through his initiative, too, that the convention of Kloster-Seven was signed (10th of September 1757), and on the 4th of May 1758 he concluded a still more promising treaty with France, whereby, in consideration of Denmark's holding an army-corps of 24,000 men in Holstein till the end of the war, to secure Hamburg, Lübeck and the Gottorp part of Holstein from invasion, France, and ultimately Austria also, engaged to bring about an exchange between the king of Denmark and the cesarevitch, as regards Holstein. But the course of the war made this compact inoperative. Austria hastened to repudiate her guarantee to Denmark in order not to offend the new emperor of Russia, Peter III., and one of Peter's first acts on ascending the throne was to declare war against Denmark. The coolness and firmness of Bernstorff saved the situation. He protested that the king of Denmark was bound to defend Schleswig "so long as there was a sword in Denmark and a drop of blood in the veins of the Danish people." He rejected the insulting ultimatum of the Russian emperor. He placed the best French general of the day at the head of the well-equipped Danish army. But just as the Russian and Danish armies had come within striking distance, the tidings reached Copenhagen that Peter III. had been overthrown by his consort. Bernstorff was one of the first to recognize the impotence of the French monarchy after the Seven Years' War, and in 1763 he considered it expedient to exchange the French for the Russian alliance, which was cemented by the treaty of the 28th of April (March 11) 1765. This compact engaged Denmark to join with Russia in upholding the existing Swedish constitution, in return for which Catherine II. undertook to adjust the Gottorp difficulty by the cession of the Gottorp portion of Holstein in exchange for the counties of Oldenburg and Delmenhorst. For his part in this treaty Bernstorff was created count. On the accession of Christian VII., in 1766, Bernstorff's position became very precarious, and he was exposed to all manner of attacks, being accused, without a shadow of truth, of exploiting Denmark, and of unduly promoting foreigners. It is remarkable, however, that though Bernstorff ruled Denmark for twenty years he never learnt Danish. His last political achievement was to draw still closer to Russia by the treaty of the 13th of December 1769, the most important paragraph of which stipulated that any change in the Swedish constitution should be regarded by Denmark and Russia as a *casus belli* against Sweden, and that in the event of such a war Denmark should retain all the territory conquered from Sweden. This treaty proved to be a great mistake on Denmark's part, but circumstances seemed at the time to warrant it. Nine months later, on the 13th of September 1770, Bernstorff was dismissed as the result of Struensee's intrigues, and, rejecting the brilliant offers of Catherine II. if he would enter the Russian service, retired to his German estates, where he died on the 18th of February 1772. Bernstorff was not only one of the ablest but one of the noblest and most conscientious statesmen of his day. The motto he chose on receiving the order of the Daneborg was "Integritas et rectum custodiunt me," and throughout a long life he was never false to it.

See Poul Vedel, *Den aeldre Grev Bernstorffs ministerium* (Copenhagen, 1882); *Correspondance ministérielle du Comte J.H.E. Bernstorff*, ed. Vedel (Copenhagen, 1882); Aage Friis, *Bernslorfferne og Danmark* (Copenhagen, 1899).

(R. N. B.)

BEROSSUS, a priest of Bel at Babylon, who translated into Greek the standard Babylonian work on astrology and astronomy, and compiled (in three books) the history of his country from native documents, which he published in Greek in the reign of Antiochus II. (250 B.C.). His works have perished, but extracts from the history have been preserved by Josephus and Eusebius, the latter of whom probably derived them not directly from Berossus, but through the medium of Alexander Polyhistor and Apollodorus. The extracts containing the Babylonian cosmology, the list of the antediluvian kings of Babylonia, and the Chaldaean story of the Deluge, have been shown by the decipherment of the cuneiform texts to have faithfully reproduced the native

legends; we may, therefore, conclude that the rest of the History was equally trustworthy. On the other hand, a list of post-diluvian dynasties, which is quoted by Eusebius and Georgius Syncellus as having been given by Berossus, cannot, in its present form, be reconciled with the monumental facts, though a substratum of historical truth is discoverable in it. As it stands, it is as follows:—

1. 86 Chaldaean	kings	34,080 or 33,091	years
2. 8 Median	”	224	”
3. 11 other kings	”	no number.	
4. 49 Chaldaean	”	458	”
5. 9 Arabian	”	245	”
6. 45 Assyrian	”	526	”

After these, according to Eusebius, came the reign of Pul. By means of an ingenious chronological combination, the several items of which, however, are very questionable, J.A. Brandis assigned 258 years to the 3rd dynasty; other summations have been proposed with equally little assurance of certainty. If Eusebius can be trusted, the 6th dynasty ended in 729 B.C., the year in which Pul or Tiglath-pileser III. was crowned king of Babylonia. But all attempts to harmonize the scheme of dynasties thus ascribed to Berossus with the list given us in the so-called dynastic Tablets discovered by Dr Pinches have been failures. The numbers, whether of kings or of years, cannot have been handed down to us correctly by the Greek writers. All that seems certain is that Berossus arranged his history so that it should fill the astronomical period of 36,000 years, beginning with the first man and ending with the conquest of Babylon by Alexander the Great.

See J.P. Cory, *Ancient Fragments* (1826, ed. by E.R. Hodges, 1876); Fr. Lenormant, *Essai de commentaire des fragments cosmogoniques de Bérose* (1872); A. von Gutschmid in the *Rheinisches Museum* (1853); George Smith in *T.S.B.A.* iii., 1874, pp. 361-379; Th.G. Pinches in *P.S.B.A.*, 1880-1881.

(A. H. S.)

BERRY, CHARLES ALBERT (1852-1899), English non-conformist divine, was born on the 14th of December 1852 at Bradshawgate, Leigh, Lancashire. At the age of seventeen he entered Airedale College, Bradford, to train for the Congregational ministry, and in 1875 became pastor of St George's Road Congregational church, Bolton. He became widely known as a man of administrative ability, a vigorous platform speaker and an eloquent preacher. In July 1883 he undertook the pastorate of the church at Queen Street, Wolverhampton, with the supervision of nine dependent churches in the neighbourhood. Here again he exercised a wide influence, due in part to his evangelical conviction, eloquence, broad views and powers of organization, but also to the magnetic force of his personality. In 1887 he went to America in fulfilment of a promise to Henry Ward Beecher of Brooklyn, and received a unanimous invitation to succeed Beecher in what was then the best-known pulpit in the United States. Berry, however, felt that his work lay in England and declined the invitation. In 1892 he took part in a conference at Grindelwald on the question of Christian Reunion, and subsequently, with Hugh Price Hughes and Alexander Mackennal of Bowdon, conducted a campaign throughout England, introducing the ideas and principles of Free Church federation. He was the first president of the Free Church congress. He played an effective part in expressing the popular desire for peace between England and America in reply to President Cleveland's message on the Venezuelan boundary dispute, and was invited to Washington to preach in connexion with the endeavour to establish an international arbitration treaty. In 1896 he was elected chairman of the Congregational Union of England and Wales. In 1898 his health began to fail, and he died suddenly on the 31st of January 1899. His published works consist chiefly of addresses, and two volumes of sermons, *Vision and Duty*, and *Mischievous Goodness*.

(D. Mn.)

BERRY, CHARLES FERDINAND, Duke of (1778-1820), younger son of Charles X. of France, was born at Versailles. At the Revolution he left France with his father, then comte d'Artois, and served in the army of Condé; from 1792 to 1797. He afterwards joined the Russian army, and in

1801 took up his residence in England, where he remained for thirteen years. During that time he married an Englishwoman, Anna Brown, by whom he had two daughters, afterwards the baronne de Charette and the comtesse de Lucinge-Faucigny. The marriage was cancelled for political reasons in 1814, when the duke set out for France. His frank, open manners gained him some favour with his countrymen, and Louis XVIII. named him commander-in-chief of the army at Paris on the return of Napoleon from Elba. He was, however, unable to retain the loyalty of his troops, and retired to Ghent during the Hundred Days. In 1816 he married the princess Caroline Ferdinande Louise (1798-1870), eldest daughter of King Francis I. of Naples. On the 13th of February 1820 he was mortally wounded, when leaving the opera-house at Paris with his wife, by a saddler named Louis Pierre Louvel. Seven months after his death the duchess gave birth to a son, who received the title of duke of Bordeaux, but who is known in history as the comte de Chambord. A daughter, afterwards duchess of Parma, was born in 1819.

The duchess of Berry was compelled to follow Charles X. to Holyrood after July 1830, but it was with the resolution of returning speedily and making an attempt to secure the throne for her son. From England she went to Italy, and in April 1832 she landed near Marseilles, but, receiving no support, was compelled to make her way towards the loyal districts of Vendée and Brittany. Her followers, however, were defeated, and, after remaining concealed for five months in a house in Nantes, she was betrayed to the government and imprisoned in the castle of Blaye. Here she gave birth to a daughter, the fruit of a secret marriage contracted with an Italian nobleman, Count Ettore Lucchesi-Palli (1805-1864). The announcement of this marriage at once deprived the duchess of the sympathies of her supporters. She was no longer an object of fear to the French government, who released her in June 1833. She set sail for Sicily, and, joining her husband, lived in retirement from that time till her death, at Brunnensee in Switzerland, in April 1870.

BERRY, JOHN, Duke of (1340-1416), third son of John II., king of France and Bonne of Luxemburg, was born on the 30th of November 1340 at Vincennes. He was created count of Poitiers in 1356, and was made the king’s lieutenant in southern France, though the real power rested chiefly with John of Armagnac, whose daughter Jeanne he married in 1360. The loss of his southern possessions by the treaty of Bretigny was compensated by the fiefs of Auvergne and Berry, with the rank of peer of France. The duke went to England in 1360 as a hostage for the fulfilment of the treaty of Bretigny, returning to France in 1367 on the pretext of collecting his ransom. He took no leading part in the war against the English, his energies being largely occupied with the satisfaction of his artistic and luxurious tastes. For this reason perhaps his brother Charles V. assigned him no share in the government during the minority of Charles VI. He received, however, the province of Languedoc. The peasant revolt of the *Tuchins* and *Coquins*, as the insurgents were called, was suppressed with great harshness, and the duke exacted from the states of Languedoc assembled at Lyons a fine of £15,000. He fought at Rosebeke in 1382 against the Flemings and helped to suppress the Parisian revolts. By a series of delays he caused the failure of the naval expedition prepared at Sluys against England in 1386, and a second accusation of military negligence led to disgrace of the royal princes and the temporary triumph of the *marmousels*, as the advisers of the late king were nicknamed. Charles VI. visited Languedoc in 1389-1390, and enquired into his uncle’s government. The duke was deprived of the government of Languedoc, and his agent, Bétizac, was burnt. When in 1401 he was restored, he delegated his authority in the province, where he was still hated, to Bérnard d’Armagnac. In 1396 he negotiated a truce with Richard II. of England, and his marriage with the princess Isabella of France. He tried to mediate between his brother Philip the Bold of Burgundy and his nephew Louis, duke of Orleans, and later between John “sans Peur” of Burgundy and Orleans. He broke with John after the murder of Orleans, though he tried to prevent civil war, and only finally joined the Armagnac party in 1410. In 1413 he resumed his rôle of mediator, and was for a short time tutor to the dauphin. He died in Paris on the 15th of June 1416, leaving vast treasures of jewelry, objects of art, and especially of illuminated MSS., many of which have been preserved. He decorated the Sainte Chapelle at Bourges; he built the Hôtel de Nesle in Paris, and palaces at Poitiers, Bourges, Mehun-sur-Yèvre and elsewhere.

See also L. Raynal, *Histoire du Berry* (Bourges, 1845); “Jean, duc de Berry,” in S Luce, *La France pendant la guerre de Cent Ans* (1890), vol. i.; Toulgoet-Tréanna, in *Mém. de la Soc. des antiquaires du centre*, vol. xvii. (1890). His beautiful illuminated *Livre d’heures* was reproduced (Paris, fol. 1904) by P. Durrieu.

BERRY, or Berri, a former province of France, absorbed in 1790 in the departments of Cher, corresponding roughly with Haut-Berry, and Indre, representing Bas-Berry. George Sand, the most famous of "berrichon" writers, has described the quiet scenery and rural life of the province in the rustic novels of her later life. Berry is the *civitas* or *pagus* Bituricensis of Gregory of Tours. The Bituriges were said by Livy (v. 34) to have been the dominating tribe in Gaul in the 7th century, one of their kings, Ambigat, having ruled over all Gaul. In Caesar's time they were dependent on the Aedui. The tribes inhabiting the districts of Berry and Bourbonnais were distinguished as Bituriges Cubi. The numerous menhirs and dolmens to be found in the district, to which local superstitions still cling, are probably monuments of still earlier inhabitants. In 52 B.C. the Bituriges, at the order of Vercingetorix, set fire to their towns, but spared Bourges (Avaricum) their capital, which was taken and sacked by the Romans. The province was amalgamated under Augustus with Aquitaine, and Bourges became the capital of Aquitania Prima. In 475 Berry came into the possession of the west Goths, from whom it was taken (*c.* 507) by Clovis. The first count of Berry, Chunibert (d. 763), was created by Waifer, duke of Aquitaine, from whom the county was wrested by Pippin the Short, who made it his residence and left it to his son Carloman, on whose death it fell to his brother Charlemagne. The countship of Berry was suppressed (926) by Rudolph, king of the Franks (fl. 923-936). Berry was for some time a group of lordships dependent directly on the crown, but the chief authority eventually passed to the viscounts of Bourges, who, while owning the royal suzerainty, preserved a certain independence until 1101, when the viscount Odo Arpin de Dun sold his fief to the crown. Berry was part of the dowry of Eleanor, wife of Louis VII., and on her divorce and remarriage with Henry II. of England it passed to the English king. Its possession remained, however, a matter of dispute until 1200, when Berry reverted by treaty with John of England to Philip Augustus, and the various fiefs of Berry were given as a dowry to John's niece, Blanche of Castile, on her marriage with Philip's son Louis (afterwards Louis VIII.). Philip Augustus established an effective control over the administration of the province by the appointment of a royal *bailli*. Berry suffered during the Hundred Years' War, and more severely during the wars of religion in the 16th century. It had been made a duchy in 1360, and its first duke, John [Jean] (1340-1416), son of the French king John II., encouraged the arts and beautified the province with money wrung from his government of Languedoc. Thenceforward it was held as an apanage of the French crown, usually by a member of the royal family closely related to the king. Charles of France (1447-1472), brother of Louis XI, was duke of Berry, but was deprived of this province, as subsequently of the duchies of Normandy and Guienne, for intrigues against his brother. The duchy was also governed by Jeanne de Valois (d. 1505), the repudiated wife of Louis XII.[1]; by Marguerite d'Angoulême, afterwards queen of Navarre; by Marguerite de Valois, afterwards duchess of Savoy; and by Louise of Lorraine, widow of Henry III., after whose death (1601) the province was finally reabsorbed in the royal domain. The title of duke of Berry, divested of territorial significance, was held by princes of the royal house. Charles (1686-1714), duke of Berry, grandson of Louis XIV., and third son of the dauphin Louis (d. 1711), married Marie Louise Elisabeth (1686-1714), eldest daughter of the duke of Orleans, whose intrigues made her notorious. The last to bear the title of duke of Berry was the ill-fated Charles Ferdinand, grandson and heir of Charles X.

1 See R. le Maulde, *Jeanne de France, duchesse d'Orléans et de Berry* (Paris, 1883).

BERRYER, ANTOINE PIERRE (1790-1868), French advocate and parliamentary orator, was the son of an eminent advocate and counsellor to the *parlement*. He was educated at the Collège de Juilly, on leaving which he adopted the profession of the law; he was admitted advocate in 1811, and in the same year he married. In the great conflict of the period between Napoleon I. and the Bourbons, Berryer, like his father, was an ardent Legitimist; and in the spring of 1815, at the opening of the campaign of the Hundred Days, he followed Louis XVIII. to Ghent as a volunteer. After the second restoration he distinguished himself as a courageous advocate of moderation in the treatment of the military adherents of the emperor. He assisted his father and Dupin in the unsuccessful defence of Marshal Ney before the chamber of peers; and he undertook alone the defence of General Cambronne and General Debelle, procuring the acquittal of the former and the pardon of the latter. By this time he had a very large business as advocate, and was engaged on behalf of journalists in many press prosecutions. He stood forward with a noble resolution to maintain the freedom of the press, and severely censured the rigorous measures of the police department. In 1830, not long before the fall of Charles X., Berryer was elected a member of the chamber of deputies. He appeared there as the champion of the king and encouraged him in his reactionary policy. After the revolution of July, when the Legitimists withdrew in a body, Berryer alone retained his seat as deputy. He resisted, but

unsuccessfully, the abolition of the hereditary peerage. He advocated trial by jury in press prosecutions, the extension of municipal franchises and other liberal measures. In May 1832 he hastened from Paris to see the duchess of Berry on her landing in the south of France for the purpose of organizing an insurrection in favour of her son, the duke of Bordeaux, since known as the Comte de Chambord. Berryer attempted to turn her from her purpose; and failing in this he set out for Switzerland. He was, however, arrested, imprisoned and brought to trial as one of the insurgents. He was immediately acquitted. In the following year he pleaded for the liberation of the duchess, made a memorable speech in defence of Chateaubriand, who was prosecuted for his violent attacks on the government of Louis Philippe, and undertook the defence of several Legitimist journalists. Among the more noteworthy events of his subsequent career were his defence of Louis Napoleon after the ridiculous affair of Boulogne, in 1840, and a visit to England in December 1843, for the purpose of formally acknowledging the pretender, the duke of Bordeaux, then living in London, as Henry V. and lawful king of France. Berryer was an active member of the National Assembly convoked after the revolution of February 1848, again visited the pretender, then at Wiesbaden, and still fought in the old cause. This long parliamentary career was closed by a courageous protest against the *coup d'état* of December 2, 1851. After a lapse of twelve years, however, he appeared once more in his forsaken field as a deputy to the Corps Législatif. Berryer was elected member of the French Academy in 1854. A visit paid by this famous orator to Lord Brougham in 1865 was made the occasion of a banquet given in his honour by the benchers of the Temple and of Lincoln's Inn. In November 1868 he was removed by his own desire from Paris to his country seat at Augerville, and there he died on the 29th of the same month.

BERSERKER (from the "sark" or shirt of the "bear," or other animal-skins worn by them), in Scandinavian mythology, the name of the twelve sons of the hero Berserk, grandson of the eight-handed Starkadder and Alfhilde. Berserk was famed for the reckless fury with which he fought, always going into battle without armour. By the daughter of King Swafurlam, whom he had killed, he had the twelve sons who were his equals in bravery. In Old Norse the term *berserker* thus became synonymous with reckless courage, and was later applied to the bodyguards of several of the Scandinavian heroes.

BERT, PAUL (1833-1886), French physiologist and politician, was born at Auxerre (Yonne) on the 17th of October 1833. He entered the École Polytechnique at Paris with the intention of becoming an engineer; then changing his mind, he studied law; and finally, under the influence of the zoologist, L.P. Gratiolet (1815-1865), he took up physiology, becoming one of Claude Bernard's most brilliant pupils. After graduating at Paris as doctor of medicine in 1863, and doctor of science in 1866, he was appointed professor of physiology successively at Bordeaux (1866) and the Sorbonne (1869). After the revolution of 1870 he began to take part in politics as a supporter of Gambetta. In 1874 he was elected to the Assembly, where he sat on the extreme left, and in 1876 to the chamber of deputies. He was one of the most determined enemies of clericalism, and an ardent advocate of "liberating national education from religious sects, while rendering it accessible to every citizen." In 1881 he was minister of education and worship in Gambetta's short-lived cabinet, and in the same year he created a great sensation by a lecture on modern Catholicism, delivered in a Paris theatre, in which he poured ridicule on the fables and follies of the chief religious tracts and handbooks that circulated especially in the south of France. Early in 1886 he was appointed resident-general in Annam and Tonkin, and died of dysentery at Hanoi on the 11th of November of that year. But he was more distinguished as a man of science than as a politician or administrator. His classical work, *La Pression barométrique* (1878), embodies researches that gained him the biennial prize of 20,000 francs from the Academy of Sciences in 1875, and is a comprehensive investigation on the physiological effects of air-pressure, both above and below the normal. His earliest researches, which provided him with material for his two doctoral theses, were devoted to animal grafting and the vitality of animal tissues, and they were followed by studies on the physiological action of various poisons, on anaesthetics, on respiration and asphyxia, on the causes of the change of colour in the chameleon, &c. He was also interested in vegetable physiology, and in particular investigated the movements of the sensitive plant, and the influence of light of different colours on the life of vegetation. After about 1880 he produced several elementary text-books of

scientific instruction, and also various publications on educational and allied subjects.

BERTANI, AGOSTINO (1812-1886), Italian revolutionist, was born at Milan on the 19th of October 1812. He took part in the insurrection of 1848, though opposed to the fusion of Lombardy with Piedmont. During the Roman republic of 1849, he, as medical officer, organized the ambulance service, and, after the fall of Rome, withdrew to Genoa, where he worked with Sir James Hudson for the liberation of the political prisoners of Naples, but held aloof from the Mazzinian conspiracies. In 1859 he founded a revolutionary journal at Genoa, but, shortly afterwards, joined as surgeon the Garibaldian corps in the war of 1859. After Villafranca he became the organizer-in-chief of the expeditions to Sicily, remaining at Genoa after Garibaldi's departure for Marsala, and organizing four separate volunteer corps, two of which were intended for Sicily and two for the papal states. Cavour, however, obliged all to sail for Sicily. Upon the arrival of Garibaldi at Naples, Bertani was appointed secretary-general of the dictator, in which capacity he reorganized the police, abolished the secret service fund, founded twelve infant asylums, suppressed the duties upon Sicilian products, prepared for the suppression of the religious orders, and planned the sanitary reconstruction of the city. Entering parliament in 1861, he opposed the Garibaldian expedition, which ended at Aspromonte, but nevertheless tended Garibaldi's wound with affectionate devotion. In 1866 he organized the medical service for the 40,000 Garibaldians, and in 1867 fought at Mentana. His parliamentary career, though marked by zeal, was less brilliant than his revolutionary activity. Up to 1870 he remained an agitator, but, after the liberation of Rome, seceded from the historic left, and became leader of the extreme left, a position held until his death on the 30th of April 1886. His chief work as deputy was an inquiry into the sanitary conditions of the peasantry, and the preparation of the sanitary code adopted by the Crispi administration.

(H. W. S.)

BERTAT (Arab. *Jebalain*), negroes of the Shangalla group of tribes, mainly agriculturists. They occupy the valleys of the Yabus and Tumat, tributaries of the Blue Nile. They are shortish and very black, with projecting jaws, broad noses and thick lips. By both sexes the hair is worn short or the head shaved; on cheeks and temple are tribal marks in the form of scars. The huts of the Bertat are circular, the floor raised on short poles. Their weapons are the spear, throwing-club, sword and dagger, and also the *kulbeda* or throwing-knife. Blocks of salt are the favourite form of currency. Gold washing is practised. Nature worship still struggles against the spread of Mahommedanism. The Bertat, estimated to number some 80,000, *c.* 1880, were nearly exterminated during the period of Dervish ascendancy (1884-1898) in the eastern Sudan. Settled among them are Arab communities governed by their own sheiks, while the *meks* or rulers of the Bertat speak Arabic, and show traces of foreign blood. (See Fazogli.)

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See Koeltlitz, "The Bertat," *Journal of the Anthropological Institute*, xxxiii. 51; *Anglo-Egyptian Sudan*, edited by Count Gleichen (London, 1905).

BERTAUT, JEAN (1552-1611), French poet, was born at Caen in 1552. He figures with Desportes in the disdainful couplet of Boileau on Ronsard:—

> "Ce poète orgueilleux, trébuché de si haut,
> Rendit plus retenus Desportes et Bertaut."

He wrote light verse to celebrate the incidents of court life in the manner of Desportes, but his verse is more fantastic and fuller of conceits than his master's. He early entered the church, and had a share in the conversion of Henry IV., a circumstance which assured his career. He was successively councillor of the parlement of Grenoble, secretary to the king, almoner to Marie de' Medici, abbot of Aulnay and finally, in 1606, bishop of Sées. After his elevation to the bishopric

he ceased to produce the light verse in which he excelled, though his scruples did not prevent him from preparing a new edition of his *Recueil de quelques vers amoureux* (1602) in 1606. The serious poems in which he celebrated the public events of his later years are dull and lifeless. Bertaut died at Sées on the 8th of June 1611. His works were edited by M.Ad. Chenevières in 1891.

BERTH, originally a nautical term, probably connected with the verb "to bear," first found in literature at the end of the 16th century, with the alternative spelling "birth." Its primary meaning is "sea-room," whether on the high seas or at anchor. Hence the phrase "to give a wide berth to," meaning "to keep at a safe distance from," both in its literal and its metaphorical use. From meaning sea-room for a ship at anchor, "berth" comes to mean also the position of a ship at her moorings ("to berth a ship"). The word further means any place on a ship allotted for a special purpose, where the men mess or sleep, or an office or appointment on board, whence the word has passed into colloquial use with the meaning of a situation or employment. From the Icelandic *byrdi*, a board, is also derived the ship-building term "berth," meaning to board, put up bulk-heads, etc.

BERTHELOT, MARCELLIN PIERRE EUGÈNE (1827-1907), French chemist and politician, was born at Paris on the 29th of October 1827, being the son of a doctor. After distinguishing himself at school in history and philosophy, he turned to the study of science. In 1851 he became a member of the staff of the Collège de France as assistant to A.J. Balard, his former master, and about the same time he began his life-long friendship with Ernest Renan. In 1854 he made his reputation by his doctoral thesis, *Sur les combinaisons de la glycérine avec les acides*, which described a series of beautiful researches in continuation and amplification of M.E. Chevreul's classical work. In 1859 he was appointed professor of organic chemistry at the École Supérieure de Pharmacie, and in 1865 he accepted the new chair of organic chemistry, which was specially created for his benefit at the Collège de France. He became a member of the Academy of Medicine in 1863, and ten years afterwards entered the Academy of Sciences, of which he became perpetual secretary in 1889 in succession to Louis Pasteur. He was appointed inspector general of higher education in 1876, and after his election as life senator in 1881 he continued to take an active interest in educational questions, especially as affected by compulsory military service. In the Goblet ministry of 1886-1887 he was minister of public instruction, and in the Bourgeois cabinet of 1895-1896 he held the portfolio for foreign affairs. His scientific jubilee was celebrated in Paris in 1901. He died suddenly, immediately after the death of his wife, on the 18th of March 1907, at Paris, and with her was buried in the Panthéon.

The fundamental conception that underlay all Berthelot's chemical work was that all chemical phenomena depend on the action of physical forces which can be determined and measured. When he began his active career it was generally believed that, although some instances of the synthetical production of organic substances had been observed, on the whole organic chemistry must remain an analytical science and could not become a constructive one, because the formation of the substances with which it deals required the intervention of vital activity in some shape. To this attitude he offered uncompromising opposition, and by the synthetical production of numerous hydrocarbons, natural fats, sugars and other bodies he proved that organic compounds can be formed by ordinary methods of chemical manipulation and obey the same laws as inorganic substances, thus exhibiting the "creative character in virtue of which chemistry actually realizes the abstract conceptions of its theories and classifications—a prerogative so far possessed neither by the natural nor by the historical sciences." His investigations on the synthesis of organic compounds were published in numerous papers and books, including *Chimie organique fondée sur la synthèse* (1860) and *Les Carbures d'hydrogéne* (1901). Again he held that chemical phenomena are not governed by any peculiar laws special to themselves, but are explicable in terms of the general laws of mechanics that are in operation throughout the universe; and this view he developed, with the aid of thousands of experiments, in his *Mécanique chimique* (1878) and his *Thermochimie* (1897). This branch of study naturally conducted him to the investigation of explosives, and on the theoretical side led to the results published in his work *Sur la force de la poudre et des matières explosives* (1872), while on the practical side it enabled him to render important services to his country as president of the

scientific defence committee during the siege of Paris in 1870-71 and subsequently as chief of the French explosives committee. In the later years of his life he turned to the study of the earlier phases of the science which he did so much to advance, and students of chemical history are greatly indebted to him for his book on *Les Origines de l'alchimie* (1885) and his *Introduction à l'étude de la chimie des anciens et du moyen âge* (1889), as well as for publishing translations of various old Greek, Syriac and Arabic treatises on alchemy and chemistry (*Collection des anciens alchimistes grecs*, 1887-1888, and *La Chimie au moyen âge*, 1893). He was also the author of *Science et philosophie* (1886), which contains a well-known letter to Renan on "La Science idéale et la science positive," of *La Révolution chimique, Lavoisier* (1890), of *Science et morale* (1897), and of numerous articles in *La Grande Encyclopédie*, which he helped to establish.

BERTHIER, LOUIS ALEXANDRE, prince of Neuchâtel (1753-1815), marshal of France and chief of the staff under Napoleon I., was born at Versailles on the 20th of February 1753. As a boy he was instructed in the military art by his father, an officer of the *Corps de génie*, and at the age of seventeen he entered the army, serving successively in the staff, the engineers and the prince de Lambesq's dragoons. In 1780 he went to North America with Rochambeau, and on his return, having attained the rank of colonel, he was employed in various staff posts and in a military mission to Prussia. During the Revolution, as chief of staff of the Versailles national guard, he protected the aunts of Louis XVI. from popular violence, and aided their escape (1791). In the war of 1792 he was at once made chief of staff to Marshal Lückner, and he bore a distinguished part in the Argonne campaign of Dumouriez and Kellermann. He served with great credit in the Vendéan War of 1793-95, and was in the next year made a general of division and chief of staff (*Major-Général*) to the army of Italy, which Bonaparte had recently been appointed to command. His power of work, accuracy and quick comprehension, combined with his long and varied experience and his complete mastery of detail, made him the ideal chief of staff to a great soldier; and in this capacity he was Napoleon's most valued assistant for the rest of his career. He accompanied Napoleon throughout the brilliant campaign of 1796, and was left in charge of the army after the peace of Campo Formio. In this post he organized the Roman republic (1798), after which he joined his chief in Egypt, serving there until Napoleon's return. He assisted in the *coup d'état* of 18th Brumaire, afterwards becoming minister of war for a time. In the campaign of Marengo he was the nominal head of the Army of Reserve, but the first consul accompanied the army and Berthier acted in reality, as always, as chief of staff to Napoleon. At the close of the campaign he was employed in civil and diplomatic business. When Napoleon became emperor, Berthier was at once made a marshal of the empire. He took part in the campaigns of Austerlitz, Jena and Friedland, and was created duke of Valengin in 1806, sovereign prince of Neuchâtel in the same year and vice-constable of the empire in 1807. In 1808 he served in the Peninsula, and in 1809 in the Austrian War, after which he was given the title of prince of Wagram. Berthier married a niece of the king of Bavaria. He was with Napoleon in Russia in 1812, Germany in 1813, and France in 1814, fulfilling, till the fall of the empire, the functions of "major-general" of the *Grande Armée*. He abandoned Napoleon to make his peace with Louis XVIII. in 1814, and accompanied the king in his solemn entry into Paris. During Napoleon's captivity in Elba, Berthier, whom he informed of his projects, was much perplexed as to his future course, and, being unwilling to commit himself, fell under the suspicion both of his old leader and of Louis XVIII. On Napoleon's return he withdrew to Bamberg, where he died on the 1st of June 1815. The manner of his death is uncertain; according to some accounts he was assassinated by members of a secret society, others say that, maddened by the sight of Russian troops marching to invade France, he threw himself from his window and was killed. Berthier was not a great commander. When he was in temporary command in 1809 the French army in Bavaria underwent a series of reverses. Whatever merit as a general he may have possessed was completely overshadowed by the genius of his master. But his title to fame is that he understood and carried out that master's directions to the minutest detail.

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BERTHOLLET, CLAUDE LOUIS (1748-1822), French chemist, was born at Talloire, near Annecy in Savoy, on the 9th of December 1748. He studied first at Chambery and afterwards at Turin, where he graduated in medicine. Settling in Paris in 1772, he became the private physician of Philip, duke of Orleans, and by his chemical work soon gained so high a reputation

that in 1780 he was admitted into the Academy of Sciences. In 1785 he declared himself an adherent of the Lavoisierian school, though he did not accept Lavoisier's view of oxygen as the only and universal acidifying principle, and he took part in the reform in chemical nomenclature carried out by Lavoisier and his associates in 1787. Among the substances of which he investigated the composition were ammonia, sulphuretted hydrogen and prussic acid, and his experiments on chlorine, which he regarded, not as an element, but as oxygenated muriatic (oxymuriatic) acid, led him to propose it as a bleaching agent in 1785. He also prepared potassium chlorate and attempted to use it in the manufacture of gunpowder as a substitute for saltpetre. When, at the beginning of the French Revolution, the deficiency in the supply of saltpetre became a serious matter, he was placed at the head of the commission entrusted with the development of its production in French territory, and another commission on which he served had for its object the improvement of the methods of iron manufacture. He was also a member in 1794 of the committee on agriculture and the arts, and technical science was further indebted to him for a systematic exposition of the principles of dyeing—*Élémens de l'art de la teinture*, 1791, of which he published a second edition in 1809, in association with his son, A.B. Berthollet (1783-1811). After 1794 he was teacher of chemistry in the polytechnic and normal schools of Paris, and in 1795 he took an active part in remodelling the Academy as the Institut National. In the following year he and Gaspard Monge were chosen chiefs of a commission charged with the task of selecting in Italy the choicest specimens of ancient and modern art for the national galleries of Paris; and in 1798 he was one of the band of scientific men who accompanied Napoleon to Egypt, there forming themselves into the Institute of Egypt on the plan of the Institut National. On the fall of the Directory he was made a senator and grand officer of the Legion of Honour; under the empire he became a count; and after the restoration of the Bourbons he took his seat as a peer. In the later years of his life he had at Arcueil, where he died on the 6th of November 1822, a well-equipped laboratory, which became a centre frequented by some of the most distinguished scientific men of the time, their proceedings being published in three volumes, between 1807 and 1817, as the *Mémoires de la société d'Arcueil*. Berthollet's most remarkable contribution to chemistry was his *Essai de statique chimique* (1803), the first systematic attempt to grapple with the problems of chemical physics. His doctrines did not meet with general approval among his contemporaries, partly perhaps because he pushed them too far, as for instance in holding that two elements might combine in constantly varying proportions, a view which gave rise to a long dispute with L.J. Proust; but his speculations, in particular his insistence on the influence of the relative masses of the acting substances in chemical reactions, have exercised a dominating influence on the modern developments of the theory of chemical affinity, of which, far more than T.O. Bergman, whom he controverted, he must be regarded as the founder.

BERTHON, EDWARD LYON (1813-1899), English inventor, was born in London, on the 20th of February 1813, the son of an army contractor and descendant of an old Huguenot family. He studied for the medical profession in Liverpool and at Dublin, but after his marriage in 1834 he gave up his intention of becoming a doctor, and travelled for about six years on the continent. Keenly interested from boyhood in mechanical science, he made experiments in the application of the screw propeller for boats. But his model, with a two-bladed propeller, was only ridiculed when it was placed before the British admiralty. Berthon therefore did not complete the patent and the idea was left for Francis Smith to bring out more successfully in 1838. In 1841 he entered Magdalene College, Cambridge, in order to study for the Church. There he produced what is usually known as "Berthon's log," in which the suction produced by the water streaming past the end of a pipe projected below a ship is registered on a mercury column above. In 1845 he was ordained, and after holding a curacy at Lymington was given a living at Fareham. Here he was able to carry on experiments with his log, which was tested on the Southampton to Jersey steamboats; but the British admiralty gave him no encouragement, and it remained uncompleted. He next designed some instruments to indicate the trim and rolling of boats at sea; but the idea for which he is chiefly remembered was that of the "Berthon Folding Boat" in 1849. This invention was again adversely reported on by the admiralty. Berthon resigned his living at Fareham, and subsequently accepted the living of Romsey. In 1873, encouraged by Samuel Plimsoll, he again applied himself to perfecting his collapsible boat. Success was at last achieved, and in less than a year he had received orders from the admiralty for boats to the amount of £15,000. Some were taken by Sir George Nares to the Arctic, others were sent to General Gordon at Khartum, and others again were taken to the Zambezi by F.C. Selous. Berthon died on the 27th of October 1899.

BERTHOUD, FERDINAND (1727-1807), Swiss chronometer-maker, was born at Plancemont, Neuchâtel, in 1727, and settling in Paris in 1745 gained a great reputation for the excellence and accuracy of his chronometers. He was a member of the Institute and a fellow of the Royal Society of London, and among other works wrote *Essais sur l'horlogerie* (1763). He died in 1807 at Montmorency, Seine et Oise. He was succeeded in business by his nephew, Louis Berthoud (1759-1813).

BERTILLON, LOUIS ADOLPHE (1821-1883), French statistician, was born in Paris on the 1st of April 1821. Entering the medical profession, he practised as a doctor for a number of years. After the revolution of 1870, he was appointed inspector-general of benevolent institutions. He was one of the founders of the school of anthropology of Paris, and was appointed a professor there in 1876. His *Démographie figurée de la France* (1874) is an able statistical study of the population of France. He died at Neuilly on the 28th of February 1883.

His son Alphonse Bertillon, the anthropometrist, was born in Paris in 1853. He published in 1883 a work *Ethnographie moderne des races sauvages*, but his chief claim to distinction lies in the system invented by him for the identification of criminals, which is described by him in his *Photographie judiciaire*, Paris, 1890 (see Anthropometry). He was officially appointed in 1894 to report on the handwriting of the *bordereau* in the Dreyfus case, and was a witness for the prosecution before the cour de cassation on the 18th of January 1899.

BERTIN, a family of distinction in the history of French journalism. The most important member of the family, generally regarded as the father of modern French journalism, Louis François Bertin (1766-1841), known as Bertin *aîné*, was born in Paris on the 14th of December 1766. He began his journalistic career by writing for the *Journal Français* and other papers during the French Revolution. After the 18th Brumaire he founded the paper, with which the name of his family has chiefly been connected, the *Journal des Débats*. He was suspected of royalist tendencies by the consulate and was exiled in 1801. He returned to Paris in 1804 and resumed the management of the paper, the title of which had been changed by order of Napoleon to that of *Journal de l'Empire*. Bertin had to submit to a rigorous censorship, and in 1811 the conduct, together with the profits, was taken over entirely by the government. In 1814 he regained possession and restored the old title and continued his support of the royalist cause —during the Hundred Days; he directed the *Moniteur de Gand*—till 1823, when the *Journal des Débats* became the recognized organ of the constitutional opposition. Bertin's support was, however, given to the July monarchy after 1830. He died on the 13th of September 1841. Louis François Bertin de Vaux (1771-1842), the younger brother of Bertin *aîné*, took a leading part in the conduct of the *Journal des Débats*, to the success of which his powers of writing greatly contributed. He entered the chamber of deputies in 1815, was made councillor of state in 1827, and a peer of France in 1830. The two sons of Bertin *aîné*, Edouard François (1797-1871) and Louis Marie François (1801-1854), were directors in succession of the *Journal des Débats*. Edouard Bertin was also a painter of some distinction.

BERTINORO, OBADIAH, Jewish commentator of the Mishnah, died in Jerusalem about 1500. Bertinoro much improved the status of the Jews in the Holy Land; before his migration thither the Jews of Palestine were in a miserable condition of poverty and persecution. His commentary on the Mishnah is the most useful of all helps to the understanding of that work. It is printed in most Hebrew editions of the Mishnah. Surenhusius, in his Latin edition of the last-named code (Amsterdam 1698-1703), translated Bertinoro's commentary.

BERTINORO, a town and episcopal see of Emilia, Italy, in the province of Forli, 8 m. S.E. direct of Forli and 5½ m. N. of the station of Forlimpopoli, and 800 ft. above sea-level. Pop. (1901) town, 3753; commune, 7786. The town commands a fine view to the north over the plain of Emilia and the lower course of the Po, itself lying on the foothills of the Apennines. It appears to have been first fortified by Frederick Barbarossa, and its castle stood frequent sieges in the middle ages. Polenta, 2½ m. to the south of it, was the birthplace of Francesca da Rimini. The castle is almost entirely ruined, but the church of S. Donato, of the Lombard period, with Byzantine capitals, is interesting; Giosuè Carducci has written a fine ode on the subject (*La Chiesa di Polenta*, Bologna, 1897).

See C. Ricci, "Della Chiesa e castello di Polenta" in *Atti e Memorie della Deputazione di Storia patria per le prooniae di Romagna*, ser. iii. vol. ix. (Bologna, 1891), 1 seq.

(T. As.)

BERTOLD (1442-1504), elector and archbishop of Mainz, son of George, count of Henneberg, entered the ecclesiastical profession, and after passing through its lower stages, was made archbishop of Mainz in 1484. He appears to have been a firm supporter of law and order, an enemy of clerical abuses and a careful administrator of his diocese. Immediately after his election as archbishop he began to take a leading part in the business of the Empire, and in 1486 was very active in securing the election of Maximilian as Roman king. His chief work, however, was done as an advocate of administrative reform in Germany. During the reign of the emperor Frederick III. he had brought this question before the diet, and after Frederick's death, when he had become imperial chancellor, he was the leader of the party which pressed the necessity for reform upon Maximilian at the diet of Worms in 1495. His proposals came to nothing, but he continued the struggle at a series of diets, and urged the Germans to emulate the courage and union of the Swiss cantons. He gained a temporary victory when the diet of Augsburg in 1500 established a council of regency (*Reichsregiment*), and in 1502 persuaded the electors to form a union to uphold the reforms of 1495 and 1500. The elector died on the 21st of December 1504. Bertold was a man of great ability and resourcefulness, and as a statesman who strove for an ordered and united Germany was far in advance of his age.

See J. Weiss, *Berthold von Henneberg, Erzbischof von Mainz* (Freiburg, 1889).

BERTOLD VON REGENSBURG (*c.* 1220-1272), the greatest German preacher of the later middle ages, was a native of Regensburg, and entered the Franciscan monastery there. From about 1250 onwards his fame as a preacher spread over all the German-speaking parts of the continent of Europe. He wandered from village to village and town to town, preaching to enormous audiences, always in the open air; the earnestness and straightforward eloquence with which he insisted that true repentance came from the heart, that pious pilgrimages and the absolution of the Church were mere outward symbols, appealed to all classes. He died in Regensburg on the 13th of December 1272. His German sermons, of which seventy-one have been preserved, are among the most powerful in the language, and form the chief monuments of Middle High German prose. His style is clear, direct and remarkably free from cumbrous Latin constructions; he employed, whenever he could, the pithy and homely sayings of the peasants, and is not reluctant to point his moral with a rough humour. As a thinker, he shows little sympathy with that strain of medieval mysticism which is to be observed in all the poetry of his contemporaries.

The best edition of Bertold's German sermons is that by F. Pfeiffer and J. Strobl (2 vols., 1862-1880; reprinted, 1906); there is also a modern German version by F. Göbel (4th ed., 1906). The Latin sermons were edited by G. Jakob (1880). See C.W. Stromberger, *Bertold von Regensburg, der grosste Volksredner des deutschen Mittelalters* (1877), K. Unkel, *Bertold von Regensburg* (1882), and E. Bernhardt, *Bruder Bertold von Regensburg* (1905); A.E. Schönbach, *Studien zur Geschichte der altdeutschen Predigt* (*Publications of the Vienna Academy*, 1906).

BERTRAM, CHARLES (1723-1765), English literary impostor, was born in London, the son of a silk dyer. In 1747, being then teacher of English at the school for Danish naval cadets at Copenhagen, he wrote to Dr William Stukeley, the English antiquarian, that he had discovered a manuscript written by a monk named Richard of Westminster, which corrected and supplemented the *Itinerary* of Antoninus in Britain. He subsequently sent to Stukeley a copy of various parts of the work and a facsimile of a few lines of the manuscript. These were so cleverly executed that they quite deceived the English palaeographers of the period. Stukeley, finding that a chronicler of the fourteenth century, Richard of Cirencester, had also been an inmate of Westminster Abbey, identified him with Bertram's Richard of Westminster, and, in 1756, read an analysis of the "discovery" before the Society of Antiquaries, which was published with a copy of Richard's map. In 1757 Bertram published at Copenhagen a volume entitled *Britannicarum Gentium Historiae Antiquae Scriptores Tres*. This contained the works of Gildas and Nennius and the full text of Bertram's forgery, and though Bertram's map did not correspond with that of Richard, Stukeley discarded the latter and adopted Bertram's concoction in his *Itinerarium Curiosum* published in 1776. Although Thomas Reynolds in his *Iter Britanniarum* (1799), an edition of the British portion of Antoninus' *Itinerary*, was distinctly sceptical as to the value of Bertram's manuscript, its authenticity was generally accepted until the middle of the 19th century. No original of the manuscript could then be found at Copenhagen, and B.B. Woodward, librarian of Windsor Castle, proved conclusively, by a series of articles in the *Gentleman's Magazine* in 1866 and 1867, that the supposed facsimile of calligraphy produced by Bertram was a blend of the style of various periods, while the greater portion of the idiomatic Latin in the book was a mere translation of 18th century English phraseology. Nevertheless, as late as 1872, a translation of Bertram's forgery was included in Bohn's Antiquarian Library as one of the *Six English Chronicles*, and there is no doubt that the work had a wide and misleading influence upon many antiquarian writers. Bertram died in 1765.

BERTRAND, HENRI GRATIEN, Comte (1773-1844), French general, was born at Châteauroux. At the outbreak of the Revolution, he had just finished his studies, and he entered the army as a volunteer. During the expedition to Egypt, Napoleon named him colonel (1798), then brigadier-general, and after Austerlitz his aide-de-camp. His life was henceforth closely bound up with that of Napoleon, who had the fullest confidence in him, honouring him in 1813 with the title of grand marshal of the court. It was Bertrand who in 1809 directed the building of the bridges by which the French army crossed the Danube at Wagram. In 1813, after the battle of Leipzig, it was due to his initiative that the French army was not totally destroyed. He accompanied Napoleon to Elba in 1814, returned with him in 1815, held a command in the Waterloo campaign, and then, after the defeat, accompanied Napoleon to St Helena. He did not return to France until after Napoleon's death, and then Louis XVIII. allowed him to retain his rank, and he was elected deputy in 1830. In 1840 he was chosen to go to bring Napoleon's remains to France. He died at Châteauroux on the 31st of January 1844. His touching fidelity has made his name very popular in France.

BERTRICH, a village and watering place of Germany, in the Prussian Rhine province, in a narrow valley running down to the Mosel near Cochem. Its waters are efficacious in cases of gout, rheumatism and biliary affections. Pop. 500.

BÉRULLE, PIERRE DE (1575-1629), French cardinal and statesman, was born at Sérilly, near Troyes, on the 4th of February 1575. He was educated by the Jesuits and at the university of Paris. Soon after his ordination in 1599, he assisted Cardinal Duperron in his controversy with the Protestant Philippe de Mornay, and made numerous converts. He founded the Congregation of the French Oratory in 1611 and introduced the Carmelite nuns into France, notwithstanding the opposition of the friars of that order, who were jealous of his ascendancy. Bérulle also played an important part as a statesman. He obtained the necessary dispensations from Rome for

Henrietta Maria’s marriage to Charles I., and acted as her chaplain during the first year of her stay in England. In 1626, as French ambassador to Spain, he concluded the treaty of Monzon. After the reconciliation of Louis XIII. with his mother, Marie de’ Medici, through his agency, he was appointed a councillor of state, but had to resign this office, owing to his Austrian policy, which was opposed by Richelieu. Bérulle encouraged Descartes’ philosophical studies, and it was through him that the Samaritan Pentateuch, recently brought over from Constantinople, was inserted in Lejay’s *Polyglot Bible*. His treatise, *Des Grandeurs de Jésus*, was a favourite book with the Jansenists. He died on the 2nd of October 1629. His works, edited by P. Bourgoing (2 vols., 1644) were reprinted, by Migne in 1857.

See *M. de Bérulle et les Carmélites; Le Père de Bérulle et l’oratoire de Jésus; Le Cardinal de Bérulle et Richelieu* (3 vols., 1872-1876), by the Abbé M. Houssaye; and H. Sidney Lear’s *Priestly Life in France in the Seventeenth Century* (London, 1873).

BERVIE, or Inverbervie, a royal and police burgh of Kincardineshire, Scotland. Pop. (1901) 1207. It is situated at the mouth of Bervie Water and is the terminus of the North British railway’s branch line from Montrose, which lies 14 m. S.W. The leading industries include manufactures of woollens, flax and chemicals, and there is also a brisk trade in live-stock. Bervie unites with Arbroath, Brechin, Forfar and Montrose in returning one member (for the “Montrose burghs”) to parliament. David II., driven by stress of weather, landed here with his queen Joanna in 1341, and, out of gratitude for the hospitality of the townsfolk, granted them a charter, which James VI. confirmed. Hallgreen Castle, a stronghold of the 14th century, is maintained in repair. About one m. south is the fishing village of Gourdon (pop. 1197), where boat-building is carried on. There is a small but steady export business from the harbour, which has a pier and breakwater. St Ternan’s, the Romanesque parish church of Arbuthnott, 2½ m. north-west, stands on the banks of the Bervie. In the chapel dedicated to St Mary, which was afterwards added to it, is the burial-place of the Arbuthnotts, who took their title from the estate in 1644. John Arbuthnot, Queen Anne’s physician and the friend of Swift and Pope, was a native of the parish. Kinneff, 2 m. north, on the coast, is of interest as the place where the Scottish regalia were concealed during the siege of Dunottar Castle.

BERWICK, JAMES FITZJAMES, Duke of (1670-1734), marshal of France, was the natural son of James, duke of York, afterwards James II. of England, by Arabella Churchill (1648-1730), sister of the great duke of Marlborough. He was born at Moulins (Bourbonnais) on the 21st of August 1670. He received his education in France at the hands of the Jesuits, and at the age of fifteen, his father having succeeded to the throne, he was sent to learn the business of a soldier under the famous general of the empire, Charles of Lorraine. He served his first campaign in Hungary, and was present at the siege of Buda. He then returned to England, was made a colonel of the 8th Foot, and in 1687 created duke of Berwick, earl of Teignmouth and Baron Bosworth. He then went out afresh to Hungary and was present at the battle of Mohacz. On his return to England he was made K.G., colonel of the 3rd troop of horse guards (Royal Horse Guards Blue) and governor of Portsmouth, but soon afterwards the revolution forced him to flee to France. He served under James II. in the campaign in Ireland, and was present at the battle of the Boyne. For a short time he was left in Ireland as commander-in-chief, but his youth and inexperience unfitted him for the post, and he was a mere puppet in stronger hands. He then took service in the French army, fought under Marshal Luxembourg in Flanders, and took part in the battles of Steinkirk and Neerwinden, at the latter of which he was taken prisoner. He was, however, immediately exchanged for the duke of Ormond, and afterwards he served under Villeroi. In 1695 he married the widow of Patrick Sarsfield, who died in 1698. His second marriage, with Anne Bulkeley, took place in 1700. As a lieutenant-general he served in the campaign of 1702, after which he became naturalized as a French subject in order to be eligible for the marshalate. In 1704, he first took command of the French army in Spain. So highly was he now esteemed for his courage, abilities and integrity, that all parties were anxious to have him on their side (*Éloge*, by Montesquieu). His tenure of the command was, however, very short, and after one campaign he was replaced by the Marshal de Tessé. In 1705 he commanded against the Camisards in Languedoc, and when on this expedition he is said to have carried out his orders with remorseless rigour. His successful expedition against Nice in 1706 caused him to be made marshal of France, and in the same year he returned to Spain as commander-in-chief of

the Franco-Spanish armies. On the 25th of April 1707, the duke won the great and decisive victory of Almanza, where an Englishman at the head of a French army defeated Ruvigny, earl of Galway, a Frenchman at the head of an English army. The victory established Philip V. on the throne of Spain. Berwick was made a peer of France by Louis XIV., and duke of Liria and of Xereca and lieutenant of Aragon by Philip. Thenceforward Berwick was recognized as one of the greatest generals of his time, and successively commanded in nearly all the theatres of war. From 1709 to 1712 he defended the south-east frontier of France in a series of campaigns which, unmarked by any decisive battle, were yet models of the art of war as practised at the time. The last great event of the War of the Spanish Succession was the storming of Barcelona by Berwick, after a long siege, on the 11th of September 1714. Three years later he was appointed military governor of the province of Guienne, in which post he became intimate with Montesquieu. In 1718 he found himself under the necessity of once more entering Spain with an army; and this time he had to fight against Philip V., the king who owed chiefly to Berwick's courage and skill the safety of his throne. One of the marshal's sons, known as the duke of Liria, was settled in Spain, and was counselled by his father not to shrink from doing his duty and fighting for his sovereign. Many years of peace followed this campaign, and Marshal Berwick was not again called to serve in the field till 1733. He advised and conducted the siege of Philipsburg, and while the siege was going on was killed by a cannon-shot on the 12th of June 1734. Cool, self-possessed and cautious as a general, Marshal Berwick was at the same time not wanting in audacity and swiftness of action. He was a true general of the 18th century, not less in his care for the lives of his men than in his punctiliousness and rigidity in matters of discipline.

The *Mémoires* of Marshal Berwick, revised, annotated and continued by the Abbé Hooke, were published by the marshal's grandson in 1778. Montesquieu made many contributions to this.

BERWICKSHIRE, a county of Scotland, forming its south-eastern extremity, bounded N. by Haddingtonshire and the North Sea; E. by the North Sea; S.E. by the county of the borough and town of Berwick; S. by the Tweed and Roxburghshire, and W. by Mid-Lothian. Its area is 292,577 acres or 457 sq. m., and it has a coast-line of 21 m. The county is naturally divided into three districts: Lauderdale, or the valley of the Leader, in the W.; Lammermuir, the upland district occupied by the hills of that name in the N.; and the Merse (the March or Borderland, giving a title to the earls of Wemyss), the largest district, occupying the S.E. The Lammermuirs are a range of round-backed hills, whose average height is about 1000 ft., while the highest summit, Says Law, reaches 1749 ft. From these hills the Merse stretches to the S. and E., and is a comparatively level tract of country. The coast is lofty, rocky and precipitous, broken by ravines and not accessible, except at Eyemouth Harbour, for small vessels, and at Coldingham and Burnmouth for fishing boats. St Abb's Head, a promontory with a lighthouse upon it, rises to 310 ft. The Eye is the only river of any size which falls directly into the sea. The others—the Leader, the Eden, the Leet and the Whiteadder with its tributaries, the Blackadder and the Dye—all flow into the Tweed. Of these the largest and most important is the Whiteadder, which has its source in the parish of Whittingehame on the East Lothian side of the Lammermuirs, and, following a sinuous course of 35 m., joins the Tweed within the bounds or liberties of Berwick. There are small lochs at Coldingham, Legerwood, Spottiswoode, the Hirsel, near Coldstream, Hule Moss on Greenlaw Moor, and tiny sheets of water near Duns and Mersington.

Geology.—The north portion of the county embraces that part of the Silurian tableland of the south of Scotland which stretches from the Lammermuir Hills east to St Abb's Head. The strata consist mainly of grits, greywackes, flags and shales, repeated by innumerable folds, trending north-east and south-west, which are laid bare in the great cliff section between Fast Castle and St Abb's Head. This section of the tableland includes sediments, chiefly of Tarannon age, which form a belt 10 m. across from the crest of the Lammermuir Hills to a point near Westruther and Longformacus. In the Earnscleuch Burn north-east of Lauder representatives of Llandovery, Caradoc and Llandeilo rocks, together with the Arenig cherts, appear along an anticlinal fold in the midst of the younger strata. Again in the extreme north-west of the county near Channelkirk and to the north of the Tarannon belt radiolarian cherts and black shales with graptolites of Upper Llandeilo and Caradoc age are met with. The Lower Old Red Sandstone rocks, which rest unconformably on the folded and denuded Silurian strata, appear at Eyemouth and Reston Junction, and at St Abb's Head are associated with contemporaneous volcanic rocks which are evidently on the same horizon as the interbedded lavas of Lower Old Red age in the Cheviots. The intrusive igneous materials of this period are represented by the granitic mass of Cockburn Law and the porphyrites of the Dirrington Laws. The Upper Old Red Sandstone, consisting of conglomerates and sandstones, rest unconformably alike on the Silurian platform as at Siccar

Point and on the lower division of that system. The age of these beds has been determined by the occurrence of remains of *Holoptychius nobilissimus* in the sandstones at Earlston and in the Whiteadder north of Duns. On the Black Hill of Earlston these strata are traversed by a sheet of trachyte resembling the type of rock capping the Eildon Hills (see Roxburghshire: *Geology*). Overlying the strata just described there is a succession of volcanic rocks extending from Greenlaw southwards by Stichil and Kelso to Carham, which, at several localities, are followed by a band of cornstone resembling that near the top of the Upper Old Red Sandstone in the midland valley of Scotland. Next in order comes a great development of the Cementstone group of the Carboniferous system which spreads over nearly the whole of the low ground of the Merse and attains a great thickness. At Marshall Meadows north of Berwick-on-Tweed, thin bands of marine limestone occur, which probably represent some of the calcareous beds above the Fell sandstones south of Spittal.

Climate and Agriculture.—Owing to the maritime position, the winter is seldom severe in the lowland districts, but spring is a trying season on account of the east winds, which often last into summer. The mean annual rainfall is 30½ in. and the average temperature for the year is 47° F., for January 37° F., and for July 58.5° F. The climate is excellent as regards both the health of the inhabitants and the growth of vegetation. The soils vary, sometimes even on the same farm. Along the rivers is a deep rich loam, resting on gravel or clay, chiefly the former. The less valuable clay soil of the Merse has been much improved by drainage. The more sandy and gravelly soils are suitable for turnips, of which great quantities are grown. Oats and barley are the principal grain crops, but wheat also is raised. The flocks of sheep are heavy, and cattle are pastured in considerable numbers. Large holdings predominate—indeed, the average size is the highest in Scotland—and scientific farming is the rule. The labourers, who are physically well developed, are as a whole frugal, industrious and intelligent, but somewhat migratory in their habits. This feature in their character, which they may have by inheritance as Borderers, has admirably fitted them for colonial life, to which the scarcity of industrial occupation has largely driven the surplus population.

Other Industries.—Next to agriculture the fisheries are the most important industry. The Tweed salmon fisheries are famous, and the lesser rivers of the Merse are held in high esteem by anglers. Eyemouth, Burnmouth, Coldingham and Cove are engaged in the sea fisheries. Cod, haddock, herring, ling, lobsters and crabs are principally taken. The season for herring is from May to the middle of September and for white fish from October to the end of May. Coal, copper ore and ironstone exist in too small quantities to work, and the limestone is so far from a coal district as to be of little economic value. Earlston sends out ginghams and woollen cloths. At Cumledge on the Whiteadder, blankets and plaids are manufactured, and paper is made at Chirnside. The other manufactures are all connected with agriculture, such as distilleries, breweries, tanneries, &c. The trade is also mainly agricultural. Fairs are held at Duns, Lauder, Coldstream and Greenlaw; but the sales of cattle and sheep mostly take place at the auction marts at Reston, Duns and Earlston. There are grain markets at Duns and Earlston. Berwick, from which the county derives its name, is still its chief market. There is, however, no legal or fiscal connexion between the county and the borough.

The North British railway monopolizes the communications of the county. The system serves the coast districts from Berwick to Cockburnspath, and there is a branch from Reston to St Boswells.

Population and Government.—The population of Berwickshire was 32,290 in 1891 and 30,824 in 1901, in which year the number of persons speaking Gaelic and English was 74, and one person spoke Gaelic only. The only considerable towns are Eyemouth (pop. in 1901, 2436) and Duns (2206). The county returns one member to parliament. Lauder is the only royal burgh, and Duns the county town, a status, however, which was held by Greenlaw from 1696 to 1853, after which date it was shared by both towns until conferred on Duns alone. Berwickshire forms a sheriffdom with Roxburgh and Selkirk shires, and there is a resident sheriff-substitute at Duns, who sits also at Greenlaw, Coldstream, Ayton and Lauder. In addition to board and voluntary schools throughout the county, there is a high school, which is also a technical school, at Duns, and Coldstream and Lauder public schools have secondary departments. Duns school is subsidized by the county council, which pays the expenses of students attending it from a distance.

History.—Traces of Roman occupation and of ancient British settlement exist in various parts of the Merse. Edin’s or Etin’s Hall, on Cockburn Law, 4 m. north of Duns, is still called the Pech’s or Pict’s House, and is one of the very few brochs found in the Lowlands. After the Romans withdrew (409) the country formed part of the Saxon kingdom of Northumbria, and the inhabitants were converted to Christianity through the missionary efforts of Modan in the 6th, and Oswald, Aidan and Cuthbert (traditionally believed to have been born in the vale of the Leader) in the 7th centuries. The Northmen invaded the seaboard, but the rugged coast proved an effectual barrier. The Danes, however, landed in 886, and destroyed the nunnery at

Coldingham, founded about 650 by Ebba, daughter of Æthelfrith, king of Northumbria, after whom the adjoining promontory of St Abb’s Head was named. After the battle of Carham (1018) the district, which then constituted part of the division of Lothian, was annexed to Scotland. Birgham (pron. Birjam), 3½ m. west of Coldstream, was the scene of the conference in 1188 between William the Lion and the bishop of Durham, which discussed the attempt of the English church to assert supremacy over the Scottish. Here also met in 1289 a convention of the Scots estates to consider the projected marriage of Prince Edward of England to the Maid of Norway; and here was signed in 1290 the treaty of Birgham, assuring the independence of Scotland. During the long period of international strife the shire was repeatedly overrun by armies of the English and Scots kings, who were constantly fighting for the ancient frontier town of Berwick. It was finally ceded to England in 1482, and the people afterwards gradually settled down to peaceful pursuits. The ford at the confluence of the Leet and Tweed near Coldstream gave access to south-eastern Scotland. Edward I. crossed it with his army in 1296, encamping at Hutton the day before the siege of Berwick, and it was similarly employed as late as 1640, when the marquess of Montrose led the Covenanters on their march to Newcastle, although James VI. had already caused a bridge to be constructed from Berwick to Tweedmouth. There are several places of historic interest in the county. Upon the site of the nunnery at Coldingham King Edgar in 1098 founded a Benedictine priory, which was one of the oldest monastic institutions in Scotland and grew so wealthy that James III. annexed its revenues to defray his extravagance, a step that precipitated the revolt of the nobles (1488). The priory was seriously damaged in the earl of Hertford’s inroad in 1545, and Cromwell blew up part of the church in 1650. The chancel (without aisles) was repaired and used as the parish church. The remains contain some fine architectural features, such as, on the outside, the Romanesque arcades surmounted by lancet windows at the east end, and, in the interior, the Early Pointed triforium. On the coast, about 4 m. north-west of Coldingham, are the ruins of Fast Castle—the “Wolf’s Crag” of Scott’s *Bride of Lammermoor*—situated on a precipitous headland. From Sir Patrick Hume it passed to Sir Robert Logan of Restalrig, who is alleged to have been one of the Gowrie conspirators, and to have intended to imprison James VI. within its walls (1600). Four miles west is the Pease or Peaths bridge, built by Thomas Telford in 1786 across the deep pass which was of old one of the strongest natural defences of Scotland. The bridge is 123 ft. high, 300 ft. long and 16 ft. wide. Near it are the ruins of Cockburnspath Tower, once a strong fortress and supposed to be the “Ravens wood” of the *Bride of Lammermoor*. In the south-west of the shire besides Dryburgh Abbey (*q.v.*) there are, at Earlston, the remains of the castle that was traditionally the residence of Thomas the Rhymer. Hume Castle, the ancient seat of the Home family, a picturesque ruin about 3 m. south of Greenlaw, is so conspicuously situated as to be visible from nearly every part of the county. Coldstream and Lamberton, being close to the Border, were both resorted to (like Gretna Green in the west) by eloping couples for clandestine marriage. In Lamberton church was signed in 1502 the contract for the marriage of James IV. and Margaret Tudor, which led, a century later, to the union of the crowns of Scotland and England.

See W.S. Crockett, *Minstrelsy of the Merse*, (Paisley, 1893); *In Praise of Tweed* (Selkirk, 1889); *The Scott Country* (London, 1902); J. Robson, *The Churches and Churchyards of Berwickshire* (Kelso, 1893); F.H. Groome, *A Short Border History* (Kelso, 1887); J. Tait, *Two Centuries of Border Church Life* (Kelso, 1889); Margaret Warrender, *Marchmont and the Humes of Polwarth* (Edinburgh, 1894); W.K. Hunter, *History of the Priory of Coldingham* (Edinburgh, 1858).

BERWICK-UPON-TWEED, a market town, seaport, municipal borough and county in itself, of England, at the mouth of the Tweed on the north bank, 339 m. N. by W. from London. Pop. (1901) 13,437. For parliamentary purposes it is in the Berwick-upon-Tweed division of Northumberland. It is the junction on the East Coast route from London to Scotland between the North Eastern and North British railways, a branch of the company first named running up the Tweed valley by Coldstream and Kelso. The town lies in a bare district on the slope and flat summit of an abrupt elevation, higher ground rising to the north and south across the river. It has the rare feature of a complete series of ramparts surrounding it. Those to the north and east are formed of earth faced with stone, with bastions at intervals and a ditch now dry. They are of Elizabethan date, but there are also lines of much earlier date, the fortifications of Edward I. Much of these last has been destroyed, and threatened encroachment upon the remaining relics so far aroused public feeling that in 1905 it was decided that the Board of Works should take over these ruins, including the Bell Tower, from the town council, and enclose them as national relics. The Bell Tower, from which alarms were given when border raiders were observed, is in fair preservation. There are slight remains of the castle, which fell into disrepair after the union of the crowns of England and Scotland. There are no traces of the churches, monasteries or other principal buildings of the ancient town. The church of Holy Trinity is a plain building

without steeple, of the time of Cromwell. Of modern places of worship, the most noteworthy is Wallace Green United Presbyterian church (1859). The chief public building is the town hall (1760), a stately classic building surmounted by a lofty spire. Educational institutions include an Elizabethan grammar school and a blue-coat school; and there is a local museum. Two bridges connect the town with the south side of the Tweed. The older, which is very substantial, was finished in 1634, having taken twenty-four years in building. It has fifteen arches, and is 924 ft. long, but only 17 ft. wide. A unique provision for its upkeep out of Imperial funds dates from the reign of Charles II. The other, the Royal Border Bridge, situated a quarter of a mile up the river, is a magnificent railway viaduct, 126 ft. high, with twenty-eight arches, which extends from the railway station, a castellated building on part of the site of the old castle, to a considerable distance beyond the river. This bridge was designed by Robert Stephenson and opened by Queen Victoria in 1850.

The reach of the river from the old bridge to the mouth forms the harbour. The entrance to the harbour is protected by a stone pier, which stretches half a mile south-east from the north bank of the river mouth. The depth of water at the bar is 17 ft. at ordinary tides, 22 ft. at spring tides, but the channel is narrow, a large rocky portion of the harbour on the north side being dry at low water. There is a wet dock of 3½ acres. Principal exports are grain, coal and fish; imports are bones and bone-ash, manure stuffs, linseed, salt, timber and iron. The herring and other sea fisheries are of some value, and the salmon fishery, in the hands of a company, has long been famous. A fair is held annually at the end of May. There are iron-works and boat-building yards. 817

The custom of specially mentioning Berwick-upon-Tweed after Wales, though abandoned in acts of parliament, is retained in certain proclamations. The title of “county in itself” also helps to recall its ancient history. The liberties of the borough, commonly called Berwick Bounds, include the towns of Spittal, at the mouth, and Tweedmouth immediately above it, on the south bank of the river. The first is a watering-place (pop. 2074), with pleasant sands and a chalybeate spa; the second (pop. 3086) has iron foundries, engineering works and fish-curing establishments. Berwick-upon-Tweed is governed by a mayor, 6 aldermen and 18 councillors. Area, 6396 acres.

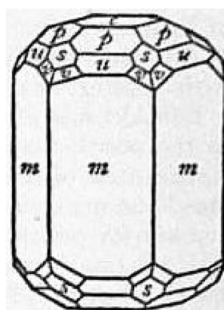
Very little is known of the history of Berwick before the Conquest. It was not until the Tweed became the boundary between England and Scotland in the 12th century that Berwick as the chief town on that boundary became really important. Until the beginning of the 14th century Berwick was one of the four royal boroughs of Scotland, and although it possesses no charter granted before that time, an inquisition taken in Edward III.’s reign shows that it was governed by a mayor and bailiffs in the reign of Alexander III., who granted the town to the said mayor and the commonalty for an annual rent. After Edward I. had conquered Berwick in 1302 he gave the burgesses another charter, no longer existing but quoted in several confirmations, by which the town was made a free borough with a gild merchant. The burgesses were given the right to elect annually their mayor, who with the commonalty should elect four bailiffs. They were also to have freedom from toll, pontage, &c., two markets every week on Monday and Friday, and a fair lasting from the feast of Holyrood to that of the Nativity of St John the Baptist. Five years later, in 1307, the mayor and burgesses received another charter, granting them their town with all things that belonged to it in the time of Alexander III., for a fee-farm rent of 500 marks, which was granted back to them in 1313 to help towards enclosing their town with a wall. While the war with Scotland dragged on through the early years of the reign of Edward II., the fortification of Berwick was a matter of importance, and in 1317 the mayor and bailiffs undertook to defend it for the yearly sum of 6000 marks; but in the following year, “owing to their default,” the Scots entered and occupied it in spite of a truce between the two kingdoms. After Edward III. had recovered Berwick the inhabitants petitioned for the recovery of their prison called the Beffroi or Bell-tower, the symbol of their independence, which their predecessors had built before the time of Alexander III., and which had been granted to William de Keythorpe when Edward I. took the town. Edward III. in 1326 and 1356 confirmed the charter of Edward I., and in 1357, evidently to encourage the growth of the borough, granted that all who were willing to reside there and desirous of becoming burgesses should be admitted as such on payment of a fine. These early charters were confirmed by most of the succeeding kings, until James I. granted the incorporation charter in 1604; but on his accession to the English throne, Berwick of course lost its importance as a frontier town. Berwick was at first represented in the court of the four boroughs and in 1326 in Robert Bruce’s parliament. After being taken by the English it remained unrepresented until it was re-taken by the Scots, when it sent two members to the parliament at Edinburgh from 1476 to 1479. In 1482 the burgesses were allowed to send two members to the English parliament, and were represented there until 1885, when the town was included in the Berwick-upon-Tweed division of the county of Northumberland. No manufactures are mentioned as having been carried on in Berwick, but its trade, chiefly in the produce of the surrounding country, was important in the 12th century. It has been noted for salmon fishery in the Tweed from very early times. There was a bridge over the Tweed at Berwick in the time of Alexander and John, kings of Scotland, but it was broken down in the time of the latter and not rebuilt until the end of the 14th century.

See *Victoria County History, Northumberland*; John Fuller, *History of Berwick-upon-Tweed*,

&c. (1799); John Scott, *Berwick-upon-Tweed: History of the Town and Guild* (1888).

BERYL, a mineral containing beryllium and aluminium in the form of a silicate; its formula is $Be_3Al_2Si_6O_{18}$. The species includes the emerald (*q.v.*), the aquamarine (*q.v.*) and other transparent varieties known as “precious beryl,” with certain coarse varieties unfit for use as gem-stones. The name comes from the Gr. βήρυλλος, a word of uncertain etymology applied to the beryl and probably several other gems. It is notable that the relation of the emerald to the beryl, though proved only by chemical analysis, was conjectured at least as far back as the time of Pliny.

Beryl crystallizes in the hexagonal system, usually taking the form of long six-sided prisms, striated vertically and terminated with the basal plane, sometimes associated with various pyramidal faces (see fig.). It cleaves rather imperfectly parallel to the base. The colour of beryl may be blue, green, yellow, brown or rarely pink; while in some cases the mineral is colourless. The specific gravity is about 2.7, and the hardness 7.5 to 8, so that for a gem-stone beryl is comparatively soft. Whilst the gem-varieties are transparent, the coarse beryl may be opaque. The transparent crystals are pleochroic—a character well marked in emerald.



Crystal of beryl.

Beryl was much prized as a gem-stone by the ancients, and Greek intaglios of very fine workmanship are extant. The Roman jewellers, taking advantage of the columnar form of the natural crystal, worked it into long cylinders for ear-pendants. It was a favourite stone with the artists of the Renaissance, but in modern times has lost popularity, except in the form of emerald, which remains one of the most valued gem-stones. It is notable that English lapidaries of the 18th century often included the sard under the term beryl—a practice which has led to some confusion in the nomenclature of engraved gems.

Beryl occurs as an accessory constituent of many granitic rocks, especially in veins of pegmatite, whilst it is found also in gneiss and in mica-schist. Rolled pebbles of beryl occur, with topaz, in Brazil, especially in the province of Minas Geraes. Crystals are found in drusy cavities in granite in the Urals, notably near Mursinka; in the Altai Mountains, which have yielded very long prismatic crystals; and in the mining district of Nerchinsk in Siberia, principally in the Adun-Chalon range, where beryl occurs in veins of topaz-rock piercing granite. Among European localities may be mentioned Elba, good crystals being occasionally found in the tourmaline-granite of San Piero. In Ireland excellent crystals of beryl occur in druses of the granite of the Mourne Mountains in Co. Down, and others less fine are found in the highlands of Donegal, whilst the mineral is also known from the Leinster granite. It occurs likewise in the granite of the Grampians in Scotland, and is not unknown in Cornwall, specimens having been found, with topaz, apatite, &c., in joints of the granite of St Michael’s Mount.

Many localities in the United States yield beryl, sometimes sufficiently fine to be cut as a gem. It is found, for example, at Hiddenite and elsewhere in Alexander county, N.C.; at Haddam and Monroe, Conn.; at Stoneham and at Albany, in Oxford county, Maine; at Royalston, Mass.; and at Mt. Antero, Colorado, where it occurs with phenacite. Beryl of beautiful pink colour occurs in San Diego county, California. Coarse beryl, much rifted, is found in crystals of very large size at Grafton and Acworth, N.H.; a crystal from Grafton weighing more than 2½ tons. A colourless beryl from Goshen, Mass., has been called Goshenite; whilst crystals of coarse yellow beryl from Rubislaw quarry in Aberdeenshire, Scotland, have been termed Davidsonite.

Beryl suffers alteration by weathering, and may thus pass into kaolin and mica.

(F. W. R.*)

BERYLLIUM, or Glucinum (symbol Be, atomic weight 9.1), one of the metallic chemical elements, included in the same sub-group of the periodic classification as magnesium. It was prepared in the form of its oxide in 1798 by L.N. Vauquelin (*Ann. de chimie*, 1798, xxvi. p. 155) from the mineral beryl, and though somewhat rare, is found in many minerals. It was first obtained, in an impure condition, in 1828 by A.A.B. Bussy (1794-1882) and F. Wöhler by the reduction of the chloride with potassium, and in 1855 H.J. Debray prepared it, in a compact state, by reducing the volatilized chloride with melted sodium, in an atmosphere of hydrogen. L.F. Nilson and O. Pettersson (*Wied. Ann.* 1878, iv. p. 554) have also prepared the metal by heating beryllium potassium fluoride with sodium; P.M. Lebeau (*Comptes rendus*, 1895-1898, vols. 120-127) has obtained it in lustrous hexagonal crystals by electrolysing the double fluoride of beryllium and sodium or potassium with an excess of beryllium fluoride. It is a malleable metal, of specific gravity 1.64 (Nilson and Pettersson) and a specific heat of 0.4079. Its melting-point is below that of silver. In a fine state of division it takes fire on heating in air, but is permanent at ordinary temperatures in oxygen or air; it is readily attacked by hydrochloric and sulphuric acids, but scarcely acted on by nitric acid. It is also soluble in solutions of the caustic alkalis, with evolution of hydrogen a behaviour similar to that shown by aluminium. It combines readily with fluorine, chlorine and bromine, and also with sulphur, selenium, phosphorus, &c.

Considerable discussion has taken place at different times as to the position which beryllium should occupy in the periodic classification of the elements, and as to whether its atomic weight should be 9.1 or 13.65, but the weight of evidence undoubtedly favours its position in Group II., with an atomic weight 9.1 (O = 16) (see Nilson and Pettersson, *Berichte*, 1880, 13, p. 1451; 1884, 17, p. 987; B. Brauner, *Berichte*, 1881, 14, p. 53; T. Carnelley, *Journ. of Chem. Soc.*, 1879, xxxv. p. 563; 1880, xxxvii., p. 125, and W.N. Hartley, *Journ. of Chem. Soc.*, 1883, xliii. p. 316). The specific heat of beryllium has been calculated by L. Meyer (*Berichte*, 1880, 13, p. 1780) from the data of L.F. Nilson and O. Pettersson, and appears to increase rapidly with increasing temperature, the values obtained being 0.3973 at 20.2° C., 0.4481 at 73.2° C. and 0.5819 at 256.8° C.

Beryllium compounds are almost wholly prepared from beryl. The mineral is fused with potassium carbonate, and, on cooling, the product is treated with sulphuric acid, the excess of which is removed by evaporation; water is then added and the silica is filtered off. On concentration of the solution, the major portion of the aluminium present separates as alum, and the mother liquor remaining contains beryllium and iron sulphates together with a little alum. This is now treated for some days with a hot concentrated solution of ammonium carbonate, which precipitates the iron and aluminium but keeps the beryllium in solution. The iron and aluminium precipitates are filtered off, and the filtrate boiled, when a basic beryllium hydroxide containing a little ferric oxide is precipitated. To remove the iron, the precipitate is again dissolved in ammonium carbonate and steam is blown through the liquid, when beryllium oxide is precipitated. This process is repeated several times, and the final precipitate is dissolved in hydrochloric acid and precipitated by ammonia, washed and dried. It has also been obtained by J. Gibson (*Journ. of Chem. Soc.*, 1893, lxiii. p. 909) from beryl by conversion of the beryllium into its fluoride.

Beryllium oxide, beryllia or glucina, BeO, is a very hard white powder which can be melted and distilled in the electric furnace, when it condenses in the form of minute hexagonal crystals. After ignition it dissolves with difficulty in acids. The hydroxide $Be(OH)_2$ separates as a white bulky precipitate on adding a solution of an alkaline hydroxide to a soluble beryllium salt; and like those of aluminium and zinc, this hydroxide is soluble in excess of the alkaline hydroxide, but is reprecipitated on prolonged boiling. Beryllium chloride $BeCl_2$, like aluminium chloride, may be prepared by heating a mixture of the oxide and sugar charcoal in a current of dry chlorine. It is deliquescent, and readily soluble in water, from which it separates on concentration in crystals of composition $BeCl_2 \cdot 4H_2O$. Its vapour density has been determined by Nilson and Pettersson, and corresponds to the molecular formula $BeCl_2$. The sulphate is obtained by dissolving the oxide in sulphuric acid; if the solution be not acid, it separates in pyramidal crystals of composition $BeSO_4 \cdot 4H_2O$, while from an acid solution of this salt, crystals of composition $BeSO_4 \cdot 7H_2O$ are obtained. Double sulphates of beryllium and the alkali metals are known, *e.g.* $BeSO_4 \cdot K_2SO_4 \cdot 3H_2O$ as are also many basic sulphates. The nitrate $Be(NO_3)_2 \cdot 3H_2O$ is prepared by adding barium nitrate to beryllium sulphate solution; it crystallizes with difficulty and is very deliquescent. It readily yields basic salts.

The carbide BeC_2 is formed when beryllia and sugar charcoal are heated together in the electric furnace. Like aluminium carbide it is slowly decomposed by water with the production of methane. Several basic carbonates are known, being formed by the addition of beryllium salts to solutions of the alkaline carbonates; the normal carbonate is prepared by passing a current of carbon dioxide through water containing the basic carbonate in suspension, the solution being filtered and concentrated over sulphuric acid in an atmosphere of carbon dioxide. The crystals so obtained are very unstable and decompose rapidly with evolution of carbon dioxide.

Beryllium salts are easily soluble and mostly have a sweetish taste (hence the name Glucinum (*q.v.*), from γλυκύς, sweet); they are readily precipitated by alkaline sulphides with formation of

the white hydroxide, and may be distinguished from salts of all other metals by the solubility of the oxide in ammonium carbonate. Beryllium is estimated quantitatively by precipitation with ammonia, and ignition to oxide. Its atomic weight has been determined by L.F. Nilson and O. Pettersson (*Berichte*, 1880, 13, p. 1451) by analysis of the sulphate, from which they found the value 9.08, and by G. Krüss and H. Moraht (*Berichte*, 1890, 23, p. 2556) from the conversion of the sulphate $BeSO_4 \cdot 4H_2O$ into the oxide, from which they obtained the value 9.05. C.L. Parsons (*Journ. Amer. Chem. Soc.*, 1904, xxvi. p. 721) obtained the values 9.113 from analyses of beryllium acetonyl-acetate and beryllium basic acetate.

For a bibliography see C.L. Parsons, *The Chemistry and Literature of Beryllium* (1909).

BERYLLONITE, a mineral phosphate of beryllium and sodium, $NaBePO_4$, found as highly complex orthorhombic crystals and as broken fragments in the disintegrated material of a granitic vein at Stoneham, Maine, where it is associated with felspar, smoky quartz, beryl and columbite. It was discovered by Prof. E.S. Dana in 1888, and named beryllonite because it contains beryllium in large amount. The crystals vary from colourless to white or pale yellowish, and are transparent with a vitreous lustre; there is a perfect cleavage in one direction. Hardness 5½-6; specific gravity 2.845. A few crystals have been cut and faceted, but, as the refractive index is no higher than that of quartz, they do not make very brilliant gem-stones.

BERZELIUS, JÖNS JAKOB (1779-1848), Swedish chemist, was born at Väfversunda Sorgard, near Linköping, Sweden, on the 20th (or 29th) of August 1779. After attending the gymnasium school at Linköping he went to Upsala University, where he studied chemistry and medicine, and graduated as M.D. in 1802. Appointed assistant professor of botany and pharmacy at Stockholm in the same year, he became full professor in 1807, and from 1815 to 1832 was professor of chemistry in the Caroline medico-chirurgical institution of that city. The Stockholm Academy of Sciences elected him a member in 1808, and in 1818 he became its perpetual secretary. The same year he was ennobled by Charles XIV., who in 1835 further made him a baron. His death occurred at Stockholm on the 7th of August 1848. During the first few years of his scientific career Berzelius was mainly engaged on questions of physiological chemistry, but about 1807 he began to devote himself to what he made the chief object of his life—the elucidation of the composition of chemical compounds through study of the law of multiple proportions and the atomic theory. Perceiving the exact determination of atomic and molecular weights to be of fundamental importance, he spent ten years in ascertaining that constant for some two thousand simple and compound bodies, and the results he published in 1818 attained a remarkable standard of accuracy, which was still further improved in a second table that appeared in 1826. He used oxygen—in his view the pivot round which the whole of chemistry revolves—as the basis of reference for the atomic weights of other substances, and the data on which he chiefly relied were the proportions of oxygen in oxygen compounds, the doctrines of isomorphism, and Gay Lussac’s law of volumes. When Volta’s discovery of the electric cell became known, Berzelius, with W. Hisinger (1766-1852), began experiments on the electrolysis of salt solutions, ammonia, sulphuric acid, &c., and later this work led him to his electrochemical theory, a full exposition of which he gave in his memoir on the *Theory of Chemical Proportions and the Chemical Action of Electricity* (1814). This theory was founded on the supposition that the atoms of the elements are electrically polarized, the positive charge predominating in some and the negative in others, and from it followed his dualistic hypothesis, according to which compounds are made up of two electrically different components. At first this hypothesis was confined to inorganic chemistry, but subsequently he extended it to organic compounds, which he saw might similarly be regarded as containing a group or groups of atoms—a compound radicle—in place of simple elements. Although his conception of the nature of compound radicles did not long retain general favour—indeed he himself changed it more than once—he is entitled to rank as one of the chief founders of the radicle theory. Another service of the utmost importance which he rendered to the study of chemistry was in continuing and extending the efforts of Lavoisier and his associates to establish a convenient system of chemical nomenclature. By using the initial letters of the Latin (occasionally Greek) names of the elements as symbols for them, and adding a small numeral subscript, to show the number of atoms of each present in a compound, he introduced the present system of chemical formulation (see CHEMISTRY). Mention should also be made of the numerous improvements he effected in analytical methods and the technique of the

blowpipe (*Über die Anwendung des Löthrohrs*, 1820), of his classification of minerals on a chemical basis, and of many individual researches such as those on tellurium, selenium, silicon, thorium, titanium, zirconium and molybdenum, most of which he isolated for the first time. Apart from his original memoirs, of which he published over 250, mostly in Swedish in the *Transactions* of the Stockholm Academy, his remarkable literary activity is attested by his *Lehrbuch der Chemie*, which went through five editions (first 1803-1818, fifth 1843-1848) and by his *Jahresbericht* or annual report on the progress of physics and chemistry, prepared at the instance of the Stockholm Academy, of which he published 27 vols. (1821-1848).

BES, or BĒSAS (Egyp. *Bēs* or *Bēsa*), the Egyptian god of recreation, represented as a dwarf with large head, goggle eyes, protruding tongue, shaggy beard, a bushy tail seen between his bow legs hanging down behind (sometimes clearly as part of a skin girdle) and usually a large crown of feathers on his head. A Bes-like mask was found by Petrie amongst remains of the twelfth dynasty, but the earliest occurrence of the god is in the temple of the queen Hatshepsut at Deir el Bahri (*c.* 1500 B.C.), where he is figured along with the hippopotamus goddess as present at the queen’s birth. His figure is that of a grotesque mountebank, intended to inspire joy or drive away pain and sorrow, his hideousness being perhaps supposed actually to scare away the evil spirits. In his joyous aspect Bes plays the harp or flute, dances, &c. He is figured on mirrors, ointment vases and other articles of the toilet. Amulets and ornaments in the form of the figure or mask of Bes are common after the New Kingdom; he is often associated with children and with childbirth and is figured in the “birth-houses” devoted to the cult of the child-god. Perhaps the earliest known instance of his prominent appearance of large size in the sculptures of the temples is under Tahraka, at Jebel Barkal, Nubia, at the beginning of the 7th century B.C. As the protector of children and others he is the enemy of noxious beasts, such as lions, crocodiles, serpents and scorpions. Large wooden figures of Bes are generally found to contain the remains of a human foetus. In the first centuries of our era an oracle of Besas was consulted at Abydos, where A.H. Sayce has found graffiti concerning him, and prescriptions exist for consulting Besas in dreams. It has been held that Bes was of non-Egyptian origin, African, as Wiedemann, or Arabian or even Babylonian, as W. Max Müller contends; he is sometimes entitled “coming from the Divine Land” (*i.e.* the East or Arabia), or “Lord of Puoni” (Punt), *i.e.* the African coast of the Red Sea; his effigy occurs also on Greek coins of Arabia. It is remarkable also that, contrary to the usual rule, he is commonly represented in Egyptian sculptures and paintings full faced instead of in profile. But the connexion of the god with Puoni may have grown out of the fact that dwarf dancers were especially brought to Egypt from Ethiopia and Puoni.

See K. Sethe in Pauly-Wissowa, *Realencyclopädie, s.v.*; A. Wiedemann, *Religion of the Ancient Egyptians* (London, 1897), p. 159; E.A.W. Budge, *Gods of the Egyptians*, ii. p. 284 (London); W. Max Müller, *Asien u. Europa* (Leipzig, 1893), p. 310.

(F. Ll. G.)

BESANÇON, a city of eastern France, capital of the department of Doubs, 76 m. E. of Dijon by the Paris-Lyon railway. Pop. (1906) town, 41,760; commune, 56,168. It is situated on the left bank of the river Doubs, 820 ft. above sea-level at the foot of the western Jura, and is enclosed by hills in every direction. The Doubs almost surrounds the city proper forming a peninsula, the neck of which is occupied by a height crowned by the citadel; on the right bank lie populous industrial suburbs. The river is bordered by fine quays, and in places by the shady promenades which are a feature of Besançon. On the right bank there is a fine bathing establishment in the Mouillère quarter, supplied by the saline springs of Miserey. The cathedral of St Jean, the chief of the numerous churches of the town, was founded in the 4th century but has often undergone reconstruction and restoration; it resembles the Rhenish churches of Germany in the possession of apses at each of its extremities. Several styles are represented in its architecture which for the most part is the work of the 11th, 12th and 13th centuries; the eastern apse and the tower date from the reign of Louis XV. In the interior there are a “Madonna and Child” of Fra Bartolommeo and a number of other paintings and works of art. The archiepiscopal palace adjoining the cathedral is a building of the 18th century. The church of Ste. Madeleine belongs to the 18th and 19th centuries. The Palais de Granvelle, in the heart of the town, was built from 1534 to 1540 by Nicolas Perrenot de Granvella, chancellor of Charles V., and is the most

interesting of the secular buildings. It is built round a square interior court surrounded by arcades, and is occupied by learned societies. The hôtel de ville dates from the 16th century, to which period many of the old mansions of Besançon also belong. The law-court, rebuilt in recent times, preserves a Renaissance façade and a fine audience-hall of the 18th century. Some relics of old military architecture survive, among them a cylindrical tower of the 15th century near the Porte Notre-Dame, the southern gate of the city, and the Porte Rivotte, a gate of the 16th century, flanked by two round towers. The Roman remains at Besançon are of great archaeological value. Close to the cathedral there is a triumphal arch decorated with bas-reliefs known as the Porte Noire, which is generally considered to have been built in commemoration of the victories of Marcus Aurelius over the Germans in 167. It is in poor preservation and was partly rebuilt in 1820. Remains of a Roman theatre, of an amphitheatre, of an aqueduct which entered the town by the Porte Taillée, a gate cut in the rock below the citadel, and an arch of a former Roman bridge, forming part of the modern bridge, are also to be seen. Besançon has statues of Victor Hugo and of the Marquis de Jouffroy d’Abbans (b. 1751), inventor of steam-navigation.

Besançon is important as the seat of an archbishopric, a court of appeal and a court of assizes, as centre of an *académie* (educational division), as seat of a prefect and as headquarters of the VIIth army corps. It also has tribunals of first instance and of commerce, a chamber of commerce, a board of trade-arbitrators, an exchange and a branch of the Bank of France. Its educational establishments include the university with its faculties of science and letters and a preparatory school of medicine and pharmacy, an artillery school, the lycée Victor Hugo for boys, a lycée for girls, an ecclesiastical seminary, training colleges for teachers, and schools of watch-making, art, music and dairy-work. The library contains over 130,000 volumes, and the city has good collections of pictures, antiquities and natural history. The chief industry of Besançon is watch- and clock-making, introduced from the district of Neuchâtel at the end of the 18th century. It employs about 12,000 workpeople, and produces about three-fourths of the watches sold in France. Subsidiary industries, such as enamelling, are also important. The metallurgical works of the *Société de la Franche-Comté* are established in the city and there are saw-mills, printing-works, paper-factories, distilleries, and manufactories of boots and shoes, machinery, hosiery, leather, elastic fabric, confectionery and artificial silk. There is trade in agricultural produce, wine, metals, &c. The canal from the Rhône to the Rhine passes under the citadel by way of a tunnel, and the port of Besançon has considerable trade in coal, sand, &c.

As a fortress Besançon forms one of a group which includes Dijon, Langres and Belfort; these are designed to secure Franche Comté and to cover a field army operating on the left flank of a German army of invasion. The citadel occupies the neck of the peninsula upon which the town stands; along the river bank in a semicircle is the town *enceinte*, and the suburb of Battant on the right bank of the Doubs is also “regularly” fortified as a bridge-head. These works, and Forts Chaudanne and Brégille overlooking the Doubs at the bend, were constructed prior to 1870. The newer works enclose an area more suited to the needs of modern warfare: the chain of detached forts along the ridges of the left bank has a total length of 7½ m., and the centre of this chain is supported by numerous forts and batteries lying between it and the citadel. On the other bank Fort Chaudanne is now the innermost of several forts facing towards the south-west, and the foremost of these works connects the fortifications of the left bank with another chain of detached forts on the right bank. The latter completely encloses a large area of ground in a semicircle of which Besançon itself is the centre, and the whole of the newer works taken together form an irregular ellipse of which the major axis, lying north-east by south-west, is formed by the Doubs.

Besançon is a place of great antiquity. Under the name of Vesontio it was, in the time of Julius Caesar, the chief town of the Sequani, and in 58 B.C. was occupied by that general. It was a rich and prosperous place under the Roman emperors, and Marcus Aurelius promoted it to the rank of a *colonia* as *Colonia Victrix Sequanorum*. During the succeeding centuries it was several times destroyed and rebuilt. The archbishopric dates from the close of the 2nd century, and the archbishops gradually acquired considerable temporal power. As the capital of the free county of Burgundy, or Franche-Comté, it was united with the German kingdom when Frederick I. married Beatrix, daughter of Renaud III., count of Upper Burgundy. In 1184 Frederick made it a free imperial city, and about the same time the archbishop obtained the dignity of a prince of the Empire. It afterwards became detached from the German kingdom, and during the 14th century came into the possession of the dukes of Burgundy, from whom it passed to the emperor Maximilian I., and his grandson Charles V. Cardinal Granvella, who was a native of the city, became archbishop in 1584, and founded a university which existed until the French Revolution. After the abdication of Charles V. it came into the possession of Spain, although it remained formally a portion of the Empire until its cession at the peace of Westphalia in 1648. During the 17th century it was attacked several times by the French, to whom it was definitely ceded by the peace of Nijmwegen in 1678. It was then fortified by the engineer Vauban. Until 1789 it was the seat of a *parlement*. In 1814 it was invested and bombarded by the Austrians, and was an important position during the Franco-German War of 1870-71.

See A. Castan, *Besançon et ses environs* (Besançon, 1887); A. Guénard, *Besançon, description historique* (Besançon, 1860).

BESANT, SIR WALTER (1836-1901), English author, was born at Portsmouth, on the 14th of August 1836, third son of William Besant of that town. He was educated at King's College, London, and Christ's College, Cambridge, of which he was a scholar. He graduated in 1859 as 18th wrangler, and from 1861 to 1867 was senior professor of the Royal College, Mauritius. From 1868 to 1885 he acted as secretary to the Palestine Exploration Fund. In 1884 he was mainly instrumental in establishing the Society of Authors, a trade-union of writers designed for the protection of literary property, which has rendered great assistance to inexperienced authors by explaining the principles of literary profit. Of this society he was chairman from its foundation in 1884 till 1892. He married Mary, daughter of Mr Eustace Foster-Barham of Bridgwater, and was knighted in 1895. He died at Hampstead, on the 9th of June 1901. Sir Walter Besant practised many branches of literary art with success, but he is most widely known for his long succession of novels, many of which have enjoyed remarkable popularity. His first stories were written in collaboration with James Rice (*q.v.*). Two at least of these, *The Golden Butterfly* (1876) and *Ready-Money Mortiboy* (1872), are among the most vigorous and most characteristic of his works. Though not without exaggeration and eccentricity, attributable to the influence of Dickens, they are full of rich humour, shrewd observation and sound common-sense, and contain characters which have taken their place in the long gallery of British fiction. After Rice's death, Sir Walter Besant wrote alone, and in *All Sorts and Conditions of Men* (1882) produced a stirring story of East End life in London, which set on foot the movement that culminated in the establishment of the People's Palace in the Mile End Road. Though not himself a pioneer in the effort made by Canon Barnett and others to alleviate the social evils of the East End by the personal contact of educated men and women of a superior social class, his books rendered immense service to the movement by popularizing it. His sympathy with the poor was shown in another attempt to stir public opinion, this time against the evils of the sweating system, in *The Children of Gibeon* (1886).

Other popular novels by him were *Dorothy Forster* (1884), *Armorel of Lyonesse* (1890), and *Beyond the Dreams of Avarice* (1895). He also wrote critical and biographical works, including *The French Humorists* (1873), *Rabelais* (1879), and lives of Coligny, Whittington, Captain Cook and Richard Jefferies. Besant undertook a series of important historical and archaeological volumes, dealing with the associations and development of the various districts of London—of which the most important was *A Survey of London*, unfortunately left unfinished, which was intended to do for modern London what Stow did for the Elizabethan city. Other books on *London* (1892), *Westminster* (1895) and *South London* (1899) showed that his mind was full of his subject. No man of his time evinced a keener interest in the professional side of literary work, and the improved conditions of the literary career in England were largely due to his energetic and capable exposition of the commercial value of authorship and to the unselfish efforts which Sir Walter constantly made on behalf of his fellow-workers in the field of letters.

See also *Autobiography of Sir Walter Besant* (1902), with a prefatory note by S.S. Sprigge; the preface to the library edition (1887) of *Ready-Money Mortiboy* contains a history of the literary partnership of Besant and Rice.

BESENVAL DE BRONSTATT, PIERRE VICTOR, Baron de (1722-1794), French soldier, was born at Soleure. He was the son of Jean Victor Besenval, colonel of the regiment of Swiss guards in the pay of France, who was charged in 1707 by Louis XIV. with a mission to Sweden, to reconcile Charles XII. with the tsar Peter the Great, and to unite them in alliance with France against England. Pierre Victor served at first as aide-de-camp to Marshal Broglie during the campaign of 1748 in Bohemia, then as aide-de-camp to the duke of Orleans during the Seven Years' War. He then became commander of the Swiss Guards. When the Revolution began Besenval remained firmly attached to the court, and he was given command of the troops which the king had concentrated on Paris in July 1789—a movement which led to the taking of the Bastille on the 14th of July. Besenval showed incompetence in the crisis, and attempted to flee. He was arrested, tried by the tribunal of the Châtelet, but acquitted. He then fell into obscurity and died in Paris in 1794. Besenval de Bronstatt is principally known as the author of *Mémoires*,

which were published in 1805-1807 by the vicomte T.A. de Ségur, in which are reported many scandalous tales, true or false, of the court of Louis XVI. and Marie Antoinette. The authenticity of these memoirs is not absolutely established.

BESKOW, BERNHARD VON, Baron (1796-1868), Swedish dramatist and historian, son of a Stockholm merchant, was born on the 19th of April 1796. His vocation for literature was assisted by his tutor, the poet Johan Magnus Stjernstolpe (1777-1831), whose works he edited. He entered the civil service in 1814, was ennobled in 1826 and received the title of baron in 1843. He held high appointments at court, and was, from 1834 onwards, perpetual secretary of the Swedish academy, using his great influence with tact and generosity. His poetry is over-decorated, and his plays are grandiose historical poems in dramatic form. Among them are "Erik XIV." (2 parts, 1826); and four pieces collected (1836-1838) as *Dramatiska Studier*, the most famous of which is the tragedy of "Thorkel Knutsson." His works include many academical memoirs, volumes of poems, philosophy and a valuable historical study, *Om Gustav den Tredje såsom konung och menniska* (5 vols. 1860-1869, "Gustavus III. as king and man"), printed in the transactions of the Swedish Academy (vols. 32, 34, 37, 42, 44). He died on the 17th of October 1868.

See also a notice by C. D. af Wirsen in his *Lefnadsteckningar* (Stockholm, 1901).

BESNARD, PAUL ALBERT (1849-   ), French painter, was born in Paris and studied at the École des Beaux-Arts, winning the *Prix de Rome* in 1874. Until about 1880 he followed the academic tradition, but then broke away completely, and devoted himself to the study of colour and light as conceived by the impressionists. The realism of this group never appealed to his bold imagination, but he applied their technical method to ideological and decorative works on a large scale, such as his frescoes at the Sorbonne, the École de Pharmacie, the Salle des Sciences at the hôtel de ville, the mairie of the first arrondissement, and the chapel of Berck hospital, for which he painted twelve "Stations of the Cross" in an entirely modern spirit. A great virtuoso, he achieved brilliant successes alike in water-colour, pastel, oil and etching, both in portraiture, in landscape and in decoration. A good example of his daring unconventionality is his portrait of Madame Réjane; and his close analysis of light can be studied in his picture "Femme qui se chauffe" at the Luxembourg in Paris.

BESOM (Old Eng. *besema*, a rod), originally a bundle of rods or twigs, used for sweeping, &c.; a stiff broom.

BESSARABIA, a government of south-west Russia, separated on the W. and S. from Moldavia and Walachia by the Pruth, and on the E. and N. from the Russian governments of Podolia and Kherson by the Dniester; on the S.E. it is washed by the Black Sea. Area, 17,614 sq. m. The northern districts are invaded by offshoots of the Carpathians, which reach altitudes of 800 to 1150 ft., and are cut up by numerous ravines and river valleys. Here, however, agriculture is the prevailing occupation, the soil being the fertile black earth. The crops principally raised are wheat and maize, though here, as well as in other parts of the government, barley, flax, tobacco, water-melons, gourds, fruit, wine, saffron and madder are grown. The middle of the government is also hilly (850-1000 ft.), and is heavily timbered, chiefly with beech, oak and mountain-ash, and, though to a smaller extent, with birch. The districts south of the old Roman earthworks which link the Dniester with the Pruth along the line of the Botna, just south of Bender, consist

of level pasture-land known as the Budjak steppes. Here stock-breeding is the predominant calling, the people owning large numbers of sheep, cattle and horses, also goats, pigs and buffaloes. Lagoons fringe the lower course of the Pruth and the coast of the Black Sea, and marshy ground exists beside the Reuth and other tributaries of the Dniester. The climate is rather subject to extremes, the mean temperature for the year, at Kishinev, being 50° Fahr., of January 27°, and of July 72°. The rainfall amounts to over 25 in. annually. Salt, saltpetre and marble are the principal mineral products. Manufacturing industry is only just beginning, wine-making (17,000,000 gallons annually), cloth-mills, iron-works, soap-works and tanneries being the principal branches. Both the Dniester and the Pruth are important waterways commercially, the former being navigable up to Mogilev and the latter to Leovo (46° 30′ N. lat.). Down the Dniester come timber and wooden wares from Galicia, and grain and wool from Bessarabia itself. Three branches of the railway from Odessa to Poland penetrate the government and proceed towards the Carpathians. The population numbered 988,431 in 1860 and 1,938,326 in 1897, of whom only 302,852 were urban, while 942,179 were women. In 1906 it was estimated at 2,262,400. It consists of various races, nearly one-half (920,919 in 1897) being Moldavians, the others Little Russians, Jews (37% in the towns and 12% in the rural districts), Bulgarians (103,225), Germans (60,206), with some Gypsies (Zigani), Greeks, Armenians, Tatars and Albanians. The Germans, who form some thirty prosperous colonies in the Budjak steppes west from Akkerman, have been settled there since about 1814. The government is divided into eight districts, the chief towns of which are Akkerman (pop. 32,470 in 1900), Bender (33,741 in 1900), Byeltsi (18,526 in 1897), Izmail (33,607 in 1900), Khotin (18,126), Kishinev (125,787 in 1900), Orgeyev (13,356), and Soroki (25,523 in 1900). The capital is Kishinev. Kagul, on the Pruth, and Reni on the Danube (the place to which Alexander of Bulgaria was carried when kidnapped by the Russians in 1886), are small, but lively, river-ports.

The original inhabitants were Cimmerians, and after them came Scythians. During the early centuries of the Christian era Bessarabia, being the key to one of the approaches towards the Byzantine empire, was invaded by many successive races. In the 2nd century it was occupied by the Getae, a Thracian tribe, whom the Roman emperor Trajan conquered in 106; he then incorporated the region in the province of Dacia. In the following century the Goths poured into this quarter of the empire, and in the 5th century it was overrun one after the other by the Huns, the Avars and the Bulgarians. Then followed in the 7th century the Bessi, a Thracian tribe, who gave their name to the region, and in the 9th the Ugrians, that is to say the ancestors of the present Magyars of Hungary, the country being then known as Atel-kuzu. The Ugrians were forced farther west by the Turkish tribe of the Petchenegs in the 10th century, and these were succeeded in the 11th century by the Kumans (Comani) or Polovtsians, a kindred Turkish stock or federation. In the 13th century Bessarabia was overrun by the irresistible Mongols under the leadership of Batu, grandson of Jenghiz Khan. In this century also the Genoese founded trading factories on the banks of the Dniester. In 1367 Bessarabia was subdued and annexed by the ruling prince of Moldavia. During the 16th century it was in the possession alternately of the Turks and the Nogais or Crimean Tatars. From early in the 18th century it was a bone of contention between the Ottoman Turks and the Russians, the latter capturing it five times between 1711 and 1812. In the latter year it was definitely annexed to Russia, and in 1829 its frontier was pushed southwards so as to include the delta of the Danube. After the Crimean War, however, Russia ceded to Moldavia not only this later addition, but also certain districts in the south of the existing government, amounting altogether to an area of 4250 sq. m. and a population of 180,000. By the treaty of Berlin (1878) Russia recovered of this 3580 sq. m., with a population of 127,000.

See Nakko, *History of Bessarabia*, in Russian (1873).

(P. A. K.; J. T. Be.)

BESSARION, JOHANNES, or Basilius (*c.* 1395-1472), titular patriarch of Constantinople, and one of the illustrious Greek scholars who contributed to the great revival of letters in the 15th century, was born at Trebizond, the year of his birth being variously given as 1389, 1395 or 1403. He was educated at Constantinople, and in 1423 went to the Peloponnese to hear Gemistus Pletho expound the philosophy of Plato. On entering the order of St Basil, he adopted the name of an old Egyptian anchorite Bessarion, whose story he has related. In 1437 he was made archbishop of Nicaea by John VII. Palacologus, whom he accompanied to Italy in order to bring about a union between the Greek and Latin churches with the object of obtaining help from the West against the Turks. The Greeks had bitterly resented his attachment to the party which saw no difficulty in a reconciliation of the two churches. At the councils held in Ferrara and Florence Bessarion supported the Roman church, and gained the favour of Pope Eugenius

IV., who invested him with the rank of cardinal. From that time he resided permanently in Italy, doing much, by his patronage of learned men, by his collection of books and manuscripts, and by his own writings, to spread abroad the new learning. He held in succession the archbishopric of Siponto and the bishoprics of Sabina and Frascati. In 1463 he received the title of Latin patriarch of Constantinople; and it was only on account of his Greek birth that he was not elevated to the papal chair. For five years (1450-1455) he was legate at Bologna, and he was engaged on embassies to many foreign princes, among others to Louis XI. of France in 1471. Vexation at an insult offered him by Louis is said to have hastened his death, which took place on the 19th of November 1472, at Ravenna. Bessarion was one of the most learned scholars of his time. Besides his translations of Aristotle's *Metaphysics* and Xenophon's *Memorabilia*, his most important work is a treatise directed against George of Trebizond, a violent Aristotelian, entitled *In Calumniatorem Platonis*. Bessarion, though a Platonist, is not so thoroughgoing in his admiration as Gemistus Pletho, and rather strives after a reconciliation of the two philosophies. His work, by opening up the relations of Platonism to the main questions of religion, contributed greatly to the extension of speculative thought in the department of theology. His library, which contained a very extensive collection of Greek MSS., was presented by him to the senate of Venice, and formed the nucleus of the famous library of St Mark.

See A.M. Bandini, *De Vita et Rebus Gestis Bessarionis* (1777); H. Vast, *Le Cardinal Bessarion* (1878); E. Legrand, *Bibliographie Hellénique* (1885); G. Voigt, *Die Wiederbelebung des klassischen Altertums*, ii. (1893); on Bessarion at the councils of Ferrara and Florence, A. Sadov, *Bessarion de Nicée* (1883); on his philosophy, monograph by A. Kandelos (in Greek: Athens, 1888); most of his works are in Migne, *Patrologia Graeca*, clxi.

BESSBOROUGH, EARLS OF. The Ponsonby family, who have contributed many conspicuous men to Irish and English public life, trace their descent to Sir John Ponsonby (d. 1678), of Cumberland, a Commonwealth soldier who obtained land grants in Ireland. His son William (1657-1724) was created Baron Bessborough (1721) and Viscount Duncannon (1723), and the latter's son Brabazon was raised to the earldom of Bessborough in 1739. He was the father not only of the 2nd earl (1704-1793), but of John Ponsonby (*q.v.*), speaker of the Irish House of Commons. The 2nd earl was a well-known Whig politician, who held various offices of state; and his son the 3rd earl (1758-1844) was father of the 4th earl (1781-1847), first commissioner of works in 1831-1834, lord privy seal from 1835 to 1839 and lord-lieutenant of Ireland in 1846. He was succeeded by his three sons, the 5th earl (d. 1880), 6th earl (1815-1895), a famous cricketer and chairman of the Bessborough commission (1881) to inquire into the Irish land system, and 7th earl (d. 1906), and the last named by his son the 8th earl.

BESSÈGES, a town of south-eastern France, in the department of Gard, on the Cèze, 20 m. north of Alais by rail. Pop. (1906) 7662. The town is important for its coal-mines, blast-furnaces and iron-works.

BESSEL, FRIEDRICH WILHELM (1784-1846), German astronomer, was born at Minden on the 22nd of July 1784. Placed at the age of fifteen in a counting-house at Bremen, he was impelled by his desire to obtain a situation as supercargo on a foreign voyage to study navigation, mathematics and finally astronomy. In 1804 he calculated the orbit of Halley's comet from observations made in 1607 by Thomas Harriot, and communicated his results to H.W.M. Olbers, who procured their publication (*Monatliche Correspondenz*, x. 425), and recommended the young aspirant in 1805 for the post of assistant in J.H. Schröter's observatory at Lilienthal. A masterly investigation of the comet of 1807 (Königsberg, 1810) enhanced his reputation, and the king of Prussia summoned him, in 1810, to superintend the erection of a new observatory at Königsberg, of which he acted as director from its completion in 1813 until his death. In this capacity he inaugurated the modern era of practical astronomy. For the purpose of improving knowledge of star-places he reduced James Bradley's Greenwich observations, and derived from

them an invaluable catalogue of 3222 stars, published in the volume rightly named *Fundamenta Astronomiae* (1818). In *Tabulae Regiomontanae* (1830), he definitively established the uniform system of reduction still in use. During the years 1821-1833, he observed all stars to the ninth magnitude in zones extending from -15° to +45° dec., and thus raised the number of those accurately determined to about 50,000. He corrected the length of the seconds' pendulum in 1826, in a discussion re-published by H. Bruns in 1889; measured an arc of the meridian in East Prussia in 1831-1832; and deduced for the earth in 1841 an ellipticity of $1/299$. His ascertainment in 1838 (*Astr. Nach.*, Nos. 365-366) of a parallax of 0″.31 for 61 Cygni was the first authentic result of the kind published. He announced in 1844 the binary character of Sirius and Procyon from their disturbed proper motions; and was preparing to attack the problem solved later by the discovery of Neptune, when fatal illness intervened. He died at Königsberg on the 17th of March 1846. Modern astronomy of precision is essentially Bessel's creation. Apart from the large scope of his activity, he introduced such important novelties as the effective use of the heliometer, the correction for personal equation (in 1823), and the systematic investigation of instrumental errors. He issued 21 volumes of *Astronomische Beobachtungen auf der Sternwarte zu Königsberg* (1815-1844), and a list of his writings drawn up by A.L. Busch appeared in vol. 24 of the same series. Especial attention should be directed to his *Astronomische Untersuchungen* (2 vols. 1841-1842), *Populäre Vorlesungen* (1848), edited by H.C. Schumacher, and to the important collection entitled *Abhandlungen* (4 vols. 1875-1882), issued by R. Engelmann at Leipzig. His minor treatises numbered over 350. In pure mathematics he enlarged the resources of analysis by the invention of Bessel's Functions. He made some preliminary use of these expressions in 1817, in a paper on Kepler's Problem (*Transactions Berlin Academy*, 1816-1817, p. 49), and fully developed them seven years later, for the purposes of a research into planetary perturbations (*Ibid.* 1824, pp. 1-52).

See also H. Durège, *Bessels Leben und Wirken* (Zürich, 1861); J.F. Encke, *Gedächtnissrede auf Bessel* (Berlin, 1846); C.T. Anger, *Erinnerung an Bessels Leben und Wirken* (Danzig, 1845); *Astronomische Nachrichten*, xxiv. 49, 331 (1846); *Monthly Notices Roy. Astr. Society*, vii. 199 (1847); *Allgemeine deutsche Biographie*, ii. 558-567.

BESSEL FUNCTION, a certain mathematical relation between two variables. The *Bessel function of order m* satisfies the differential equation

$$\frac{d^2u}{d\rho^2} + \frac{1}{\rho}\frac{du}{d\rho} + \left(1 - \frac{m^2}{\rho^2}\right) u = 0,$$

and may be expressed as the series

$$\frac{\rho^m}{2^m \cdot m!} \left\{ 1 - \frac{\rho^2}{2 \cdot 2m + 2} + \frac{\rho^4}{2 \cdot 4 \cdot 2m + 2 \cdot 2m + 4} \cdots \right\};$$

the function of *zero order* is deduced by making m = 0, and is equivalent to the series $1 - \rho^2/2^2 + \rho^4/2^2 \cdot 4^2$, &c. O. Schlömilch defines these functions as the coefficients of the power of t in the expansion of $\exp \tfrac{1}{2}\rho(t - t^{-1})$. The symbol generally adopted to represent these functions is $J_m(\rho)$ where m denotes the order of the function. These functions are named after Friedrich Wilhelm Bessel, who in 1817 introduced them in an investigation on Kepler's Problem. He discussed their properties and constructed tables for their evaluation. Although Bessel was the first to systematically treat of these functions, it is to be noted that in 1732 Daniel Bernoulli obtained the function of zero order as a solution to the problem of the oscillations of a chain suspended at one end. This problem has been more fully discussed by Sir A.G. Greenhill. In 1764 Leonhard Euler employed the functions of both zero and integral orders in an analysis into the vibrations of a stretched membrane; an investigation which has been considerably developed by Lord Rayleigh, who has also shown (1878) that Bessel's functions are particular cases of Laplace's functions. There is hardly a branch of mathematical physics which is independent of these functions. Of the many applications we may notice:—Joseph Fourier's (1824) investigation of the motion of heat in a solid cylinder, a problem which, with the related one of the flow of electricity, has been developed by W.E. Weber, G.F. Riemann and S.D. Poisson; the flow of electromagnetic waves along wires (Sir J.J. Thomson, H. Hertz, O. Heaviside); the diffraction of light (E. Lömmel, Lord Rayleigh, Georg Wilhelm Struve); the theory of elasticity (A.E. Love, H. Lamb, C. Chree, Lord Rayleigh); and to hydrodynamics (Lord Kelvin, Sir G. Stokes).

The remarkable connexion between Bessel's functions and spherical harmonics was established in 1868 by F.G. Mehler, who proved that a simple relation existed between the function of zero order and the zonal harmonic of order *n*. Heinrich Eduard Heine has shown that the functions of higher orders may be considered as limiting values of the associated functions;

this relation was discussed independently, in 1878, by Lord Rayleigh.

For the mathematical investigation see Spherical Harmonics and for tables see Table, Mathematical.

See A. Gray and G.B. Matthews, *Treatise on Bessel's Functions* (1895); *Encyclopädie der math. Wissenschaften*; F.W. Bessel, *Untersuchung des Teils der planetarischen Störungen* (1824).

BESSEMER, SIR HENRY (1813-1898), English engineer, was born on the 19th of January 1813, at Charlton, in Hertfordshire. Throughout his life he was a prolific inventor, but his name is chiefly known in connexion with the Bessemer process for the manufacture of steel, by which it has been rendered famous throughout the civilized world. Though this process is now largely supplemented, and even displaced, by various rivals, at the time it was brought out it was of enormous industrial importance, since it effected a great cheapening in the price of steel, and led to that material being widely substituted for others which were inferior in almost every respect but that of cost. Bessemer's attention was drawn to the problem of steel manufacture in the course of an attempt to improve the construction of guns. Coming to the conclusion that if any advance was to be made in artillery better metal must be available, he established a small iron-works in St Pancras, and began a series of experiments. These he carried on for two years before he evolved the essential idea of his process, which is the decarbonization of cast iron by forcing a blast of air through the mass of metal when in the molten condition. The first public announcement of the process was made at the Cheltenham meeting of the British Association in 1856, and immediately attracted considerable notice. Many metallurgists were sceptical on theoretical grounds about his results, and only became convinced when they saw that his process was really able to convert melted cast iron into malleable iron in a perfectly fluid state. But though five firms applied without delay for licences to work under his patents, success did not at once attend his efforts; indeed, after several ironmasters had put the process to practical trial and failed to get good results, it was in danger of being thrust aside and entirely forgotten. Its author, however, instead of being discouraged by this lack of success, continued his experiments, and in two years was able to turn out a product, the quality of which was not inferior to that yielded by the older methods. But when he now tried to induce makers to take up his improved system, he met with general rebuffs, and finally was driven to undertake the exploitation of the process himself. To this end he erected steelworks in Sheffield, on ground purchased with the help of friends, and began to manufacture steel. At first the output was insignificant, but gradually the magnitude of the operations was enlarged until the competition became effective, and steel traders generally became aware that the firm of Henry Bessemer & Co. was underselling them to the extent of £20 a ton. This argument to the pocket quickly had its effect, and licences were applied for in such numbers that, in royalties for the use of his process, Bessemer received a sum in all considerably exceeding a million sterling.

Of course, patents of such obvious value did not escape criticism, and invalidity was freely urged against them on various grounds. But Bessemer was fortunate enough to maintain them intact without litigation, though he found it advisable to buy up the rights of one patentee, while in another case he was freed from anxiety by the patent being allowed to lapse in 1859 through non-payment of fees. At the outset he had found great difficulty in making steel by his process—in his first licences to the trade iron alone was mentioned. Experiments he made with South Wales iron were failures because the product was devoid of malleability; Mr Göransson, a Swedish ironmaster, using the purer charcoal pig iron of that country, was the first to make good steel by the process, and even he was successful only after many attempts. His results prompted Bessemer to try the purer iron obtained from Cumberland haematite, but even with this he did not meet with much success, until Robert Mushet showed that the addition of a certain quantity of spiegeleisen had the effect of removing the difficulties. Whether or not Mushet's patents could have been sustained, the value of his procedure was shown by its general adoption in conjunction with the Bessemer method of conversion. At the same time it is only fair to say that whatever may have been the conveniences of Mushet's plan, it was not absolutely essential; this Bessemer proved in 1865, by exhibiting a series of samples of steel made by his own process alone. The pecuniary rewards of Bessemer's great invention came to him with comparative quickness; but it was not till 1879 that the Royal Society admitted him as a fellow and the government honoured him with a knighthood. Bessemer died at Denmark Hill, London, on the 15th of March 1898.

Among Bessemer's numerous other inventions, not one of which attained a tithe of the success or importance of the steel process, were movable dies for embossed stamps, a gold paint, sugar machinery, and a ship which was to save her passengers from the miseries of *mal de mer*. This

last had her saloon mounted in such a way as to be free to swing relatively to the boat herself, and the idea was that this saloon should always be maintained steady and level, no matter how rough the sea. For this purpose hydraulic mechanism of Bessemer's design was arranged under the control of an attendant, whose duty it was to keep watch on a spirit-level, and counteract by proper manipulation of the apparatus any deviation from the horizontal that might manifest itself on the floor of the saloon owing to the rolling of the vessel. A boat, called the "Bessemer," was built on this plan in 1875 and put on the cross-Channel service to Calais, but the mechanism of the swinging saloon was not found effective in practice and was ultimately removed.

An *Autobiography* was published in 1905.

BESSEMER, a town of Jefferson county, Alabama, U.S.A., about 12 m. S.W. of Birmingham, a little N. of the centre of the state. Pop. (1890) 4544; (1900) 6538, including 3695 negroes; (1910) 10,864. The town is served by the Alabama Great Southern (Queen & Crescent route), the Louisville & Nashville, the Kansas City, Memphis & Birmingham (St Louis & San Francisco system), the Birmingham Southern, and the Atlanta, Birmingham & Atlantic railways. Bessemer is situated in the midst of the iron ore and limestone district of Alabama, in the south part of Jones' Valley (about 3 m. wide.); to the east is the Red Ore mountain range, rich in red haematite; to the north-west are the Warrior coalfields; to the south-west, south and south-east are immense fossiliferous iron ore seams and the Cahaba coalfields; in the immediate vicinity of the city are limestone quarries, and about 18 m. north-east are the limestone kilns of Gate City. Mining, iron smelting and the manufacture of iron and coke are the chief industries of Bessemer; truck farming is also an important industry. In 1900 Bessemer was the eighth city of the state in population, second in amount of capital invested in manufacturing, and fourth in the value of its manufactured product for the year. Bessemer was laid out in 1887, and was incorporated in 1889.

BESSIÈRES, JEAN BAPTISTE, duke of Istria (1768-1813), French marshal, was born near Cahors in 1768. He served for a short time in the "Constitutional Guard" of Louis XVI. and as a non-commissioned officer took part in the war against Spain. In the Army of the Eastern Pyrenees and in the Army of the Moselle he repeatedly distinguished himself for valour, and in 1796, as captain, he served in Bonaparte's Italian campaign. At Roveredo his conduct brought him to his chief's notice, and after Rivoli he was sent to France to deliver the captured colours to the Directory. Hastening back to the front, he accompanied Napoleon in the invasion of Styria in command of the "Guides," who formed the nucleus of the later Consular and Imperial Guard. As *chef de brigade* he next served in the Egyptian expedition, and won further distinction at Acre and Aboukir. Returning to Europe with Napoleon, he was present at Marengo (1800) as second-in-command of the Consular Guard, and led a brilliant and successful cavalry charge at the close of the day, though its effect on the battle was not as decisive as Napoleon pretended. Promoted general of division in 1802 and marshal of France in 1804, he made the most famous campaigns of the Grande Armée as colonel-general of the Guard Cavalry (1805, 1806, 1807). In 1805 he had received the Grand Eagle of the Legion of Honour, and in 1800 was created duke of Istria. With the outbreak of the Peninsular War, Marshal Bessières had his first opportunity of an independent command, and his crushing victory over the Spaniards at Medina del Rio Seco (1808) justified Napoleon's choice. When disaster in other parts of the theatre of war called Napoleon himself to the Peninsula, Bessières continued to give the emperor the very greatest assistance in his campaign. In 1809 he was again with the *Grande Armée* in the Danube valley. At Essling his repeated and desperate charges checked the Austrians in the full tide of their success. At Wagram he had a horse killed under him. Replacing Bernadotte in the command of the Army of the North, a little later in the same year, the newly-created duke of Istria successfully opposed the British Walcheren expedition, and in 1811 he was back again, in a still more important command, in Spain. As Masséna's second-in-command he was present at the battle of Fuentes d'Onoro, but Napoleon never detached him for very long, and in 1812 he commanded the Guard Cavalry at Borodino and in the retreat from Moscow. Wherever engaged he won further distinction, and at the beginning of the 1813 campaign he was appointed to the command of the whole of Napoleon's cavalry. Three days after the opening of the campaign, while reconnoitring the defile of Poserna-Rippach, Bessières was killed by a musket-ball.

Napoleon, who deeply felt the loss of one of his truest friends and ablest commanders, protected his children, and his eldest son was made a member of the Chamber of Peers by Louis XVIII. As a commander, especially of cavalry, Bessières left a reputation excelled by very few of Napoleon's marshals, and his dauntless courage and cool judgment made him a safe leader in independent command. He was personally beloved to an extraordinary extent amongst his soldiers, and (unlike most of the French generals of the time) amongst his opponents. It is said that masses were performed for his soul by the priests of insurgent Spain, and the king of Saxony raised a monument to his memory.

His younger brother, Bertrand, Baron Bessières (1773-1855), was a distinguished divisional leader under Napoleon. After serving with a good record in Italy, in Egypt and at Hohenlinden, he had a command in the *Grande Armée*, and in 1808 was sent to Spain. He commanded a division in Catalonia and played a notable part at the action of Molins de Rey near Barcelona. Disagreements with his superior, General Duhesme, led to his resignation, but he subsequently served with Napoleon in all the later campaigns of the empire. Placed on the retired list by the Bourbons, his last public act was his defence of the unfortunate Ney. The rest of his long life was spent in retirement.

BESSUS, satrap of Bactria and Sogdiana under Darius III. In the battle of Gaugamela (1st of October 331) he commanded the troops of his satrapy. When Alexander pursued the Persian king on his flight to the East (summer 330), Bessus with some of the other conspirators deposed Darius and shortly afterwards killed him. He then tried to organize a national resistance against the Macedonian conqueror in the eastern provinces, proclaimed himself king and adopted the name Artaxerxes. But he was taken prisoner by treachery in the summer of 329. Alexander sent him to Ecbatana, where he was condemned to death. Before his execution his nose and ears were cut off, according to the Persian custom; we learn from the Behistun inscription that Darius I. punished the usurpers in the same way.

BEST, WILLIAM THOMAS (1826-1897), English organist, the son of a solicitor, was born at Carlisle on the 13th of August 1826. Having decided upon a musical career, he received his first instruction from the cathedral organist. He applied himself especially to Bach's music, and became a player of great skill. His successive appointments were to Pembroke chapel, Liverpool, 1840; to a church for the blind, 1847, and the Liverpool Philharmonic Society, 1848. For a short time (1854-1855) he was in London at the Panopticon in Leicester Square, the church of St Martin-in-the-Fields, and Lincoln's Inn chapel. In 1855 he returned to Liverpool as organist of St George's Hall, where his performances rapidly became famous throughout England. Ill-health compelled him at last to retire in 1894. He was engaged as solo organist at all the Handel festivals at the Crystal Palace, and also as organist at the Albert Hall, where he inaugurated the great organ in 1871. He had been in the receipt of a civil list pension of £100 a year since 1880, and in 1890 went to Australia to give organ recitals in the town hall of Sydney. Best died at Liverpool on the 10th of May 1897.

His command over all the resources of his own instrument was masterly; his series of Saturday recitals at St George's Hall, carried on for many years, included the whole field of organ music, and of music that could be arranged for the organ, ancient and modern; and his performances of Bach's organ works were particularly fine. His own compositions for the organ, chiefly comprised in the publication entitled *Organ Pieces for Church Use*, have a strong and marked individuality. Best, unlike many soloists, was an all-round musician, and fully acquainted with every branch of the art. His bust, by Conrad Dressler, has been placed on the platform in front of the Liverpool organ, as a memorial of his long series of performances there.

BESTIA, the name of a family in ancient Rome, of which the following were the most distinguished.

1. Lucius Calpurnius Bestia, Roman tribune of the people in 121 B.C., consul in 111. Having been appointed to the command of the operations against Jugurtha, he at first carried on the campaign energetically, but soon, having been heavily bribed, concluded a disgraceful peace. On his return to Rome he was brought to trial for his conduct and condemned, in spite of the efforts of Marcus Scaurus who, though formerly his legate and equally guilty, was one of the judges. He is probably identical with the Bestia who encouraged the Italians in their revolt, and went into exile (90) to avoid punishment under the law of Q. Varius, whereby those who had secretly or openly aided the Italian allies against Rome were to be brought to trial (Appian, *Bell. Civ.* i. 37; Val. Max. viii. 6. 4). Both Cicero and Sallust express a high opinion of Bestia's abilities, but his love of money demoralized him. He is mentioned in a Carthaginian inscription as one of a board of three, perhaps an agricultural commission.

See Sallust, *Jugurtha*; Cicero, *Brutus*, xxxiv. 128; for the general history, A.H.J. Greenidge, *Hist. of Rome*, vol. i. (1904), pp. 346 foll.

2. Lucius Calpurnius Bestia, one of the Catilinarian conspirators, possibly a grandson of the above. He was tribune elect in 63, and it had been arranged that, after entering upon his office, he should publicly accuse Cicero of responsibility for the impending war. This was to be the signal for the outbreak of revolution. The conspiracy, however, was put down and Bestia had to content himself with delivering a violent attack upon the consul on the expiration of his office. This Bestia is probably not the Lucius Calpurnius Bestia, aedile, and a candidate for the praetorship in 57. He was accused of bribery during his candidature, and, in spite of Cicero's defence, was condemned. In 43 he attached himself to the party of Antony, apparently in the hope of obtaining the consulship.

Sallust, *Catiline*, xvii. 43; Appian, *Bell. Civ.* ii. 3; Cicero, *Ad Q. Fr.* ii. 3, 6.

BESTUZHEV-RYUMIN, ALEXIUS PETROVICH, Count (1693-1768), grand chancellor of Russia, the second son of Count Peter Bestuzhev, the early favourite of the empress Anne, was born at Moscow on the 1st of June 1693. Educated abroad, with his elder brother Mikhail, at Copenhagen and Berlin, he especially distinguished himself in languages and the applied sciences. Peter the Great, in 1712, attached him to Prince Kurakin at the Utrecht Congress that he might learn diplomacy, and for the same reason permitted him in 1713 to enter the service of the elector of Hanover. George I. took him to London in 1714, and sent him to St Petersburg as his accredited minister with a notification of his accession. Bestuzhev then returned to England, where he remained four years. It was the necessary apprenticeship to his brilliant diplomatic career. His passion for intrigue is curiously illustrated by his letter to the tsarevich Alexius at Vienna, assuring his "future sovereign" of his devotion, and representing his sojourn in England as a deliberate seclusion of a zealous but powerless well-wisher. This extraordinary indiscretion might well have cost him his life, but the tsarevich fortunately destroyed the letter.[1] On his return to Russia he served for two years without any salary as chief gentleman of the Bedchamber at the court of Anne of Courland, and in 1721 succeeded Vasily Dolgoruki as Russian minister at Copenhagen. Copenhagen was then a whirlpool of diplomatic intrigue, for George I. was endeavouring to arm the northern powers against Peter the Great, and this it was Bestuzhev's mission to counteract. On the occasion of the peace of Nystad, which terminated the 21 years war between Russia and Sweden, Bestuzhev designed and struck a commemorative medal with a panegyrical Latin inscription, which so delighted Peter (then at Derbent) that he sent a letter of thanks written with his own hand and his portrait set in brilliants. It was at this time too that the many-sided Alexius invented his famous "drops," or *tinctura toniconervina Bestuscheffi*, the recipe of which was stolen by the French brigadier Lamotte, who made his fortune by introducing it at the French court, where it was known as *Élixir d'Or*.

The sudden death of Peter the Great seriously injured Bestuzhev's prospects. For more than ten years he remained at Copenhagen, looking vainly towards Russia as a sort of promised land from which he was excluded by enemies or rivals. He rendered some important services, however, to the empress Anne, for which he was decorated and made a privy councillor. He also won the favour of Biren, and on the tragic fall of Artemy Voluinsky in 1739 was summoned home to take his place in the council. He assisted Biren to obtain the regency in the last days of the empress Anne, but when his patron fell three weeks later, his own position became extremely precarious. His chance came when the empress Elizabeth, immediately after her accession, summoned him back to court, and appointed him vice-chancellor. For the next twenty years, during a period of exceptional difficulty, he practically controlled the foreign policy of Russia. Bestuzhev rightly recognized that, at this time, France was the natural enemy of Russia. The interests of the two states in Turkey, Poland and Sweden were diametrically opposed, and

Russia could never hope to be safe from the intrigues of France in these three borderlands. All the enemies of France were thus necessarily the friends of Russia, and her friends Russia's enemies. Consequently Great Britain, and still more Austria, were Russia's natural allies, while the aggressive and energetic king of Prussia was a danger to be guarded against. It was, therefore, the policy of Bestuzhev to bring about a quadruple alliance between Russia, Austria, Great Britain and Saxony, to counterpoise the Franco-Prussian league. But he was on dangerous ground. The empress herself was averse from an alliance with Great Britain and Austria, whose representatives had striven to prevent her accession; and many of her personal friends, in the pay of France and Prussia, took part in innumerable conspiracies to overthrow Bestuzhev. Nevertheless, step by step, Bestuzhev, aided by his elder brother Mikhail, carried out his policy. On the 11th of December 1742, a defensive alliance was concluded between Great Britain and Russia. Bestuzhev had previously rejected with scorn the proposals of the French government to mediate between Russia and Sweden on the basis of a territorial surrender on the part of the former; and he conducted the war so vigorously that by the end of 1742 Sweden lay at the mercy of the empress. At the peace congress of Åbo (January-August 1743) he insisted that the whole of Finland should be ceded to Russia, by way of completing the testament of Peter the Great. But the French party contrived to get better terms for Sweden, by artfully appealing to the empress's fondness for the house of Holstein. The Swedes, at the desire of Elizabeth, accepted Adolphus Frederick, duke of Holstein, as their future king, and, in return, received back Finland, with the exception of a small strip of land up to the river Kymmene. Nor could Bestuzhev prevent the signing of a Russo-Prussian defensive alliance (March 1743); but he deprived it of all political significance by excluding from it the proposed guarantee of Frederick's Silesian conquests. Moreover, through Bestuzhev's efforts, the credit of the Prussian king (whom he rightly regarded as more dangerous than France) at the Russian court fell steadily, and the vice-chancellor prepared the way for an alliance with Austria by acceding to the treaty of Breslau (1st of November 1743). A bogus conspiracy, however, got up by the Holstein faction, aided by France and Prussia, who persuaded Elizabeth that the Austrian ambassador was intriguing to replace Ivan VI. on the throne, alienated the empress from Austria for a time; and Bestuzhev's ruin was regarded as certain when, in 1743, the French agent, the marquis de La Chétardie, arrived to reinforce his other enemies. But he found a friend in need in M.L. Vorontsov, the empress's confidant, who shared his political views. Still his position was most delicate, especially when the betrothal between the grand-duke Peter and Sophia of Anhalt-Zerbst (afterwards Catharine II.) was carried through against his will, and Elizabeth of Holstein, the mother of the bride, arrived in the Prussian interests to spy upon him. Frederick II., conscious of the instability of his French ally, was now eager to contract an offensive alliance with Russia; and the first step to its realization was the overthrow of Bestuzhev, "upon whom," he wrote to his minister Axel von Mardefeld, "the fate of Prussia and my own house depends." But Bestuzhev succeeded, at last, in convincing the empress that Chétardie was an impudent intriguer, and on the 6th of June 1744, that diplomatist was ordered to quit Russia within twenty-four hours. Five weeks later Bestuzhev was made grand chancellor (July 15th). Before the end of the year Elizabeth of Holstein was also expelled from Russia, and Bestuzhev was supreme.

The attention of European diplomacy at this time was concentrated upon the king of Prussia, whose insatiable acquisitiveness disturbed all his neighbours. Bestuzhev's offer, communicated to the British government at the end of 1745, to attack Prussia if Great Britain would guarantee subsidies to the amount of some £6,000,000, was rejected as useless now that Austria and Prussia were coming to terms. Then he turned to Austria, and on the 22nd of May 1746, an offensive and defensive alliance was concluded between the two powers manifestly directed against Prussia. In 1747, alliances were also concluded with Denmark and the Porte. At the same time Bestuzhev resisted any rapprochement with France, and severely rebuked the court of Saxony for its intrigues with that of Versailles. About this time he was hampered by the persistent opposition of the vice-chancellor Mikhail Vorontsov, formerly his friend, now his jealous rival, who was secretly supported by Frederick the Great. In 1748, however, he got rid of him by proving to the empress that Vorontsov was in the pay of Prussia. The hour of Bestuzhev's triumph coincided with the peace congress of Aix-la-Chapelle, which altered the whole situation of European politics and introduced fresh combinations, the breaking away of Prussia from France and a rapprochement between England and Prussia, with the inevitable corollary of an alliance between France and the enemies of Prussia. Bestuzhev's violent political prejudices at first prevented him from properly recognizing this change. Passion had always been too large an ingredient in his diplomacy. His Anglomania also misled him. His enemies, headed by his elder brother Mikhail and the vice-chancellor Vorontsov, powerless while his diplomacy was faultless, quickly took advantage of his mistakes. When, on the 16th of January 1756, the Anglo-Prussian, and on the 2nd of May the Franco-Austrian alliances were concluded, Vorontsov advocated the accession of Russia to the latter league, whereas Bestuzhev insisted on a subsidy treaty with Great Britain. But his influence was now on the wane. The totally unexpected Anglo-Prussian alliance had justified the arguments of his enemies that England was impossible, while his hatred of France prevented him from adopting the only alternative of an alliance with her. To prevent underground intrigues, Bestuzhev now proposed the erection of a council of ministers,

to settle all important affairs, and at its first session (14th-30th of March) an alliance with Austria, France and Poland against Frederick II. was proposed, though Bestuzhev opposed any composition with France. He endeavoured to support his failing credit by a secret alliance with the grand-duchess Catherine, whom he proposed to raise to the throne instead of her Holstein husband, Peter, from whom Bestuzhev expected nothing good either for himself or for Russia. The negotiations were conducted through the Pole Stanislaus Poniatowski. The accession of Russia to the anti-Prussian coalition (1756) was made over his head, and the cowardice and incapacity of Bestuzhev's friend, the Russian commander-in-chief, Stephen Apraksin, after the battle of Gross-Jagersdorf (1757), was made the pretext for overthrowing the chancellor. His unwillingness to agree to the coalition was magnified into a determination to defeat it, though it is quite obvious that he could only gain by the humiliation of Frederick, and nothing was ever proved against him. Nevertheless he was deprived of the chancellorship and banished to his estate at Goretovo (April 1759), where he remained till the accession of Catharine II., who recalled him to court and created him a field marshal. But he took no leading part in affairs and died on the 21st of April 1768, the last of his race.

See *The Sbornik of the Russian Historical Society*, vols. 1, 3, 5, 7, 12, 22, 26, 66, 79, 80, 81, 85-86, 91-92, 96, 99, 100, 103 (St Petersburg, 1870, &c.); *Politische Correspondenz Friedrichs des Grossen*, vols. 1-21 (Berlin, 1879-1904.); R. Nisbet Bain, *The Daughter of Peter the Great* (London, 1899).

(R. N. B.)

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1 A copy of the letter was taken by way of precaution, beforehand, by the Austrian ministers, and this copy is still in the Vienna archives.

BESTUZHEV-RYUMIN, MIKHAIL PETROVICH, Count (1688-1760), Russian diplomatist, elder brother of the foregoing, was educated at Berlin, and was sent by Peter the Great to represent Russia at Copenhagen in 1705. In 1720 he was appointed resident at London at a time when the English court was greatly inflamed against Peter, who was regarded as a dangerous rival in the Baltic; and Bestuzhev was summarily dismissed for protesting against the lately-formed Anglo-Swedish alliance. On the conclusion of the peace of Nystad in 1721 he was sent as ambassador to the court of Stockholm. His first official act was the signing of a defensive alliance between Russia and Sweden for twelve years, in 1724. He was successively transferred to Warsaw (1726) and to Berlin (1730), but returned to Stockholm in 1732. How far Bestuzhev was concerned in the murder (June 28th, 1739) of the Swedish diplomatic agent Sinclair in Silesia on his journey home from Constantinople, it is difficult to say. It is certain that Bestuzhev sent information to his court of Sinclair's mission, which was supposed to be hostile to Russia, and even supplied the portrait of the envoy for recognition. The Swedish authorities are unanimous in describing Bestuzhev as the arch-plotter in this miserable affair; yet, while the active agents were banished to Siberia, Bestuzhev was not even censured. The Sinclair murder led ultimately to the Swedish-Russian War of 1741, when Bestuzhev was transferred first to Hamburg and subsequently to Hanover, where he endeavoured to conclude an alliance between Great Britain and Russia. On his return to Russia in 1743, he was made grand marshal, and married Anna, the widow of Paul Yaguzhinsky, Peter the Great's famous pupil. A few months later his wife was implicated in a bogus conspiracy got up by the French ambassador, the marquis de La Chétardie, to ruin the Bestuzhevs (see Bestuzhev-Ryumin, Alexius), and after a public whipping, had her tongue cut out and was banished to Siberia. Thither Bestuzhev had not the manhood to follow her, but went abroad, and subsequently resumed his diplomatic career. His last and most brilliant mission was to Versailles, shortly after the conclusion of the coalition against Frederick the Great, where he cut a great figure. He died at Paris on the 26th of February 1760.

See Robert Nisbet Bain, *The Daughter of Peter the Great* (London, 1899); Mikhail Sergyievich, *History of Russia* (Rus.), vols. xv.-xxii. (2nd ed., St Petersburg, 1897).

(R. N. B.)

BET and **BETTING** (probably from O. Fr. *abeter*, to instigate, Eng. "abet," *i.e.* with money). To "bet" is to stake money or something valuable on some future contingency. Betting in some form or other has been in vogue from the earliest days, commencing in the East with royal and

noble gamblers, and gradually extending itself westwards and throughout all classes. In all countries where the English tongue is spoken betting is now largely indulged in; and in the United Kingdom it spread to such an extent amongst all grades of society, during the 19th century, that the interference of the legislature was necessary (see Gaming and Wagering). Bets can, of course, be made on any subject, and are a common method of backing one's opinion or skill, whether at games of cards or in any other connexion; but the commonest form of betting is associated with the turf. In the early days of horse-racing persons who wished to bet often failed to gratify their inclination because of the difficulty of finding any one ready to wager. To obviate this difficulty the professional bookmaker arose. It was perceived that if a man laid money against a number of horses, conducting his business on discreet principles, he would in all probability receive enough to pay the bettor who was successful and to leave a surplus for himself; for the "bookmaker," as the professional betting man came to be called, had enormous advantages in his favour. He was presumably shrewd and wary, whereas many of those with whom he dealt were precisely the opposite, and benefit arose to him from the mistakes and miscalculations of owners and trainers of horses, and from the innumerable accidents which occur to prevent anticipated success; moreover, if he carried out the theory of his calling he would so arrange his book, by what is called "betting to figures," that the money he received would be more than he could possibly be called upon to pay. In practice, of course, this often does not happen, because "backers" will sometimes support two or three horses in a race only, and the success of one may result in loss to the bookmaker; but in the long run it has been almost invariably found that the bookmaker grows rich and that the backer of horses loses money. It is the bookmaker who regulates the odds, and this he does, sometimes by anticipating, sometimes by noting, the desire of backers to support certain animals. Such things as stable secrets can scarcely be said to exist at the present time; the bookmaker is usually as well able as any one else to estimate the chances of the various horses engaged in races. Notwithstanding that the reports of a trial gallop are of comparatively little value to any except the few persons who know what weights the animals carried when tried, the bookmaker is extraordinarily keen, and frequently successful, in his search for information; and on this the odds depend.

Betting in connexion with horse-racing is of two kinds: "post," when wagering does not begin until the numbers of the runners are hoisted on the board; and "ante-post," when wagering opens weeks or months before the event; though of this latter there is far less than was formerly the case, doubtless for the reason that before the introduction of so many new and valuable stakes attention was generally concentrated on a comparatively small number of races. Bets on the Derby, the Oaks and the St Leger were formerly common nearly a year before the running of the races, and a few handicaps, such as the Chester Cup, used to occupy attention months beforehand; the weights, of course, being published at a much longer interval prior to the contest than is at present the rule. As regards ante-post betting, bookmakers have their own ideas as to the relative prospects of the horses entered. A person who wishes to back a horse asks the price, and accepts or declines, as the case may be. If the bet is laid it will probably be quoted in the newspapers, and other persons who propose to wager on the race are so likely to follow suit that it is shrewdly suspected that in not a few cases bets are quoted which never have been laid, in order to induce the backers to speculate. According to the public demand for a horse the price shortens. If there is little or no demand the odds increase, the market being almost entirely regulated by the money; so that if a great many people bet on a certain animal the odds become shorter and shorter, till in many cases instead of laying odds against a horse, the bookmaker comes to take odds, that is, to agree to pay a smaller sum than he would receive from the backer if the animal lost. Post betting is conducted on very much the same principles. When the numbers are hoisted bookmakers proclaim their readiness to lay or take certain odds, which vary according to the demand for the different animals. Backers are influenced by many considerations: by gossip, by the opinions of writers on racing, and in many cases, unfortunately, by the advice of "tipsters," who by advertisements and circulars profess their ability to indicate winners, a pretence which is obviously absurd, as if these men possessed the knowledge they claim, they would assuredly keep it to themselves and utilize it for their own private purposes.

The specious promises of such men do infinite mischief, as they so often appeal with success to the folly and gullibility of the ignorant, and in recent years the extent to which betting has grown has resulted in attempts to check it by organized means. A society for the purpose was formed in England called the Anti-Gambling League. A bookmaker named Dunn was summoned in 1897 for betting in Tattersall's enclosure, which it was contended contravened the Betting House Act of 1853. This act had been aimed against what were known as "list houses," establishments then kept by bookmakers for betting purposes, and associated with many disgraceful scandals. In the preamble to his bill Lord Cockburn began by remarking that "Whereas a new form of betting has of late sprung up," and the Anti-Gambling League sought to argue that this included a form of betting which had not sprung up of late but had on the contrary been carried on without interference for many generations. The divisional court of the queen's bench (*Hawke* v. *Dunn*, 13 T.L.R. 281) held that such betting was an infringement of the act, and that the enclosure was a "place" within the meaning of the act, and had been used by

the respondent for the purpose of betting with persons resorting thereto, and that he was liable to be Convicted. The case was remitted to the justices, who convicted the defendant. A somewhat similar case was decided on the same day (*M‘Inany* v. *Hildreth*, 1897, 13 T.L.R. 285), in which it was held that a professional bookmaker who went to a place known as the “pit heap” at Jarrow, to which the public had access at all times, and made bets with persons assembled there, was properly convicted, and that the “pit heap” itself and the place where he stood were “places” within the meaning of the act. It was afterwards held by the court of appeal (*Powell* v. *Kempton Park Racecourse Co., Ltd.*, 1897, 2 Q.B. 242), in an action brought to restrain a racecourse company from opening or keeping an enclosure on a racecourse by allowing it to be used by bookmakers, that the words “other place” must be construed as meaning a defined place, that the user of such a place implied some exclusive right in the user against others, and that the racecourse owners had not been guilty of permitting the enclosure to be used in the manner prohibited by the act of 1853. The decision in *Hawke* v. *Dunn* was disapproved of; and the House of Lords afterwards affirmed the decision of the court of appeal.

The Street Betting Act 1906 enacted that any person frequenting or loitering in streets or public places for the purpose of bookmaking, or betting, or wagering, should be liable on summary conviction, in the case of a first offence, to a fine not exceeding ten pounds, in the case of a second offence, to a fine not exceeding twenty pounds, and in the case of a third or subsequent offence, or in any case where he is proved to have committed the offence of having a betting transaction with a person under the age of sixteen years, to a fine, on conviction on indictment, not exceeding fifty pounds or to imprisonment with or without hard labour for a term not exceeding six months. On summary conviction the fine is a sum not exceeding thirty pounds or imprisonment with or without hard labour for a term not exceeding three months. A wide definition is given to the words “street” and “public place,” and racecourses are expressly exempted from the operation of the act.

On all French racecourses (since 1866), as on others nearly everywhere else on the continent, and likewise in the British colonies, a system of betting known as the *Pari-Mutuel* or Totalizator, is carried on. Rows of offices are established behind or near the stands, on each of which lists are exhibited containing the numbers of the horses that are to run in the coming race. At some of these the minimum wager is five francs, at others ten, twenty, fifty, one hundred, five hundred and in some cases a thousand. The person who proposes to bet goes to the clerk at one of these offices, mentions the number, as indicated on the card, of the horse he wishes to back, and states whether he desires to bet on it to win or for a place only. He receives a voucher for his money. After the race the whole amount collected at the various offices is put together and divided after a percentage has been deducted for the administration and for the poor. As soon as this has been done, the money is divided and the prices to be paid to winners are exhibited on boards. These prices are calculated on a unit of ten francs. Thus, for instance, if the winner is notified as bringing in twenty-five francs, the meaning is that the backer receives his original stake of ten and fifteen in addition, the money being paid immediately by another clerk attached to the office at which the bet was made. The great French municipalities derive considerable revenue in relief of rates from the *Paris Mutuels*. In Japan this system was made illegal in 1908.

BETAÏNE (Oxyneurine, Lycine), $C_5H_{13}NO_3$, a substance discovered in the sugar beet (*Beta vulgaris*) in 1869 by C. Scheibler (*Ber.*, 1869, 2, p. 292). It is also found in cotton seed, in the vetch and in wheat sprouts (E. Schulz and S. Frankfurt, *Ber.*, 1893, 26, p. 2151). It may be synthetically prepared by oxidizing choline with chromic acid (O. Liebreich, *Ber.*, 1869, 2, 13), $(CH_3)_3N(OH)\cdot CH_2\cdot CH_2OH \rightarrow C_5H_{13}NO_3 + H_2O$; by heating trimethylamine with monochloracetic acid (Liebreich), $(CH_3)_3N + CH_2Cl\cdot COOH = (CH_3)_3N(Cl)\cdot CH_2\cdot COOH$ (betaïne hydrochloride); and by heating amino-acetic acid (glycocoll) with methyl iodide in the presence of an alkali (P. Griess, *Ber.*, 1875, 8, p. 1406). It crystallizes from alcohol in large deliquescent crystals; and is readily soluble in water, but insoluble in ether. It is a weak base. As is shown by the various syntheses of the base, it is the methyl hydroxide of dimethyl glycocoll. This free base readily loses water on heating and gives an internal anhydride of constitution $(CH_3)_3N<{}^{CH_2}_{O}>CO$, which is the type of the so-called “betaïnes.” These organic betaïnes are internal anhydrides of carboxylic acids, which contain an ammonium hydroxide group in the α-position. A. Hantzsch (*Ber.*, 1886, 19, p. 31) prepared the betaïnes of nicotinic, picolinic and collidine carboxylic acids from the potassium salts of the acids, by treatment with methyl iodide, followed by moist silver oxide. The reaction may be shown as follows:—

The methyl betaïne of nicotinic acid is identical with the alkaloid *trigonelline*, which was discovered in 1885 by E. Jahns in the seeds of *Trigonella faenum-graecum* (*Ber.*, 1885, 18, p. 2518). It has also been obtained from nicotine by A. Pictet by oxidizing the methyl hydroxide of nicotine with potassium permanganate (*Ber.*, 1897, 30, p. 2117).

Substances closely related to betaïne are choline, neurine and muscarine. Choline (bilineurine, sincaline), (Gr. χολή, bile), $C_5H_{15}NO_2$ or $HO{\cdot}CH_2{\cdot}CH_2{\cdot}N(CH_3)_3{\cdot}OH$, first isolated by A. Strecker in 1862 (*Ann.* 123, p. 353; 148, p. 76), is found in the bile, in brain substance, and in yolk of egg in the form of lecithin, a complex ester of glycerin with phosphoric acid and the fatty acids. It is also found in combination with sinapic acid in sinapin, the glucoside obtained from white mustard, and can be obtained from this glucoside by hydrolysis with baryta water,

$$\underset{\text{Sinapin.}}{C_{16}H_{23}NO_5} + 2H_2O = \underset{\text{Choline.}}{C_5H_{15}NO_2} + \underset{\text{Sinapic acid.}}{C_{11}H_{12}O_5}.$$

It can be synthetically prepared by the action of trimethylamine on an aqueous solution of ethylene oxide (A. Wurtz, *Ann. Suppl.*, 1868, 6, p. 201). It forms deliquescent crystals of strongly alkaline reaction, and absorbs carbon dioxide from the air. It is not poisonous. By continued boiling of its aqueous solution, it is resolved into glycol and trimethylamine.

Neurine, trimethyl vinyl ammonium hydroxide (Gr. νεῦρον, nerve), $CH_2 : CH{\cdot}N(CH_3)_3{\cdot}OH$, is a product of the putrefaction of albumen. It may be prepared by the action of moist silver oxide on ethylene dibromide and trimethylamine,

$$CH_2Br{\cdot}CH_2Br \rightarrow CH_2Br{\cdot}CH_2N(CH_3)_3Br \rightarrow CH_2 : CH{\cdot}N(CH_3)_3{\cdot}OH.$$

It is a crystalline solid, very soluble in water, and is strongly basic and very poisonous. Muscarine, $C_5H_{15}NO_3$, is an exceedingly poisonous substance found in many fungi. It may be obtained synthetically by oxidizing choline with dilute nitric acid (O. Schmiedeberg, *Jahresb.*, 1876, p. 804). The exact constitution has not yet been definitely determined.

BETEL NUT. The name betel is applied to two different plants, which in the East are very closely associated in the purposes to which they are applied. The betel nut is the fruit of the Areca or betel palm, *Areca Catechu*, and the betel leaf is the produce of the betel vine or pan, *Chavica Betel*, a plant allied to that which yields black pepper. The Areca palm is a native of the Malay Peninsula and Islands and is extensively cultivated over a wide area in the East, including southern India, Ceylon, Siam, the Malay Archipelago and the Philippine Islands. It is a graceful tree with a straight, slender, unbranched stem reaching 40 or 50 ft. in height and about 1½ ft. in circumference, and bearing a crown of 6-9 very large spreading pinnate fronds. The fruit is about the size of a small hen’s egg, and within its fibrous rind is the seed or so-called nut, the albumen of which is very hard and has a prettily mettled grey and brown appearance. The chief purpose for which betel nuts are cultivated and collected is for use as a masticatory,—their use in this form being so widespread among Oriental nations that it is estimated that one-tenth of the whole human family indulge in betel chewing. For this use the fruits are annually gathered between the months of August and November, before they are quite ripe, and deprived of their husks. They are prepared by boiling in water, cutting up into slices, and drying in the sun, by which treatment the slices assume a dark brown or black colour. When chewed a small piece is wrapped up in a leaf of the betel vine or pan, with a pellet of shell lime or chunam; and in some cases a little cardamom, turmeric or other aromatic is added. The mastication causes a copious flow of saliva of a brick-red colour, which dyes the mouth, lips and gums. The habit blackens the teeth, but it is asserted by those addicted to it that it strengthens the gums, sweetens the breath and stimulates the digestive organs. Among the Orientals betel is offered on ceremonial visits in the same manner as wine is produced on similar occasions by Europeans. Betel nuts are further used as a source of catechu, which is procured by boiling the nuts in water. The water of the first boiling becomes red and thick, and when this is inspissated after the removal of the nuts it forms a catechu of high astringency and dark colour called in Bombay “Kossa.” The nuts are again boiled, and the inspissated juice of the second decoction yields a weaker catechu of a

brown or reddish colour. Betel nuts have been used by turners for ornamental purposes, and for coat buttons on account of the beauty of their structure. At one time they were supposed to be useful as a vermifuge. The nuts of other species of *Areca* are used by the poorer classes in the East as substitutes for the genuine betel nut.

The alkaloid arecaidine, $C_7H_{11}NO_2$, occurs in areca or betel nuts, together with three other alkaloids: arecoline, $C_8H_{13}NO_2$, guvacine, $C_6H_9NO_2$, and arecaine, $C_7H_{11}NO_2$. Arecaidine forms white crystals easily soluble in water, and difficultly soluble in alcohol. Chemically it is methyl-tetrahydro-nicotinic acid. Dehydration results in the formation of a "betaïne," which is a tetrahydro-trigonelline (see Betaïne). Arecoline is an oil, and the physiological action of the betel nut is alone due to this substance. Chemically it is the methyl ester of arecaidine. Guvacine, named from "guvaca," an Indian designation of the betel palm, forms white crystals. It is a secondary base, but its constitution is uncertain. Arecaine is *n*-methyl-guvacine.

BETHANY (mod. *el-'Azariyeh*), a village nearly 2 m. E.S.E. from Jerusalem, on the eastern slope of the Mount of Olives, 2208 ft. above the sea. It is interesting as the residence of Lazarus and his sisters, and a favourite retreat of Jesus (see especially John xi., which describes the miracle of the resurrection of Lazarus at this place). From the 4th century down to the time of the Mahommedan invasion several ecclesiastical buildings were erected on the spot, but of these no distinct traces remain. El-'Azariyeh is a poor village of about thirty families, with few marks of antiquity; there is no reason to believe that the houses of Mary and Martha and of Simon the Leper, or the sepulchre of Lazarus, still shown by the monks, have any claim to the names they bear. Another Bethany (with the alternative reading Bethabara) is mentioned in John i. 28, as "beyond Jordan"; it has not been identified.

BETHEL (Heb. "House of God"), originally called *Luz*, an ancient city of Palestine, on the N.W. border of the tribe of Benjamin, 11 m. N. of Jerusalem and nearly 2900 ft. above sea-level. From very early times it was a holy place, a circumstance probably due primarily to a very extraordinary group of boulders and rock-outcrops north of the town. Abraham recognized its sanctity (Gen. xii. 8); Jacob, in ignorance, slept in the sacred enclosure and was granted a vision ("Jacob's ladder," Gen. xxviii). For a while the ark seems to have been deposited here (Judg. xx. 27), and it was a place for consulting the oracle (Judg. xx. 18). At the secession of the northern kingdom under Jeroboam, Bethel became a royal residence and a national shrine (1 Kings xii. 29-31, Amos vii. 13), for which its position at the junction of main roads from N. to S. and E. to W. well fitted it. It was taken from Jeroboam by Abijah, king of Judah (2 Chr. xiii. 19). It seems to have continued to flourish down into the Christian era; remains of its ecclesiastical buildings still exist. The present village, which bears the name of Beitin, occupies about three or four acres, and has a population of 2000.

BÉTHENCOURT, JEAN DE (*c.* 1360-1422), French explorer, belonged to a noble family of Normandy, and held important offices at the court of Charles VI., king of France. His spirit was fired by hearing of the deeds of explorers and adventurers, and having formed a plan to conquer the Canary Islands he raised some money by pledging his Norman estates, and sailed from La Rochelle on the 1st of May 1402 with two ships, commanded by himself and Gadifer de la Salle. He was delayed by a mutiny off the coast of Spain, but reached the island of Lanzarote in July. Unable to carry out his project of conquest, he left his men at the Canaries and went to seek help at the court of Castile. He obtained men and provisions from Henry III. king of Castile, through the good offices of his uncle, Robert de Braquemont, who had considerable influence with Henry; he also received the title of king, and did homage to Henry for his future conquests. Returning to the Canaries in 1404 he found that Gadifer de la Salle had conquered Lanzarote and Fuerteventura, and explored other islands. La Salle, unwilling to accept a position of inferiority, left the Canaries and appealed unsuccessfully for redress at the court of Castile. Béthencourt was unable to complete his work of conquest and exploration. In 1405 he visited

Normandy, and returned with fresh colonists who occupied Hierro. In December 1406 he left the islands to the government of his nephew, Maciot de Béthencourt, reserving for himself the royal title and a share in any profits obtained. He returned to Normandy, where he appears to have spent the remainder of his days. He died in 1422, and was buried in the church of Grainville-la-Teinturière. Béthencourt wrote a very untrustworthy account of his "conquest of the Canary Islands," *Le Canarien, livre de la conquête et conversion ses Canaries*. This has been published with introduction and notes by G. Gravier (Rouen, 1874), and an English translation was edited by R.H. Major for the Hakluyt Society (London, 1872).

See also Canary Islands, for the controversy as to the relations between Béthencourt and La Salle.

BETHESDA (*i.e.* "House of Mercy," John v. 2), better perhaps Bethzatha or Bethsaida, a pool or public bath in Jerusalem, where miraculous cures were believed to be performed. The following identifications have been suggested: *Birket Isra'il*, near St Stephen's gate; a large cistern, near St Anne's church; the "Twin Pools," north of the Haram (the ancient Temple area); the *Hammam esh-Shifa'* or pool of healing, west of the Haram; the Virgin's fountain, south of the Haram; and the "Pool of Siloam." Which, if any, of these identifications is correct, it is impossible to say.

BETHESDA, an urban district of Carnarvonshire, N. Wales, 5 m. from Bangor, by a branch of the London & North-Western railway. Pop. (1901) 5281. It lies near the lower end of the fine Nant Ffrancon (valley of the Ogwen stream). The scriptural name is due, as often in Wales, to the village or hamlet taking its title from the Nonconformist church. Here are extensive slate quarries belonging to Lord Penrhyn. A narrow-gauge railway connects these with Port Penrhyn, at the mouth of the stream Cegid (hemlock, "*cicuta*"), which admits the entry of vessels of 300 tons to the quay at low water.

BETH-HORON ("the place of the hollow way"), the name of two neighbouring villages, upper and lower Beth-horon, on the ascent from the coast plain of Palestine to the high tableland of Benjamin, which was until the 16th century the high road from Jerusalem to the sea. The two towns thus played a conspicuous part in Israelitish military history (see Josh. x. 10; 1 Sam. xiii. 18; 1 Kings ix. 17; 1 Macc. iii. 13-24, vii. 39 ff., ix. 50). Josephus (*Bell. Jud.* ii. 19) tells of the rout of a Roman army under Cestius Gallus in A.D. 66. The Talmud states that many rabbis were born in the place. It is now represented by Beit 'Ur-el-foka and Beit 'Ur-et-tahta.

BETHLEHEM (Heb. "House of Bread," or, according to a more questionable etymology, "of [the god] Lakhmu"), a small town in Palestine, situated on a limestone ridge (2550 ft. above sea-level), 5 m. S. of Jerusalem. The neighbourhood produces wheat, barley, olives and vines in abundance. It was occupied in very early times, though the references in Judges xvii., xix., and Ruth[1] are of doubtful date. It was the early home of David and of Joab (2 Sam. ii. 32). It was fortified by Rehoboam, and in the neighbouring inn of Chimham the murderers of Gedaliah took refuge (Jer. xli. 17). Micah (v. 2) and other writers speak of it as Bethlehem-Ephrathah; perhaps Ephrathah was the name of the district. Almost complete obscurity, however, was gathering round it when it became (according to Matt. ii. and Luke ii.) the birthplace of Jesus. The traditional scene of the Nativity, a grotto on the eastern part of the ridge, is alleged to have been desecrated during the reign of Hadrian by a temple of Adonis. In 330 it was enclosed by a basilica built by the orders of the emperor Constantine. This basilica (S. Maria a Praesepio),

which is still standing, was restored and added to by Justinian, and was later surrounded by the three convents successively erected by the Greek, Latin and Armenian Churches (see de Vogüé, *Les Églises de la Terre Sainte*). Captured by the Crusaders in the 11th century, Bethlehem was made an episcopal see; but the bishopric soon sank to a titular dignity. Beside the grotto of the Nativity other traditional sites are shown within the church, such as the Altar of the Magi, the Tomb of Eusebius, the cave wherein Jerome made his translation of the Bible, &c.

There are several monasteries and convents, and British, French and German schools. The village is well built and comparatively clean. The population (8000) has contained few Moslems since the Moslem quarter was destroyed by Ibrahim Pasha, in revenge for the murder of one of his favourites, after the insurrection of 1834. The carving of crucifixes and other sacred mementoes gives employment to a large proportion of the population. In 1850 a dispute arose between France and Russia, in the name of the Latin and Greek Churches respectively, concerning the possession of the key of the chief door of the basilica, and concerning the right to place a silver star, with the arms of France, in the grotto of the Nativity. The Porte, after much futile temporizing, yielded to France. The disappointment thus inflicted on Russia was a determining cause of the outbreak of the Crimean War (see Kinglake, *Invasion of the Crimea*, chap. iii.). [There is a tiny village of the same name in Zebulun, 7 m. N.W. of Nazareth (Josh. xv. 19).]

See bibliography under Palestine. For the modern town see Palmer, "Das jetzige Bethlehem," in the *Zeitschrift* of the Deutsche Palästina-Verein, xvii. p. 89.

(R. A. S. M.)

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1 The country of Moab is clearly visible from around Bethlehem.

BETHLEHEM, a borough of Northampton and Lehigh counties, Pennsylvania, U.S.A., on the N. bank of the Lehigh river, opposite South Bethlehem and 55 m. N. by W. of Philadelphia. Pop. (1890) 6762; (1900) 7293 (350 foreign-born); (1910) 12,837. It is served by the Central of New Jersey, the Lehigh & New England, the Lehigh Valley and the Philadelphia & Reading railways, and is connected by two long bridges with South Bethlehem. The borough lies on a ridge of ground commanding delightful landscape scenery extending north up the course of the river to the Blue Mountains 20 m. away. In Church Street and its vicinity still stand several specimens of the 17th-century style of architecture of eastern Germany. The same sect that erected these buildings, the Moravians, or United Brethren, maintain here the Moravian College and Theological Seminary, and a well-known school for girls (the Moravian Seminary), founded as a church boarding school in 1749 and reorganized in 1785, for girls of all denominations. During the War of Independence, from December 1776 to April 1777, and from September 1777 to April 1778, the old Colonial Hall in this seminary (built 1748) was used as a general hospital of the continental army. From its roof the famous Moravian trombones were long played on festal or funeral occasions, and later summoned the people to musical festivals. The Moravians have given Bethlehem a national reputation as a musical centre. Only a few years after the city was founded, Benjamin Franklin was strongly impressed with the fine music in its church, and towards the close of the 19th century a choir under the direction of the organist, J. Frederick Wolle, became widely known by rendering for the first time in America Bach's *St John Passion* (in 1888), followed after short intervals by the *St Matthew Passion*, the *Christmas Oratorio*, the *Mass in B Minor*, and finally by an annual Bach festival continuing for three days, which was discontinued after Wolle's removal to the university of California in 1905. Bethlehem has often been called the American Bayreuth. Among the borough's industrial establishments, the manufactories of iron and steel are the most important, but it also manufactures brass, zinc, and silk and knit goods. The municipality owns and operates its waterworks. Bethlehem was founded by the Moravians, led by Count Nikolaus Ludwig Zinzendorf, shortly before Christmas in 1741, and the season of the year suggested its name; for the first century of its existence it was almost exclusively a settlement of that sect, and it is still their American headquarters. Bethlehem was incorporated as a borough in 1845. In 1904 the borough of West Bethlehem (pop. in 1900, 3465) was consolidated with Bethlehem.

See J.M. Levering, *A History of Bethlehem, Pennsylvania* (Bethlehem, 1903).

BETHLEHEMITES, a name borne at different times by three orders in the Roman Catholic Church. (1) A community of friars at Cambridge, in 1257, whose habit was distinguished from that of the ordinary Dominicans by a five-rayed red star (in reference to Matt. ii. 9 f). (2) An order of knighthood similar to the Knights of St John, established by Pius II. in 1459 to resist the inroads of the Turks. (3) The Bethlehemite Order of Guatemala, a nursing community founded in 1650 by Pedro Betancourt (d. 1667), extended by the brothers Rodrigo and Antonio of the Cross, and raised to an order by Innocent XI. in 1687. They wore a dress like that of the Capuchins, and Clement XI. in 1707 gave them the privileges of the mendicant orders. They spread throughout Central America and Mexico and as far south as Lima, and with the order of sisters, founded in 1668 by Anna Maria del Galdo, were conspicuous for their devotion during times of plague and other contagious diseases. This order became extinct about 1850. The name Bethlehemites has also sometimes been given to the Hussites of Bohemia because their leader preached in the Bethlehem church at Prague.

BETHLEN, GABRIEL (Gábor) (1580-1629), prince of Transylvania, the most famous representative of the Iktári branch of a very ancient Hungarian family, was born at Illyé, and educated at Szarhegy, at the castle of his uncle András Lázár. Thence he was sent to the court of Prince Zsigmond Báthory, whom he accompanied on his famous Wallachian campaign in 1600. Subsequently he assisted Stephen Bocskay to mount the throne of Transylvania (1605), and remained his chief counsellor. Bethlen also supported Bocskay’s successor Gabriel Báthory (1608-1613), but the prince became jealous of Bethlen’s superior abilities, and he was obliged to take refuge with the Turks. In 1613 he led a large army against his persecutor, on whose murder by two of his officers that year Bethlen was placed on the throne by the Porte, in opposition to the wishes of the emperor, who preferred a prince who would incline more towards Vienna than towards Constantinople. On the 13th of October 1613, the diet of Klausenburg confirmed the choice of the sultan. In 1615 Gábor was also officially recognized by the emperor Matthias. Bethlen no sooner felt firmly seated on his throne than he seized the opportunity presented to him by the outbreak of the Thirty Years’ War to take up arms in defence of the liberties and the constitution of the extra-Transylvanian Hungarian provinces, with the view of more effectually assuring his own position. While Ferdinand was occupied with the Bohemian rebels, Bethlen led his armies into Hungary (1619), and soon won over the whole of the northern counties, even securing Pressburg and the Holy Crown. Nevertheless he was not averse to a peace, nor to a preliminary suspension of hostilities, and negotiations were opened at Pressburg, Kassa and Beszterczebánya successively, but came to nothing because Bethlen insisted on including the Bohemians in the peace, whereupon (20th of August 1620) the estates of North Hungary elected him king. Bethlen accepted the title but refused to be crowned, and war was resumed, till the defeat of the Czechs at the battle of the White Hill gave a new turn to affairs. In Bohemia, Ferdinand II. took a fearful revenge upon the vanquished; and Bethlen, regarding a continuation of the war as unprofitable, concluded the peace of Nikolsburg (31st of December 1621), renouncing the royal title on condition that Ferdinand confirmed the peace of Vienna (which had granted full liberty of worship to the Protestants) and engaged to summon a general diet within six months. For himself Bethlen secured the title of prince of the Empire, the seven counties of the Upper Theiss, and the fortresses of Tokaj, Munkács and Ecsed. Subsequently Bethlen twice (1623 and 1626) took up arms against Ferdinand as the ally of the anti-Habsburg Protestant powers. The first war was concluded by the peace of Vienna, the second by the peace of Pressburg, both confirmatory of the peace of Nikolsburg. After the second of these insurrections, Bethlen attempted a rapprochement with the court of Vienna on the basis of an alliance against the Turks and his own marriage with one of the Austrian archduchesses; but Ferdinand had no confidence in him and rejected his overtures. Bethlen was obliged to renounce his anti-Turkish projects, which he had hitherto cherished as the great aim and object of his life, and continue in the old beaten paths. Accordingly, on his return from Vienna he wedded Catherine, the daughter of the elector of Brandenburg, and still more closely allied himself with the Protestant powers, especially with Gustavus Adolphus of Sweden, who, he hoped, would assist him to obtain the Polish crown. He died before he could accomplish any of his great designs (15th of November 1629), having previously secured the election of his wife Catherine as princess. His first wife, Susannah Károlyi, died in 1622.

Gabriel Bethlen was certainly one of the most striking and original personages of his century. A zealous Calvinist, whose boast it was that he had read the Bible twenty-five times, he was nevertheless no persecutor, and even helped the Jesuit Kaldy to translate and print his version of the Scriptures. He was in communication all his life with the leading contemporary statesmen, so that his correspondence is one of the most interesting and important of historical documents.

He also composed hymns.

The best editions of his correspondence are those by Sándor Szilágyi, both published at Buda (1866 and 1879). The best life of him is that by the Bohemian historian Anton Gindely, *Acta et documenta historiam Gabrielis Bethleni illustrantia* (Budapest, 1890). This work has been largely utilized by Ignáe-Acsády in his excellent *Gabriel Bethlen and his Court* (Hung., Budapest, 1890).
(R. N. B.)

BETHNAL GREEN, an eastern metropolitan borough of London, England, bounded N. by Hackney, E. by Poplar, S. by Stepney and W. by Shoreditch. Pop. (1901) 129,680. It is a district of poor houses, forming part of the area commonly known as the "East End." The working population is employed in the making of match-boxes, boot-making, cabinet-making and other industries; but was formerly largely devoted to silk-weaving, which spread over the district from its centre in Spitalfields (see Stepney). This industry is still maintained. The Bethnal Green museum was opened in 1872. It contains exhibits of food and animal products, formerly at South Kensington, entomological collections, &c.; and various loan exhibitions are held from time to time. The Museum also housed the Wallace collection until the opening of Hertford House, and the pictures now in the National Portrait Gallery. It stands in public gardens; there are several other small open spaces; and some 70 out of the 217 acres of Victoria Park are within the borough. Close by the park there stood, until the 19th century, a house believed to have belonged to the notorious Bishop Bonner, the persecutor of Protestants in the reign of Mary; his name is still attached to a street here. Among institutions are the missionary settlement of the Oxford House, founded in 1884, with its women's branch, St Margaret's House; the North-Eastern hospital for children, the Craft school und the Leather Trade school. The parliamentary borough of Bethnal Green has two divisions, each returning one member. The borough council consists of a mayor, 5 aldermen and 30 councillors. Area, 759.3 acres.

BÉTHUNE (Family). The *seigneurs* of Béthune, *avoués* (*advocati*) of the great abbey of Saint-Vaast at Arras from the 11th century, were the ancestors of a great French house whence sprang the dukes of Sully, Charost, Orval, and Ancenis; the marquises of Rosny, Courville and Chabris; the counts of Selles and the princes of Boisbelle and Henrichemont. Conon de Béthune (*q.v.*), the crusader and poet, was an early forebear. The most illustrious member of the Béthune family was Maximilien, baron of Rosny, and afterwards duke of Sully (*q.v.*), minister of Henry IV. His brother Philip, count of Selles and of Charost, was ambassador to Scotland, Rome, Savoy and Germany, and died in 1649. Hippolyte de Béthune, count of Selles and marquis of Chabris, who died in 1665, bequeathed to the king a magnificent collection of historical documents and works of art. The Charost branch of the family gave France a number of generals during the 17th and 18th centuries.

The last duke of Charost, Armand Joseph de Béthune (1738-1800), French economist and philanthropist, served in the army during the Seven Years' War, after which he retired to his estates in Berry, where, and also in Brittany and Picardy, he sought to ameliorate the lot of his peasants by abolishing feudal dues, and introducing reforms in agriculture. During the Terror he was arrested, but was liberated after the 9th Thermidor. He was mayor of the 10th arrondissement of Paris under the Consulate, and died at Paris on the 20th of October 1800, of small-pox, contracted during a visit to a workshop for the blind which he had founded. He published essays on the way to destroy mendicancy and to improve the condition of the labourers, and also on the establishment of a fund for rural relief and the organization of rural education. His life throws light on some phases of the *ancien régime* which are often overlooked by historians. Louis XV. said of Charost, "Look at this man, his appearance is insignificant, but he has put new life into three of my provinces." His only son, Armand Louis de Béthune, marquis de Charost, was beheaded on the 28th of April 1794.

BÉTHUNE, CONON or Quesnes, **DE** (*c.* 1150-1224), French *trouvère* of Arras, was born about the middle of the 12th century. He came about 1180 to the court of France, where he met Marie de France, countess of Champagne. To this princess his love poems are dedicated, and much of his time was passed at her court where the *trouvères* were held in high honour. At the French court he met with some criticisms from Queen Alix, the widow of Louis VII., on the roughness of his verse and on his Picard dialect. To these criticisms, interesting as proof of the already preponderant influence of the dialect of the Île de France, the poet replied by some verses in the satirical vein that best suited his temperament. Some of his best songs were inspired by anger at the delays before the crusade of 1188-1192. His plain-speaking made him many enemies, and when he returned with the rest after the fruitless capture of Acre, these were not slow to take advantage of the opportunity for retaliation. Conon took part with Baldwin of Flanders in the crusade which resulted in 1204 in the capture of Constantinople, and he is said to have been the first to plant the crusaders' standard on the walls of the city. He held high office in the new empire and died about 1224. His verses, of which the crusading song *Ah! amors com dure departie* is well known, are marked by a vigour and martial spirit which distinguish them from the work of other *trouvères*.

The completest edition of his works is in the *Trouvères belges* of Aug. Scheler (1876).

BÉTHUNE, a town of northern France, capital of an arrondissement in the department of Pas-de-Calais, 24 m. N.N.W. of Arras, on the Northern railway between that town and St Omer. Pop. (1906) 12,601. Béthune is situated on a low hill at the confluence of the Lawe with the canal from Aire to Bauvin. Once strongly fortified, it is now surrounded by wide boulevards, and new quarters have grown up on its outskirts. The old town is composed of winding streets and *culs-de-sac* bordered by old houses in the Flemish style. In the central square stands one of the finest belfries of northern France, a square structure surmounted by a wooden campanile, dating from the 14th century. St Vaast, the principal church of Béthune, belongs to the 16th century. The town is the seat of a sub-prefect, and has a tribunal of first instance, a chamber of commerce and a communal college among its public institutions. Béthune lies in the midst of the richest coal mines in France. Its industries include the distillation of oil, tanning, salt-refining, brewing, and the manufacture of earthenware and casks. Trade is carried on in flax, cloth, cereals, oil-seeds, &c.

The town, which dates from the 11th century, was governed by its own lords till 1248, after which date it passed through the ownership of the counts of Flanders, the dukes of Burgundy, and the sovereigns of Austria and Spain. Ceded to France by the peace of Nijmwegen (1678), it was taken by the allied forces in 1710, and restored to France by the treaty of Utrecht.

BETROTHAL (A.S. *treowth*, "truth"), the giving "one's truth," or pledging one's faith to marry. Although left optional by the church and not necessary in law, betrothal was anciently a formal ceremony which in most cases preceded the actual marriage service, usually by a period of some weeks, but the marriage might for various reasons be delayed for years. The canon law distinguished two types of betrothal:—(1) *Sponsalia de praesenti*, (2) *Sponsalia de futuro*. The first was a true though irregular marriage, and was abolished by the council of Trent as leading to clandestine unions and therefore being inimical to morality. The second, or betrothal properly so called, was a promise to marry at a future date, which promise without further ceremony became a valid marriage upon consummation. The church never precisely determined the form of the ceremony, but demanded for its validity that it should have been entered into freely and at a legal age, *i.e.* after the seventh birthday. The church further declared that females between the ages of seven and twelve, and males between seven and fourteen, could be betrothed, but not married, and that all such betrothals were to be public. The ill-defined laws as to betrothals tended to encourage abuses; and the people, especially in the rural districts, inclined to hold betrothal sufficient justification for cohabitation. Such pre-contract is known to have existed in the case of Shakespeare (*q.v.*). Francis Douce (*Illustrations of Shakespeare and of Antient Manners*, 1807) says that betrothal consisted of the "interchange of rings—the kiss—the joining of hands, to which is to be added the testimony of witnesses." In France the presence of a priest seems to have been considered essential, and though this was not so elsewhere it was customary for the couple to get their parish priest to witness their promise. In England solemn betrothal

was almost universally practised. Among the peasantry the place of rings was taken by a coin which was broken between the pair, each taking a part. But almost any gift sufficed. A case in 1582 is recorded where the lover gave the girl a pair of gloves, two oranges, two handkerchiefs and a red silk girdle. Sometimes the bride-elect received a bent or crooked sixpence. At the conclusion of the ceremony, which by no means always took place in a church, it seems to have been usual for the couple to pledge each other in a cup of wine, as do the Jews and Russians to-day. This drinking together was ever the universal custom of parties in ratification of a bargain. Joseph Strutt (1749-1802) states that by the civil law gifts given at betrothal could be recovered by the parties, if the marriage did not take place. But only conditionally, for if the man "had had a kiss for his money, he should lose one half of that which he gave. Yet with the woman it is otherwise, for, kissing or not kissing, whatever she gave, she may ask and have it again. However, this extends only to gloves, rings, bracelets and such-like small wares." Though the church abstained from prescribing the form of the ceremony, it jealously watched over the fulfilment of such contracts and punished their violation. Betrothal, validly contracted, could be dissolved either by mutual consent, or by the supervening of some radical physical or social change in the parties, or by the omission to fulfil one of the conditions of the contract. But here the church stepped in, and endeavoured to override such law as existed in the matter by decreeing that whoever, after betrothal, refused to marry *in facie ecclesiae*, was liable to excommunication till relieved by public penance. In England the law was settled by an act of 1753, which enacted that an aggrieved party could obtain redress only by an action at common law for breach of promise of marriage (see MARRIAGE).

Formal betrothal is no longer customary in England, but on the European continent it retains much of its former importance. There it is either solemn (publicly in church) or private (simply before witnesses). Such betrothals are legal contracts. They are only valid between persons of legal age, both of whom consent; and they are rendered void by fraud, intimidation and duress. In Germany if the parties are under age the consent of the parents is needed; but if this be unreasonably withheld the couple may appeal to a magistrate, who can sanction the betrothal. If the parents disagree, the father's wish prevails. Public betrothal carries with it an obligation to marry, and in case of refusal an action "lies" for the injured party. In Germany the betrothal is generally celebrated before the relatives, and the couple are called bride and bridegroom from that day *until* marriage. In Russia, where it was once as binding as marriage, it is now a mere formal part of the marriage ceremony.

Among the ancient Jews betrothal was formal and as binding as marriage. After the ceremony, which consisted of the handing of a ring or some object of value to the bride and formal words of contract, and the mutual pledging of the couple in consecrated wine, a period of twelve months elapsed before the marriage was completed by the formal home-taking; unless the bride was a widow or the groom a widower, when this interval was reduced to thirty days. Latterly the ceremony of betrothal has become a part of the marriage ceremony, and the engagement has become the informal affair it is in England.

For betrothal customs in China, the East and elsewhere, consult L.J. Miln, *Wooings and Weddings in Many Climes* (London, 1900), and H.N. Hutchinson, *Marriage Customs in Many Lands* (London, 1897). On early English law as to betrothals see Sir F. Pollock and Maitland, *History of English Law before the time of Edward I.* (2nd ed., 1898). See also J.O. Halliwell-Phillipps, *Outlines of the Life of Shakespeare* (London, 1848, 1883).

BETTERMENT (*i.e.* "making better," as opposed to "worsement"), a general term, used particularly in connexion with the increased value given to real property by causes for which a tenant or the public, but not the owner, is responsible; it is thus of the nature of "unearned increment." When, for instance, some public improvement results in raising the value of a piece of private land, and the owner is thereby "bettered" through no merit of his own, he gains by the betterment, and many economists and politicians have sought to arrange, by taxation or otherwise, that the increased value shall come into the pocket of the public rather than into his. A betterment tax would be so assessed as to divert from the owner of the property the profit thus accruing "unearned" to him. (See also COMPENSATION.) The whole problem is one of the incidence of taxation and the question of land values, and various applications of the principle of betterment have been tried in America and in England, raising considerable controversy from time to time.

See A.A. Baumann, *Betterment, Worsement and Recoupment* (1894).

BETTERTON, THOMAS (*c.* 1635-1710), English actor, son of an under-cook to King Charles I., was born in London. He was apprenticed to John Holden Sir William Davenant’s publisher, and possibly later to a bookseller named Rhodes, who had been wardrobe-keeper to the theatre in Blackfriars. The latter obtained in 1659 a licence to set up a company of players at the Cockpit in Drury Lane; and on the reopening of this theatre in 1660, Betterton made his first appearance on the stage. His talents at once brought him into prominence, and he was given leading parts. On the opening of the new theatre in Lincoln’s Inn Fields in 1661, Sir William Davenant, the patentee, engaged Betterton and all Rhodes’s company to play in his *Siege of Rhodes*. Betterton, besides being a public favourite, was held in high esteem by Charles II., who sent him to Paris to examine stage improvements there. According to Cibber it was after his return that shifting scenes instead of tapestry were first used in an English theatre. In 1692, in an unfortunate speculation, Betterton and his friend Sir Francis Watson were ruined; but Betterton’s affection for Sir Francis was so strong that he adopted the latter’s daughter and educated her for the stage. In 1693, with the aid of friends, he erected the New Playhouse in the tennis court in Lincoln’s Inn Fields. It was opened in 1695 with Congreve’s *Love for Love*. But in a few years the profits fell off; and Betterton, labouring under the infirmities of age and gout, determined to quit the stage. At his benefit performance, when the profits are said to have been over £500, he played Valentine in *Love for Love*. In 1710 he made his last appearance as Melantius in *The Maid’s Tragedy*; he died on the 28th of April, and was buried in Westminster Abbey.

In appearance he was athletic, slightly above middle height, with a tendency to stoutness; his voice was strong rather than melodious, but in recitation it was used with the greatest dexterity. Pepys, Pope, Steele and Cibber all bestow lavish praise on his acting. His repertory included a large number of Shakespearian roles, and although many of these were presented in the tasteless versions of Davenant, Dryden, Shadwell and Nahum Tate, yet they could not hide the great histrionic gifts which Betterton possessed, nor does his reputation rest on these performances alone. The blamelessness of his life was conspicuous in an age and a profession notorious for dissolute habits. Betterton was author of several adaptations which were popular in their day. In 1662 he had married Mary Saunderson (d. 1712), an admirable actress, whose Ophelia shared the honours with his Hamlet.

See Howe, *Thomas Betterton* (1891); *The Life and Times of Thomas Betterton* (1886).

BETTIA, a town of British India, in the Champaran district of Bengal; situated on a former branch of the Harha river, with a station on the Tirhoot section of the Bengal & North-Western railway. Bettia is the residence of one of the leading noblemen of northern Behar, who enjoys a rent-roll of £66,000. In 1901, owing to a disputed succession, the estate was under the management of the court of wards. It comprises land in no fewer than ten districts, much of which is let on permanent leases to indigo-planters. Besides the palace of the maharaja, the town contains a middle English school and a female dispensary, entirely supported out of the estate. There is a Roman Catholic mission, with about 1000 converts, which was founded by an Italian priest in 1746.

BETTINELLI, SAVERIO (1718-1808), Italian Jesuit and man of letters, was born at Mantua on the 18th of July 1718. After studying under the Jesuits in his native city and at Bologna he entered the society in 1736. He taught the belles-lettres from 1739 to 1744 at Brescia, where Cardinal Quirini, Count Mazzuchelli, Count Duranti and other scholars, formed an illustrious academy. He next went to Bologna, to pursue the study of divinity, and there he enjoyed the society of many learned and literary men. At the age of thirty he went to Venice, where he became professor of rhetoric, and was on friendly terms with the most illustrious persons of that city and state. The superintendence of the college of nobles at Parma was entrusted to him in 1751; and he had principal charge of the studies of poetry and history, and the entertainments of the theatre. He remained there eight years, visiting, at intervals, other cities of Italy, either on the affairs of his order, for pleasure or for health. In 1755 he traversed part of Germany, proceeded as far as Strassburg and Nancy, and returned by way of Germany into Italy, taking with him two young sons or nephews of the prince of Hohenlohe, who had requested him to take charge of their education. He made, the year following, another journey into France along with

the eldest of his pupils; and during this excursion he wrote his famous *Lettere dieci di Virgilio agli Arcadi*, which were published at Venice with his *sciolti* verses, and those of Frugoni and Algarotti. The opinions maintained in these letters against the two great Italian poets and particularly against Dante, created him many enemies, and embroiled him with Algarotti. In 1758 he went into Lorraine, to the court of King Stanislaus, who sent him on a matter of business to visit Voltaire. Voltaire presented him with a copy of his works, with a flattering inscription in allusion to Bettinelli's *Letters of Virgil*. From Geneva he returned to Parma, where he arrived in 1759. He afterwards lived for some years at Verona and Modena, and he had just been appointed professor of rhetoric there, when, in 1773, the order of Jesuits was abolished in Italy. Bettinelli then returned into his own country, and resumed his literary labours with new ardour. The siege of Mantua by the French compelled him to leave the city, and he retired to Verona, where he formed an intimate friendship with the chevalier Hippolito Pindemonti. In 1797 he returned to Mantua. Though nearly eighty years old, he resumed his labours and his customary manner of life. He undertook in 1799 a complete edition of his works, which was published at Venice in 24 vols. 12mo. Arrived at the age of ninety years, he still retained his gaiety and vivacity of mind, and died on the 13th of September 1808. The works of Bettinelli are now of little value. The only one still deserving remembrance, perhaps, is the *Risorgimento negli studj, nelle Arti e ne' Costumi dopo il Mille* (1775-1786), a sketch of the progress of literature, science, the fine arts, industry, &c., in Italy.

BETTWS Y COED, an urban district of Carnarvonshire, North Wales, 4 m. from Llanrwst and 16 m. from Llandudno, on a branch of the London & North-Western railway. Pop. (1901) 1070. The name means "warm place of the wood," according to Llyn's definition of *bettws*. The other derivation of the word from *Abbatis* (*domus*) agrees with its vicinity to Yspytty[1] Ifan (Ieuan), *Hospitium Ioannis*, near Pentre'r Foelas. The words "y coed" are added to distinguish this Bettws from several others in Wales, especially that near Llandeilo Fawr, Carmarthenshire, not far from the Bettws hills. Bettws y coed is a favourite village for artists and tourists. It is a centre for excursions towards Capel Curig and Snowdon, or towards Blaenau Festiniog, via Roman Bridge. There is excellent fishing for salmon and trout, and in summer coaches leave their daily loads of tourists here. The best-known streams and waterfalls are Llugwy, Lledr, with Rhaiadr y wenol (Swallow falls), Conwy and Machno falls. In the neighbourhood are Dolwyddelan castle and the hill of Moel Siabod.

1 Other places named "Yspytty" are Y. Cynfyn and Y. Ystwyth. For the name Yspytty, cf. Bale's *King John*, 2125: "So many masendeens (*maisons Dieu*), hospytals and *spyttle* howses."

BETTY, WILLIAM HENRY WEST (1791-1874), English actor, known as "the young Roscius," was born on the 13th of September 1791 at Shrewsbury. He first appeared on the stage at Belfast before he was twelve years old, as Osman in Aaron Hill's *Zara*, an English version of Voltaire's *Zaire*. His success was immediate, and he shortly afterwards appeared in Dublin, where it is said that in three hours of study he committed the part of Hamlet to memory. His precocious talents aroused great enthusiasm in Glasgow and Edinburgh, and he was favourably compared with some of the greatest tragedians. In 1804 he first appeared at Covent Garden, when the troops had to be called out to preserve order, so great was the crush to obtain admittance. At Drury Lane the house was similarly packed, and he played for the then unprecedented salary of over 75 guineas a night. He was a great success socially, George III. himself presenting him to the queen, and Pitt upon one occasion adjourning the House of Commons that members might be in time for his performance. But this enthusiasm gradually subsided, and in 1808 he made his final appearance as a boy actor, and entered Christ's College, Cambridge. He re-appeared four years later, but the public would have none of him, and he retired to the enjoyment of the large fortune which he had amassed as a prodigy. He died on the 24th of August 1874. His son Henry Betty (1819-1897) was also an actor.

BETUL, a town and district of British India, in the Nerbudda division of the Central Provinces. In 1901 the population of the town was 4739. The administrative headquarters of the district have been transferred to the town of Badnur (*q.v.*), 3 m. north.

The district of Betul has an area of 3826 sq. m. In 1901 the population was 285,363, showing a decrease of 12% in the decade, due to the results of famine. The mean elevation above the sea is about 2000 ft. The country is essentially a highland tract, divided naturally into three distinct portions, differing in their superficial aspects, the character of their soil and their geological formation. The northern part of the district forms an irregular plain of the sandstone formation. It is a well-wooded tract, in many places stretching out in charming glades like an English park, but it has a very sparse population and little cultivated land. In the extreme north a line of hills rises abruptly out of the great plain of the Nerbudda valley. The central tract alone possesses a rich soil, well watered by the Machna and Sampna rivers, almost entirely cultivated and studded with villages. To the south lies a rolling plateau of basaltic formation (with the sacred town of Multai, and the springs of the river Tapti at its highest point), extending over the whole of the southern face of the district, and finally merging into the wild and broken line of the Ghats, which lead down to the plains. This tract consists of a succession of stony ridges of trap rock, enclosing valleys or basins of fertile soil, to which cultivation is for the most part confined, except where the shallow soil on the tops of the hills has been turned to account. The principal crops are wheat, millet, other food-grains, pulse, oil-seeds, and a little sugar-cane and cotton. A large part of the area is covered with forests, which yield teak and other timber. The only manufacture is cotton cloth. A railway is projected from Itarsi through the district to Berar. Good roads are few; and none of the rivers is navigable. This district suffered very severely from the famine of 1896-1897, in 1897 the death-rate being as high as 73 per 1000. It suffered again in 1900, when in May the number of persons relieved rose to one-third of the total population.

Little is known of the early history of the district except that it must have been the centre of the first of the four ancient Gond kingdoms of Kherla, Deogarh, Mandla and Chanda. According to Ferishta, the Persian historian, these kingdoms engrossed in 1398 all the hills of Gondwana and adjacent countries, and were of great wealth and power. About the year 1418 Sultan Husain Shah of Malwa invaded Kherla, and reduced it to a dependency. Nine years later the raja rebelled, but although with the help of the Bahmani kings of the Deccan he managed for a time to assert his independence, he was finally subdued and deprived of his territories. In 1467 Kherla was seized by the Bahmani king, but was afterwards restored to Malwa. A century later the kingdom of Malwa became incorporated into the dominions of the emperor of Delhi. In 1703 a Mussulman convert of the Gond tribe held the country, and in 1743 Raghoji Bhonsla, the Mahratta ruler of Berar, annexed it to his dominions. The Mahrattas in the year 1818 ceded this district to the East India Company as payment for a contingent, and by the treaty of 1826 it was formally incorporated with the British possessions. Detachments of British troops were stationed at Multai, Betul and Shahpur to cut off the retreat of Apa Sahib, the Mahratta general, and a military force was quartered at Betul until June 1862. The ruined city of Kherla formed the seat of government under the Gonds and preceding rulers, and hence the district was, until the time of its annexation to the British dominions, known as the “Kherla Sarkar.” The town of Multai contains an artificial tank, from the centre of which the Tapti is said to take its rise: hence the reputed sanctity of the spot, and the accumulation of temples in its honour.

The climate of Betul is fairly healthy. Its height above the plains and the neighbourhood of extensive forests moderate the heat, and render the temperature pleasant throughout the greater part of the year. During the cold season the thermometer at night falls below the freezing point; little or no hot wind is felt before the end of April, and even then it ceases after sunset. The nights in the hot season are comparatively cool and pleasant. During the monsoon the climate is very damp, and at times even cold and raw, thick clouds and mist enveloping the sky for many days together. The average annual rainfall is 40 in. In the denser jungles malaria prevails for months after the cessation of the rains, but the Gonds do not appear to suffer much from its effects. Travellers and strangers who venture into these jungles run the risk of fever of a severe type at almost all seasons of the year.

BETWA, a river of India, which rises in the native state of Bhopal in Malwa, and after a course of 360 m., for the most part in a north-easterly direction, falls into the Jumna at Hamirpur. A weir is thrown across the Betwa about 15 m. from Jhansi town, whence a canal 168 m. long takes off, irrigating 106,000 acres of the Jalaun district; similar works have been carried out elsewhere on the river.

BEUDANT, FRANÇOIS SULPICE (1787-1850), French mineralogist and geologist, was born at Paris on the 5th of September 1787. He was educated at the École Polytechnique and École Normale, and in 1811 was appointed professor of mathematics at the lycée of Avignon. Thence he was called, in 1813, to the lycée of Marseilles to fill the post of professor of physics. In the following year the royal mineralogical cabinet was committed to his charge to be conveyed into England, and from that time his attention was directed principally towards geology and cognate sciences. In 1817 he published a paper on the phenomena of crystallization, treating especially of the variety of forms assumed by the same mineral substance. In 1818 he undertook, at the expense of the French government, a geological journey through Hungary, and the results of his researches, *Voyage minéralogique et géologique en Hongrie*, 3 vols. 4to, with atlas, published in 1822, established for him a European reputation. In 1820 he was appointed to the professorship of mineralogy in the Paris faculty of sciences, and afterwards became inspector-general of the university. He subsequently published treatises on physics and on mineralogy and geology, and died on the 10th of December 1850.

BEUGNOT, JACQUES CLAUDE, Count (1761-1835), French politician, was born at Bar-sur-Aube. A magistrate under the old régime, he was elected deputy to the Legislative Assembly (1791), then to the Convention. He was involved in the proscription of the Girondists and imprisoned until the 9th Thermidor. He next entered into relations with the family of Bonaparte, and in 1799, after the 18th Brumaire, again entered politics, becoming successively prefect of the lower Seine, councillor of state, and finance minister to Jerome Bonaparte, king of Westphalia. In 1808 Beugnot, who had meanwhile been appointed administrator of the duchy of Berg-Cleves, received the cross of officer of the Legion of Honour with the title of count. He returned to France in 1813, after the battle of Leipzig, and was made prefect of the department of Nord. In 1814 he was a member of the provisional government as minister of the interior; and by Louis XVIII. he was named director-general of police and afterwards minister of marine. He followed Louis to Ghent during the Hundred Days, and became one of his confidants. He contributed to draw up Louis's charter, and in his memoirs boasted of having furnished the text of the proclamation addressed by the king to the French people before his return to France; but it is known now that it was another text that was adopted. Lacking the support of the ultra-royalists, he was given the title of minister of state without portfolio, which was equivalent to a retirement. Elected deputy, he attached himself to the moderate party, and defended the liberty of the press. In 1831 Louis Philippe made him a peer of France and director-general of manufactures and commerce. He died on the 24th of June 1835.

His son, Auguste Arthur Beugnot (1797-1865), was an historian and scholar, who published an *Essai sur les institutions de Saint Louis* (1821), *Histoire de la destruction du paganisme en occident* (2 vols., 1885), and edited the *Olim* of the parlement of Paris, the *Assizes of Jerusalem*, and the *Coutumes de Beauvoisis* of Philippe de Beaumanoir. He was a member of the chamber of peers under Louis Philippe, and opposed Villemain's plan for freedom of education. After 1848 he maintained the same rôle, acting as reporter of the *loi Falloux*. He retired from public life after the *coup d'état* of Napoleon III., and died on the 15th of March 1865.

The *Mémoires* of J.C. Beugnot were published by his grandson, Count Albert Beugnot (2nd ed., Paris, 1868); see H. Wallon, *Éloges académiques* (1882); and E. Dejean, *Un Préfet du Consulat: J.C. Beugnot* (Paris, 1907).

BEULÉ, CHARLES ERNEST (1826-1874), French archaeologist and politician, was born at Saumur on the 29th of June 1826. He was educated at the École Normale, and after having held the professorship of rhetoric at Moulins for a year, was sent to Athens in 1851 as one of the professors in the École Française there. He had the good fortune to discover the propylaea of the Acropolis, and his work, *L'Acropole d'Athènes* (2nd ed., 1863), was published by order of the minister of public instruction. On his return to France, promotion and distinctions followed rapidly upon his first successes. He was made doctor of letters, chevalier of the Legion of Honour, professor of archaeology at the Bibliothèque Impériale, member of the Académie des Inscriptions et Belles-Lettres and perpetual secretary of the Académie des Beaux-Arts. He took great interest in political affairs, with which the last few years of his life were entirely occupied. Elected a member of the National Assembly in 1871, he zealously supported the Orleanist party.

In May-November 1873 he was minister of the interior in the Broglie ministry. He died by his own hand on the 4th of April 1874. His other important works are: *Études sur le Péloponnèse* (2nd ed., 1875); *Les Monnaies d'Athènes* (1858); *L'Architecture au siècle de Pisistrate* (1860); *Fouilles à Carthage* (1861). Beulé was also the author of high-class popular works on artistic and historical subjects: *Histoire de l'art grec avant Périclès* (2nd ed., 1870); *Le Procès des Césars* (1867-1870, in four parts; *Auguste, sa famille et ses amis*; *Tibère et l'héritage d'Auguste*; *Le Sang de Germanicus*; *Titus et sa dynastie*).

See Ideville, *Monsieur Beulé, Souvenirs personnels* (1874).

BEURNONVILLE, PIERRE DE RUEL, Marquis de (1752-1821), French general. After service in the colonies, he married a wealthy Creole, and returning to France purchased the post of lieutenant of the Swiss guard of the count of Provence. During the Revolution he was named lieutenant-general, and took an active part in the battles of Valmy and Jemmapes. Minister of war in February 1793, he denounced his old commander, C.F. Dumouriez, to the Convention, and was one of the four deputies sent to watch him. Given over by him to the Austrians on the 3rd of April 1793, Beurnonville was not exchanged until November 1795. He entered the service again, commanded the armies of the Sambre-et-Meuse and of the North, and was appointed inspector of infantry of the army of England in 1798. In 1800 he was sent as ambassador to Berlin, in 1802 to Madrid. Napoleon made him a senator and count of the empire. In 1814 he was a member of the provisional government organized after the abdication of Napoleon, and was created a peer of France. During the Hundred Days he followed Louis XVIII. to Ghent, and after the second restoration was made marquis and marshal of France.

See A. Chaquet, *Les Guerres de la Révolution* (Paris, 1886).

BEUST, FRIEDRICH FERDINAND VON (1809-1886), Austrian statesman, was descended from a noble family which had originally sprung from the Mark of Brandenburg, and of which one branch had been for over 300 years settled in Saxony. He was born on the 13th of January 1809 in Dresden, where his father held office at the Saxon court. After studying at Leipzig and Göttingen he entered the Saxon public service; in 1836 he was made secretary of legation at Berlin, and afterwards held appointments at Paris, Munich and London. In March 1848 he was summoned to Dresden to take the office of foreign minister, but in consequence of the outbreak of the revolution was not appointed. In May he was appointed Saxon envoy at Berlin, and in February 1849 was again summoned to Dresden, and this time appointed minister of foreign affairs, an office which he continued to hold till 1866. In addition to this he held the ministry of education and public worship from 1849 to 1853; that of internal affairs in 1853, and in the same year was appointed minister-president. From the time that he entered the ministry he was, however, the leading member of it, and he was chiefly responsible for the events of 1849. By his advice the king refused to accept the constitution proclaimed by the Frankfort parliament, a policy which led to the outbreak of revolution in Dresden, which was suppressed after four days' fighting by Prussian troops, for whose assistance Beust had asked. On Beust fell also the chief responsibility for governing the country after order was restored, and he was the author of the so-called *coup d'état* of June 1850 by which the new constitution was overthrown. The vigour he showed in repressing all resistance to the government, especially that of the university, and in reorganizing the police, made him one of the most unpopular men among the Liberals, and his name became synonymous with the worst form of reaction, but it is not clear that the attacks on him were justified. After this he was chiefly occupied with foreign affairs, and he soon became one of the most conspicuous figures in German politics. He was the leader of that party which hoped to maintain the independence of the smaller states, and was the opponent of all attempts on the part of Prussia to attract them into a separate union; in 1849-1850 he had been obliged to join the "three kings' union" of Prussia, Hanover and Saxony, but he was careful to keep open a loophole for withdrawal, of which he speedily availed himself. In the crisis of 1851 Saxony was on the side of Austria, and he supported the restoration of the diet of the confederation. In 1854 he took part in the Bamberg conferences, in which the smaller German states claimed the right to direct their own policy independent of that of Austria or of Prussia, and he was the leading supporter of the idea of the *Trias*, *i.e.* that the smaller states should form a closer union among themselves against the preponderance of the great monarchies. In 1863 he came forward as a

warm supporter of the claims of the prince of Augustenburg to Schleswig-Holstein (see Schleswig-Holstein Question); he was the leader of the party in the German diet which refused to recognize the settlement of the Danish question effected in 1852 by the treaty of London, and in 1864 he was appointed representative of the diet at the congress of London. He was thus thrown into opposition to the policy of Bismarck, and he was exposed to violent attacks in the Prussian press as a "particularist," *i.e.* a supporter of the independence of the smaller states. The expulsion of the Saxon troops from Rendsburg nearly led to a conflict with Prussia. Beust was accused of having brought about the war of 1866, but the responsibility for this must rest with Bismarck. On the outbreak of war Beust accompanied the king to Prague, and thence to Vienna, where they were received by the emperor with the news of Königgrätz. Beust undertook a mission to Paris to procure the help of Napoleon. When the terms of peace were discussed he resigned, for Bismarck refused to negotiate with him.

After the victory of Prussia there was no place for Beust in Germany, and his public career seemed to be closed, but he quite unexpectedly received an invitation from the emperor of Austria to become his foreign minister. It was a bold decision, for Beust was not only a stranger to Austria, but also a Protestant; but the choice of the emperor justified itself. Beust threw himself into his new position with great energy; it was owing to him that the negotiations with Hungary were brought to a successful issue. When difficulties came he went himself to Budapest, and acted directly with the Hungarian leaders. In 1867 he also held the position of Austrian minister-president, and he carried through the measures by which parliamentary government was restored. He also carried on the negotiations with the pope concerning the repeal of the concordat, and in this matter also did much by a liberal policy to relieve Austria from the pressure of institutions which had checked the development of the country. In 1868, after giving up his post as minister-president, he was appointed chancellor of the empire, and received the title of count. His conduct of foreign affairs, especially in the matter of the Balkan States and Crete, successfully maintained the position of the empire. In 1869 he accompanied the emperor on his expedition to the East. He was still to some extent influenced by the anti-Prussian feeling he had brought from Saxony. He maintained a close understanding with France, and there can be little doubt that he would have welcomed an opportunity in his new position of another struggle with his old rival Bismarck. In 1867, however, he helped to bring the affair of Luxemburg to a peaceful termination. In 1870 he did not disguise his sympathy for France, and the failure of all attempts to bring about an intervention of the powers, joined to the action of Russia in denouncing the treaty of Paris, was the occasion of his celebrated saying that he was nowhere able to find Europe. After the war was over he completely accepted the new organization of Germany.

As early as December 1870 he had opened a correspondence with Bismarck with a view to establishing a good understanding with Germany. Bismarck accepted his advances with alacrity, and the new *entente*, which Beust announced to the Austro-Hungarian delegations in July 1871, was sealed in August by a friendly meeting of the two old rivals and enemies at Gastein.

In 1871 Beust interfered at the last moment, together with Andrássy, to prevent the emperor accepting the federalist plans of Hohenwart. He was successful, but at the same time he was dismissed from office. The precise cause for this is not known, and no reason was given him. At his own request he was appointed Austrian ambassador at London; in 1878 he was transferred to Paris; in 1882 he retired from public life. He died at his villa at Altenberg, near Vienna, on the 24th of October 1886, leaving two sons, both of whom entered the Austrian diplomatic service. His wife, a Bavarian lady, survived him only a few weeks. His elder brother Friedrich Konstantin (1806-1891), who was at the head of the Saxon department for mines, was the author of several works on mining and geology, a subject in which other members of the family had distinguished themselves.

Beust was in many ways a diplomatist of the old school. He had great social gifts and personal graces; he was proud of his proficiency in the lighter arts of composing waltzes and *vers de société*. His chief fault was vanity, but it was an amiable weakness. It was more vanity than rancour which made him glad to appear even in later years as the great opponent of Bismarck; and if he cared too much for popularity, and was very sensitive to neglect, the saying attributed to Bismarck, that if his vanity were taken away there would be nothing left, is very unjust. He was apt to look more to the form than the substance, and attached too much importance to the verbal victory of a well-written despatch; but when the opportunity was given him he showed higher qualities. In the crisis of 1849 he displayed considerable courage, and never lost his judgment even in personal danger. If he was defeated in his German policy, it must be remembered that Bismarck held all the good cards, and in 1866 Saxony was the only one of the smaller states which entered on the war with an army properly equipped and ready at the moment. That he was no mere reactionary the whole course of his government in Saxony, and still more in Austria, shows. His Austrian policy has been much criticized, on the ground that in establishing the system of dualism he gave too much to Hungary, and did not really understand Austrian affairs; and the Austro-Hungarian crisis during the early years of the present century

has given point to this view. Yet it remains the fact that in a crisis of extraordinary difficulty he carried to a successful conclusion a policy which, even if it was not the best imaginable, was probably the best attainable in the circumstances.

Beust was the author of reminiscences: *Aus drei Viertel-Jahrhunderten* (2 vols., Stuttgart, 1887; English trans. edited by Baron H. de Worms); and he also wrote a shorter work, *Erinnerungen zu Erinnerungen* (Leipzig, 1881), in answer to attacks made on him by his former colleague, Herr v. Frieseri, in his reminiscences. See also Ebeling, *F.F. Graf v. Beust* (Leipzig, 1876), a full and careful account of his political career, especially up to 1866; *Diplomatic Sketches: No. 1, Count Beust*, by Outsider (Baron Carl v. Malortie); Flathe, *Geschichte van Sachsen*, vol. iii. (Gotha, 1877); Friesen, *Erinnerungen aus meinem Leben* (Dresden, 1880).

(J. W. He.)

BEUTHEN, or Niederbeuthen, a town of Germany, in the north of Prussian Silesia, on the Oder, the capital of the mediatized principality of Carolath-Beuthen. Pop. (1900) 3164. The chief industries of the place are straw-plaiting, boat-building, and the manufacture of pottery; and a considerable traffic is carried on by means of the river.

BEUTHEN, or Oberbeuthen, a town of Germany, in the extreme south-east of Prussian Silesia, on the railway between Breslau and Cracow, 121 m. S.E. of the former. Pop. (1905) 60,078. It is the centre of the mining district of Upper Silesia, and its population is mainly engaged in such operations and in iron and zinc smelting. Beuthen is an old town, and was formerly the capital of the Bohemian duchy of Beuthen, which in 1620 was ultimately granted, as a free lordship of the Empire, to Lazarus, Baron Henckel von Donnersmarck, by the emperor Ferdinand II., and parts of which, now mediatized, are held by two branches of the counts Henckel von Donnersmarck.

BEVEL (from an O. Fr. word, cf. mod. *biveau*, a joiner’s instrument), the inclination of one surface of a solid body to another; also, any angle other than a right angle, and particularly, in joinery, the angle to which a piece of timber has to be cut. The mechanic’s instrument known as a bevel consists of a rule with two arms so jointed as to be adjustable to any angle. In heraldry, a bevel is an angular break in a line. Bevelment, as a term of crystallography, means the replacement of an edge of a crystal by two planes equally inclined to the adjacent planes. As an architectural term “bevel” is a sloped or canted edge given to a sill or horizontal course of stone, but is more frequently applied to the canted edges worked round the projecting bands of masonry which for decorative purposes are employed on the quoins of walls or windows and in some cases, with vertical joints, cover the whole wall. When the outer face of the stone band is left rough so that it forms what is known as rusticated masonry, the description would be bevelled and rusticated. The term is sometimes applied to the splaying of the edges of a window on the outside, but the wide expansion made inside in order to admit more light is known as a splay.

BEVERLEY, WILLIAM ROXBY (1814?-1889), English artist and scene-painter, was born at Richmond, Surrey, about 1814, the son of William Roxby, an actor-manager who had assumed the name of Beverley. His four brothers and his sister all entered the theatrical profession, and Beverley soon became both actor and scene-painter. In 1831 his father and his brothers took over the old Durham circuit, and he joined them to play heavy comedy for several seasons, besides painting scenery. His work was first seen in 1831 in London, for the pantomime *Baron Munchausen* at the Victoria theatre, which was being managed by his brother Henry. He was

appointed scenic director for the Covent Garden operas in 1853. In 1854 he entered the service of the Drury Lane theatre under the management of E.T. Smith, and for thirty years continued to produce wonderful scenes for the pantomimes, besides working for Covent Garden and a number of other theatres. In 1851 he executed part of a great diorama of Jerusalem and the Holy Land, and produced dioramic views of the ascent of Mont Blanc, exhibited at the Egyptian Hall, Piccadilly, and in 1884 a panorama of the Lakes of Killarney. He was a frequent exhibitor of sea pictures at the Royal Academy from 1865 to 1880. In 1884 failing eyesight put an end to his painting. He died in comparative poverty at Hampstead on the 17th of May 1889. He was the last of the old school of one surface painters, and famed for the wonderful atmospheric effects he was able to produce. Although he was skilled in all the mechanical devices of the stage, and painted in 1881 scenery for *Michael Strogoff* at the Adelphi, in which for the first time in England the still life of the stage was placed in harmony with the background, he was strongly opposed to the new school of scene-builders.

BEVERLEY, a market town and municipal borough in the Holderness parliamentary division of the East Riding of Yorkshire, England, 8 m. N.N.W. of Hull by a branch of the North-Eastern railway. Pop. (1901) 13,183. It lies in a level country east of the line of slight elevations known as the Wolds, near the river Hull, and has communication by canal with Hull. The church of St John the Evangelist, commonly called Beverley Minster, is a magnificent building, exceeding in size and splendour some of the English cathedrals. A monastery was founded here by John of Beverley (*c.* 640-721), a native of the East Riding, who was bishop successively of Hexham and of York, and was canonized in 1037. A college of secular canons followed in the 10th century, the provostship of which subsequently became an office of high dignity, and was held by Thomas Becket, afterwards archbishop of Canterbury. Of the existing building, the easternmost bay of the nave, the transepts with east and west aisles, the choir with aisles and short transepts, and the Lady chapel, are Early English, a superb example of the finest development of that style. The remainder of the nave is Decorated, excepting the westernmost bay which is Perpendicular, as is the ornate west front with its graceful flanking towers. The north porch is also a beautiful example of this style. The most noteworthy details within the church are the exquisite Early English staircase which led to the chapter house (no longer remaining), and the Percy tomb, a remarkable example of Decorated work, commemorating Eleanor, wife of Henry Percy (d. 1328). The church of St Mary is a cruciform building with central tower, almost entirely of Decorated and Perpendicular work. Though overshadowed by the presence of the minster, it is yet a very fine example of its styles, its most noteworthy features being the tower and the west front. Beverley was walled, and one gate of the 15th century remains; there are also some picturesque old houses. The industries are tanning, iron-founding, brewing and the manufacture of chemicals; and there is a large agricultural trade. Beverley is the seat of a suffragan bishop in the diocese of York. The municipal borough is under a mayor, 6 aldermen and 18 councillors, and has an area of 2404 acres, including a large extent of common pasture land.

Beverley (Beverlac) is said to be on the site of a British settlement. Evidently a church had existed there before 704, since in that year it was restored by St John of Beverley, who also founded a monastery there and was himself buried in the church. In the devastation of the north of England which followed the Conquest, Beverley is said to have escaped by a miracle attributed to St John; the Norman leader, while about to enter and pillage the church, fell from his horse dead, and the king, thinking this a sign that the town was under the protection of heaven, exempted it from pillage. From the time of St John of Beverley until the dissolution of the monasteries, the manor and town of Beverley belonged to the archbishopric of York, and is said to have been held under a charter of liberties supposed to have been granted by King Æthelstan in 925. This charter, besides other privileges, is said to have granted sanctuary in Beverley, and the “leuga” over which this privilege extended was afterwards shown to include the whole town. Confirmations of Æthelstan’s charter were granted by Edward the Confessor and other succeeding kings. In the reign of Henry I., Thurstan, archbishop of York, gave the burgesses their first charter, which is one of the earliest granted to any town in England. In it he granted them the same privileges as the citizens of York, among these being a gild merchant and freedom from toll throughout the whole of Yorkshire, with right to take it at all the markets and fairs in their town except at the three principal fairs, the toll of which belonged to the archbishop. In 1200 King John granted the town a new charter, for which the burgesses had to pay 500 marks. Other charters generally confirming the first were granted to the town by most of the early kings. The incorporation charter granted by Queen Elizabeth in 1573 was confirmed by Charles I. in 1629 and Charles II. in 1663, and renewed by James II. on his accession. Parliamentary representation by two members began in the reign of Edward I., but lapsed, until the corporation charter of 1573, from which date it continued until the Reform Act of 1867. In 1554-1555 Queen Mary granted the three fairs on the feasts of St John the Confessor, the

Translation of St John and the Nativity of St John the Baptist, together with the weekly markets on Wednesday and Saturday, which had been held by the archbishops of York by traditional grant of Edward the Confessor to the burgesses of the town. Cloth-weaving was one of the chief industries of Beverley; it is mentioned and appears to have been important as early as 1315.

See *Victoria County History—Yorkshire*; G. Poulson, *Beverlac; Antiquities and History of Beverley and of the Provostry, &c., of St John's* (2 vols., 1829); G. Oliver, D.D., *History and Antiquities of Beverley, &c*. (1829).

BEVERLY, a seaboard city of Essex county, Massachusetts, U.S.A., situated on the N. shore of Massachusetts Bay, opposite Salem. It is 18 m. from Boston on the Boston & Maine railway. Pop. (1890) 10,821; (1900) 13,884, of whom 2814 were foreign-born; (1910, census) 18,650. The land area of the city is about 15 sq. m. The surface is the typical glacial topography, with a few low, rocky hills, less than 100 ft. in height. There are beautiful drives through well-wooded districts, studded with handsome summer houses. In the city are a public library, the Beverly hospital, the New England industrial school for deaf mutes (organized, 1876; incorporated, 1870), and the Beverly historical society (1891), which owns a large colonial house, in which there is a valuable historical collection. The city has an excellent public school system. There are a number of manufacturing establishments; in 1905 the total factory product of the city was valued at $4,101,168, boots and shoes accounting for more than one-half of the total. Leather and shoe machinery also are important manufactures; and the main plant of the United Shoe Machinery Corporation is located here. Market gardening is a considerable industry, and large quantities of vegetables are raised under glass for the Boston markets. Fishing is an industry no longer of much importance. Beverly is connected by a regular line of oil-steamers with Port Arthur, Texas, and is the main distributing point for the Texas oil fields. The first settlement within the limits of Beverly was made by Roger Conant in 1626. The town was a part of Salem until 1668, when it was incorporated as a separate township; in 1894 it was chartered as a city. In 1788 there was established here the first cotton mill to be successfully operated in the United States. The manufacture of Britannia ware was begun in 1812. George Cabot lived for many years in Beverly, which he represented in the provincial congress (1779); Nathan Dane (1752-1835) was also a resident; and it was the birthplace of Wilson Flagg (1805-1884), the author of *Studies in the Field and Forest* (1857), *The Woods and By-Ways of New England* (1872), *The Birds and Seasons of New England* (1875), and *A Year with the Birds* (1881). It was also the birthplace and early home of Lucy Larcom (1826-1893), and the scene of much of her *Story of a New England Girlhood* (Boston, 1889).

BEVIS OF HAMPTON, the name of an English metrical romance. Bevis is the son of Guy, count of Hampton (Southampton) and his young wife, a daughter of the king of Scotland. The countess asks a former suitor, Doon or Devoun, emperor of Almaine (Germany), to send an army to murder Guy in the forest. The plot is successful, and she marries Doon. When threatened with future vengeance by her ten-year-old son, she determines to make away with him also, but he is saved from death by a faithful tutor, is sold to heathen pirates, and reaches the court of King Hermin, whose realm is variously placed in Egypt and Armenia (Armorica). The exploits of Bevis, his love for the king's daughter Josiane, his mission to King Bradmond of Damascus with a sealed letter demanding his own death, his imprisonment, his final vengeance on his stepfather are related in detail. After succeeding to his inheritance he is, however, driven into exile and separated from Josiane, to whom he is reunited only after each of them has contracted, in form only, a second union. The story also relates the hero's death and the fortunes of his two sons.

The oldest extant version appears to be *Boeve de Haumtone*, an Anglo-Norman text which dates from the first half of the 13th century. The English metrical romance, *Sir Beues of Hamtoun*, is founded on some French original varying slightly from those which have been preserved. The oldest MS. dates from the beginning of the 14th century. The French *chanson de geste*, *Beuve d'Hanstone*, was followed by numerous prose versions. The printed editions of the story were most numerous in Italy, where *Bovo d'Antona* was the subject of more than one poem, and the tale was interpolated in the *Reali di Francia*, the Italian compilation of Carolingian legend. Although the English version that we possess is based on a French original, it seems probable that the legend took shape on English soil in the 10th century, and that it

originated with the Danish invaders. Doon may be identified with the emperor Otto the Great, who was the contemporary of the English king Edgar of the story. R. Zenker (*Boeve-Amlethus*, Berlin and Leipzig, 1904) establishes a close parallel between Bevis and the Hamlet legend as related by Saxo Grammaticus in the *Historia Danica*. Among the more obvious coincidences which point to a common source are the vengeance taken on a stepfather for a father's death, the letter bearing his own death-warrant which is entrusted to the hero, and his double marriage.[1] The motive of the feigned madness is, however, lacking in Bevis. The princess who is Josiane's rival is less ferocious than the Hermuthruda of the Hamlet legend, but she threatens Bevis with death if he refuses her. Both seem to be modelled on the type of Thyrdo of the Beowulf legend. A fanciful etymology connecting Bevis (Boeve) with Béowa (Béowulf), on the ground that both were dragon slayers, is inadmissible.

Bibliography.—*The Romance of Sir Beues of Hamtoun*, edited from six MSS. and the edition (without date) of Richard Pynson, by E. Kölbing (Early Eng. Text Soc., 1885-1886-1894); A. Stimming, "Der anglonormannische Boeve de Haumtone," in H. Suchier's *Bibl. Norm*. vol. vii. (Halle, 1899); the Welsh version, with a translation, is given by R. Williams, *Selections of the Hengwrt MSS*. (vol. ii., London, 1892); the old Norse version by G. Cederschiöld, *Fornsogur Sudhrlanda* (Lund, 1884); A. Wesselofsky, "Zum russischen Bovo d'Antona" (in *Archiv für slav. Phil*. vol. viii., 1885); for the early printed editions of the romance in English, French and Italian see G. Brunet, *Manuel du libraire*, *s.vv.* Bevis, Beufues and Buovo.

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1 On double marriage in early romance see G. Paris, "La Légende du mari aux deux femmes," in *La Poésie du moyen âge* (2nd series, Paris, 1895); and A. Nutt, "The Lai of Eliduc," &c, in *Folk-Lore*, vol. iii. (1892).

BEWDLEY, a market town and municipal borough in the Bewdley parliamentary division of Worcestershire, England; 137 m. N.W. by W. from London and 17¼ N. by W. from Worcester by rail. Pop. (1901) 2866. The Worcester-Shrewsbury line of the Great Western is here joined by lines east from Birmingham and west from Tenbury. Bewdley is pleasantly situated on the sloping right bank of the Severn, on the eastern border of the forest of Wyre. A bridge by Telford (1797) crosses the river. A free grammar school, founded in 1591, was re-founded by James I. in 1606, and possesses a large library bequeathed in 1812. The town manufactures combs and horn goods, brass and iron wares, leather, malt, bricks and ropes. The town is governed by a mayor, 4 aldermen and 12 councillors. Area, 2105 acres.

Bewdley (*i.e.* Beaulieu) is probably referred to in the Domesday survey as "another Ribbesford," and was held by the king. The manor, then called *Bellus Locus* or Beaulieu on account of its beautiful situation, was afterwards granted to the Mortimers, in whose family it continued until it was merged in the crown on the accession of Edward IV. It is from this time that Bewdley dates its importance. Through its situation on the Severn it was connected with the sea, and in 1250 a bridge, the only one between it and Worcester, was built across the river and added greatly to the commerce of the town. From Edward IV. Bewdley received its charter in 1472, and there appears to be no evidence that it was a borough before this time. Other charters were granted in 1605, 1685 and 1708. By James I.'s charter the burgesses sent one member to parliament, and continued to do so until 1885. A fair and a market on Wednesday were granted by Edward III. in 1373 to his grand-daughter Philippa, wife of Edmund Mortimer, and confirmed to Richard, duke of York, by Henry VI. Edward IV. also granted the burgesses a market on Saturdays, and three fairs, which were confirmed to them by Henry VII. Coal-mines were worked in Bewdley as early as 1669, and the town was formerly noted for making caps.

BEWICK, THOMAS (1753-1828), English wood-engraver, was born at Cherryburn, near Newcastle-on-Tyne, in August 1753. His father rented a small colliery at Mickleybank, and sent his son to school at Mickley. He proved a poor scholar, but showed, at a very early age, a remarkable talent for drawing. He had no tuition in the art, and no models save natural objects. At the age of fourteen he was apprenticed to Mr Beilby, an engraver in Newcastle. In his office Bewick engraved on wood for Dr Hutton a series of diagrams illustrating a treatise on mensuration. He seems thereafter to have devoted himself entirely to engraving on wood, and in 1775 he received a premium from the Society for the Encouragement of Arts and Manufactures for a woodcut of the "Huntsman and the Old Hound." In 1784 appeared his *Select Fables*, the

engravings in which, though far surpassed by his later productions, were incomparably superior to anything that had yet been done in that line. The *Quadrupeds* appeared in 1790, and his great achievement, that with which his name is inseparably associated, the *British Birds*, was published from 1797-1804. Bewick, from his intimate knowledge of the habits of animals acquired during his constant excursions into the country, was thoroughly qualified to do justice to his great task. Of his other productions the engravings for Goldsmith's *Traveller* and *Deserted Village*, for Parnell's *Hermit*, for Somerville's *Chase*, and for the collection of *Fables of Aesop and Others*, may be specially mentioned. Bewick was for many years in partnership with his former master, and in later life had numerous pupils, several of whom gained distinction as engravers. He died on the 8th of November 1828.

His autobiography, *Memoirs of Thomas Bewick, by Himself*, appeared in 1862.

BEXHILL, a municipal borough and watering-place in the Rye parliamentary division of Sussex, England, 62 m. S.E. by S. from London, on the London, Brighton & South Coast, and the South-Eastern & Chatham railways. Pop. (1891) 5206; (1901) 12,213. The ancient village, with the Norman and Early English church of St Peter, lies inland on the slope of the low hills fringing the coast, but the watering-place on the shore has developed very rapidly since about 1884, owing to the exertions of Earl De la Warr, who owns most of the property. It has a marine parade, pier, golf links, and the usual appointments of a seaside resort, while the climate is bracing and the neighbouring country pleasant. Bexhill was incorporated in 1902, the corporation consisting of a mayor, 6 aldermen and 18 councillors. Area, 8013 acres.

BEXLEY, NICHOLAS VANSITTART, Baron (1766-1851), English politician, was the fifth son of Henry Vansittart (d. 1770), governor of Bengal, and was born in London on the 29th of April 1766. Educated at Christ Church, Oxford, he took his degree in 1787, and was called to the bar at Lincoln's Inn in 1791. He began his public career by writing pamphlets in defence of the administration of William Pitt, especially on its financial side, and in May 1796 became member of parliament for Hastings, retaining his seat until July 1802, when he was returned for Old Sarum. In February 1801 he was sent on a diplomatic errand to Copenhagen, and shortly after his return was appointed joint secretary to the treasury, a position which he retained until the resignation of Addington's ministry in April 1804. Owing to the influence of his friend, Ernest, duke of Cumberland, he became secretary for Ireland under Pitt in January 1805, resigning his office in the following September. With Addington, now Viscount Sidmouth, he joined the government of Fox and Grenville as secretary to the treasury in February 1806, leaving office with Sidmouth just before the fall of the ministry in March 1807. During these and the next few years Vansittart's reputation as a financier was gradually rising. In 1809 he proposed and carried without opposition in the House of Commons thirty-eight resolutions on financial questions, and only his loyalty to Sidmouth prevented him from joining the cabinet of Spencer Perceval as chancellor of the exchequer in October 1809. He opposed an early resumption of cash payments in 1811, and became chancellor of the exchequer when the earl of Liverpool succeeded Perceval in May 1812. Having forsaken Old Sarum, he had represented Helston from November 1806 to June 1812; and after being member for East Grinstead for a few weeks, was returned for Harwich in October 1812.

When Vansittart became chancellor of the exchequer the country was burdened with heavy taxation and an enormous debt. Nevertheless, the continuance of the war compelled him to increase the custom duties and other taxes, and in 1813 he introduced a complicated scheme for dealing with the sinking fund. In 1816, after the conclusion of peace, a large decrease in taxation was generally desired, and there was a loud outcry when the chancellor proposed only to reduce, not to abolish, the property or income tax. The abolition of this tax, however, was carried in parliament, and Vansittart was also obliged to remit the extra tax on malt, meeting a large deficiency principally by borrowing. He devoted considerable attention to effecting real or supposed economies with regard to the national debt. He carried an elaborate scheme for handing over the payment of naval and military pensions to contractors, who would be paid a fixed annual sum for forty-five years; but no one was found willing to undertake this contract, although a modified plan on the same lines was afterwards adopted. Vansittart became very unpopular in the country, and he resigned his office in December 1822. His system of finance

was severely criticized by Huskisson, Tierney, Brougham, Hume and Ricardo. On his resignation Liverpool offered Vansittart the post of chancellor of the duchy of Lancaster. Accepting this offer in February 1823, he was created Baron Bexley in March, and granted a pension of £3000 a year. He resigned in January 1828. In the House of Lords Bexley took very little part in public business, although he introduced the Spitalfields weavers bill in 1823, and voted for the removal of Roman Catholic disabilities in 1824. He took a good deal of interest in the British and Foreign Bible Mission, the Church Missionary Society and kindred bodies, and assisted to found King's College, London. He died at Foot's Cray, Kent, on the 8th of February 1851. His wife, whom he married in July 1806, was Isabella (d. 1810), daughter of William Eden, 1st Baron Auckland, and as he had no issue the title became extinct on his death. There are nine volumes of Vansittart's papers in the British Museum.

See Spencer Walpole, *History of England* (London, 1890); S.C. Buxton, *Finance and Politics* (London, 1888).

BEXLEY, an urban district in the Dartford parliamentary division of Kent, England, 12 m. S.E. by E. of London by the South-Eastern & Chatham railway. Pop. (1901) 12,918. Bexley, which is mentioned in Domesday Book, has had a church since the 9th century. The present church of St Mary is Early English and later. With the rental of the manor of Bexley, William Camden, the antiquary, founded the ancient history professorship at Oxford. Hall Place, which contains a fine Jacobean staircase and oak-panelled hall, is said to occupy the site of the dwelling-place of the Black Prince. The course of Watling Street may be traced over Bexley Heath, where, too, there exist deep pits, widening into vaults below, and probably of British origin.

BEY (a modern Turk, word, the older form being *beg*, cf. Pers. *baig*), the administrator of a district, now generally an honorific title throughout the Turkish empire; the granting of this in Egypt is made by the sultan of Turkey through the khedive. In Tunis "bey" has become the hereditary title of the reigning sovereigns (see Tunisia).

BEYBAZAR, the chief town of a *kaza* of the Angora vilayet in Asiatic Turkey, situated on an affluent of the Sakaria (anc. *Sangarius*), about 52 m. W. of Angora. It corresponds to the anc. *Lagania*, renamed *Anastasiopolis* under the emperor Anastasius (491-518), a bishopric by the 5th century. Its well-built wooden houses cover the slopes of three hills at the mouth of a gorge filled with fruit gardens and vineyards. The chief products are rice, cotton and fruits. From Beybazar come the fine pears sold in Constantinople as "Angora pears"; its musk-melons are equally esteemed; its grapes are used only for a sweetmeat called *jevizli-sujuk* ("nutty fruit sausage"). There are few remains of antiquity apart from numerous rock-cut chambers lining the banks of the stream. Pop. about 4000 to 5000.

BEYLE, MARIE HENRI (1783-1842), better known by his *nom de plume* of Stendhal, French author, was born at Grenoble on the 23rd of January 1783. With his father, who was an *avocat* in the parlement of Grenoble, he was never on good terms, but his intractable disposition sufficiently explains his unhappy childhood and youth. Until he was twelve years old he was educated by a priest, who succeeded in inspiring him with a lasting hatred of clericalism. He was then sent to the newly established École Centrale at Grenoble, and in 1799 to Paris with a letter of introduction to the Daru family, with which the Beyles were connected. Pierre Daru offered him a place in the ministry for war, and with the brothers Daru he followed Napoleon to

Italy. Most of his time in Italy was spent at Milan, a city for which he conceived a lasting attachment. Much of his *Chartreuse de Parme* seems to be autobiographical of this part of his life.

He was a spectator of the battle of Marengo, and afterwards enlisted in a dragoon regiment. With rapid promotion he became adjutant to General Michaud; but after the peace of Amiens in 1802 he returned to study in Paris. There he met an actress, Mélanie Guilbert, whom he followed to Marseilles. His father cut off his supplies on hearing of this escapade, and Beyle was reduced to serving as clerk to a grocer. Mélanie Guilbert, however, soon abandoned him to marry a Russian, and Beyle returned to Paris. Through the influence of Daru he obtained a place in the commissariat, which he filled with some distinction from 1806 to 1814. Charged with raising a levy in Brunswick of five million francs, he extracted seven; and during the retreat from Moscow he discharged his duties with efficiency. On the fall of Napoleon he refused to accept a place under the new régime, and retired to Milan, where he met Silvio Pellico, Manzoni, Lord Byron and other men of note. At Milan he contracted a *liaison* with a certain Angelina P., whom he had admired fruitlessly during his earlier residence in that city. In 1814 he published, under the pseudonym of Alexandre César Bombet, his *Lettres écrites de Vienne en Aulriche sur le célèbre compositeur, Joseph Haydn, suivies d'une vie de Mozart, et de considérations sur Métastase et l'état présent de la musique en Italie*. His letters on Haydn were borrowed from the *Haydini* (1812) of Joseph Carpani, and the section on Mozart had no greater claim to originality. The book was reprinted (1817) as *Vies de Haydn, Mozart et Métastase*. His *Histoire de la peinture en Italic* (2 vols., 1817) was originally dedicated to Napoleon.

His friendship with some Italian patriots brought him in 1821 under the notice of the Austrian authorities, and he was exiled from Milan. In Paris he felt himself a stranger, as he had never recognized French contemporary art in literature, music or painting. He frequented, however, many literary salons in Paris, and found some friends in the "*idéologues*" who gathered round Destutt de Tracy. He was the most closely allied with Prosper Mérimée, a *dilettante* and an ironist like himself. He published at this time his *Essai sur l'amour* (1822), of which only seventeen copies were sold in eleven years, though it afterwards became famous, *Racine et Shakespeare* (1823-1825), *Vie de Rossini* (1824), *D'un nouveau complot centre les industriels* (1825), *Promenades dans Rome* (1829), and his first novel, *Armance, ou quelques scenes de Paris en 1827* (1827). After the Revolution of 1830 he was appointed consul at Trieste, but the Austrian government refused to accept him, and he was sent to Civita Vecchia instead. *Le Rouge et le noir, chronique du XIXe siècle* (2 vols., 1830) appeared in Paris after his departure, but attracted small notice. He had published in 1838 *Mémoires d'un touriste*, and in 1839 *La Chartreuse de Parme* (2 vols.), which was the last of his publications, and the first to secure any popular success, though his earlier writings had been regarded as significant by a limited public. It was enthusiastically reviewed by Balzac in his *Revue Parisienne* (1840). Beyle remained at Civita Vecchia, discharging his duties as consul perfunctorily and with frequent intervals of absence until his death, which took place in Paris on the 23rd of March 1842. He wrote his own epitaph,[1] describing himself as a Milanese.

His posthumous works include a fragmentary *Vie de Napoléon* (1875); *Mélanges d'art et de littérature* (1867); *Chroniques italiennes* (1885), including "*L'Abbesse de Castro*," "*Les Cenci*," "*Vittoria Accoramboni*," "*Vanina Vanini*," "*La Duchesse de Palliano*," some of which has appeared separately; *Romans et nouvelles* and *Nouvelles inédites* (1855); *Correspondance* (2 vols., 1855); Lamiel (ed. C. Stryienski, 1889); his *Journal 1801-1814* (ed. Stryienski and F. de Nion, 1888), of which the section dealing with the Russian and German campaigns is unfortunately lost; *Vie de Henri Brulard* (1890), a disguised autobiography, chiefly the history of his numerous love affairs; *Lettres intimes* (1892); *Lucien Leuwen* (ed. J. de Mitty, 1894); *Souvenirs d'égotisme* (ed. C. Stryienski, 1892), autobiography and unpublished letters.

Stendhal's reputation practically rests on the two novels *Le Rouge et le noir* and *La Chartreuse de Parme*. In the former of these he borrowed his plot from events which had actually happened some years previously. Julien Sorel in the novel is tutor in a noble family and seduces his pupil's mother. He eventually kills her to avenge a letter accusing him to the family of his betrothed, Mlle de la Mole. Julien is a picture of Beyle as he imagined himself to be. The *Chartreuse de Parme* has less unity of purpose than *Le Rouge et le noir*. For its setting the author drew largely on his own experiences. Fabrice's experiences at Waterloo are his own in the Italian campaign, and the countess Pietranera is his Milanese Angelina. But of the two novels it is more picturesque and has been more popular. Stendhal's real vogue dates from the early sixties, but his importance is essentially literary. In spite of his egotism and the limitations of his ideas, his acute analysis of the motives of his personages has appealed to successive generations of writers, and a great part of the development of the French novel must be traced to him. Brunetière has pointed out (*Manual of French Lit.*, Eng. trans., 1898) that Stendhal supplied the Romanticists with the notion of the interchange of the methods and effects of poetry, painting and music, and that in his worship of Napoleon he agreed with their glorification of individual energy. Stendhal, however, thoroughly disliked the Romanticists,

though Sainte-Beuve acknowledged (*Causeries du lundi*, vol. ix.) that his books gave ideas. Taine (*Essais de critique et d'histoire*, 1857) found in him a great psychologist; Zola (*Romanciers naturalistes*, 1881) actually claimed him as the father of the naturalist school; and Paul Bourget (*Essais de psychologie contemporaine*, 1883) cited *Le Rouge et le noir* as one of the classic novels of analysis.

The 1846 edition of *La Chartreuse de Parme* contains a prefatory notice by R. Colomb, and a reprint of Balzac's article. In addition to the authorities already mentioned see the essay on Beyle (1850) by Prosper Mérimée; A.A. Paton, *Henry Beyle, a Critical and Biographical Study* (1874); Adolphe Paupe, *Histoire des œuvres de Stendhal* (1903); A. Chuquet, *Stendhal-Beyle* (1902); a review by R. Doumic (*Revue des deux mondes*, February 1902), deprecating the excessive attention paid to Beyle's writings; and Edouard Rod, *Stendhal* (1892) in the "Grands écrivains français" series. See also *Correspondance de Stendhal, 1800-1842*, with preface by M. Barrés (Paris, 1908).

1 Quì giace Arrigo Beyle Milanese; visse, scrisse, amò.

BEYRICH, HEINRICH ERNST VON (1815-1896), German geologist, was born at Berlin on the 31st of August 1815, and educated at the university in that city, and afterwards at Bonn, where he studied under Goldfuss and Nöggerath. He obtained his degree of Ph.D. in 1837 at Berlin, and was subsequently employed in the mineralogical museum of the university, becoming director of the palaeontological collection in 1857, and director of the museum in 1875. He was one of the founders of the German Geological Society in 1848. He early recognized the value of palaeontology in stratigraphical work; and he made important researches in the Rhenish mountains, in the Harz and Alpine districts. In later years he gave special attention to the Tertiary strata, including the Brown Coal of North Germany. In 1854 he proposed the term Oligocene for certain Tertiary strata intermediate between the Eocene and Miocene; and the term is now generally adopted. In 1865 he was appointed professor of geology and palaeontology in the Berlin University, where he was eminently successful as a teacher; and when the Prussian Geological Survey was instituted in 1873 he was appointed co-director with Wilhelm Hauchecorne (1828-1900). He published *Beiträgezur Kenntniss der Versteinerungen des rheinischen Übergangs-gebirges* (1837); *Über einige böhmische Trilobiten* (1845); *Die Conchylien des norddeutschen Tertiärgebirges* (1853-1857). He died on the 9th of July 1896.

BEYSCHLAG, WILLIBALD (1823-1900), German Protestant divine, was born at Frankfort-on-Main on the 5th of September 1823. He studied theology at Bonn and Berlin (1840-1844), and in 1856 was appointed court-preacher at Karlsruhe. In 1860, he moved to Halle as professor ordinarius of practical theology. A theologian of the mediating school, he became leader of the *Mittelpartei*, and with Albrecht Wolters founded as its organ the *Deutschevangelische Blätter*. As a representative of this party, he took a prominent part in the general synods of 1875 and 1879. His championship of the rights of the laity and his belief in the autonomy of the church led him to advocate the separation of church and state. He died at Halle on the 25th of November 1900. Among his numerous works are *Die Christologie des Neuen Testaments* (1866), *Der Altkatholicismus* (three editions, 1882-1883), *Leben Jesu* (2 vols., 1885; 3rd ed., 1893), *Neutestamentliche Theologie* (2 vols., 1891-1892; 2nd ed., 1896), *Christenlehre auf Grund des kleinen luth. Katechismus* (1900), and an autobiography *Aus meinem Leben* (2 parts, 1896-1898).

See P. Schaff, *Living Divines* (1887); Lichtenberger, *Hist. Germ. Theol.* (1889); Calwer-Zeller, *Kirchenlexikon*.

BEZA (DE BÈSZE), **THEODORE** (1519-1605), French theologian, son of *bailli* Pierre de Bèsze, was born at Vezelai, Burgundy, on the 24th of June 1519. Of good descent, his parents were

known for generous piety. He owed his education to an uncle, Nicolas de Bèsze, counsellor of the Paris parlement, who placed him (1529) under Melchior Wolmar at Orleans, and later at Bourges. Wolmar, who had taught Greek to Calvin, grounded Beza in Scripture from a Protestant standpoint; after his return to Germany (1534) Beza studied law at Orleans (May 1535 to August 1539), beginning practice in Paris (1539) as law licentiate. To this period belong his exercises in Latin verse, in the loose taste of the day, foolishly published by him as *Juvenilia* in 1548. Though not in orders, he held two benefices. A severe illness wrought a change; he married his mistress, Claude Desnoz, and joined the church of Calvin at Geneva (October 1548). In November 1549 he was appointed Greek professor at Lausanne, where he acted as Calvin's adjutant in various publications, including his defence of the burning of Servetus, *De Haereticis a civili magistratu puniendis* (1554). In 1558 he became professor in the Geneva academy, where his career was brilliant. His conspicuous ability was shown in the abortive Colloquy of Poissy (1561). On Calvin's death (1564) he became his biographer and administrative successor. As a historian, Beza, by his chronological inexactitude, has been the source of serious mistakes; as an administrator, he softened the rigour of Calvin. His editions and Latin versions of the New Testament had a marked influence on the English versions of Geneva (1557 and 1560) and London (1611). The famous codex D. was presented by him (1581) to Cambridge University, with a characteristically dubious account of the history of the manuscript. His works are very numerous, but of little moment, except those already mentioned. He resigned his offices in 1600, and died on the 13th of October 1605. He had taken a second wife (1588), Catherine del Piano, a widow, but left no issue. He was not the author of the *Histoire ecclésiastique* (1580), sometimes ascribed to him; nor, probably, of the vulgar skit published under the name of Benedict Panavantius (1551).

See Laingaeus, *De Vita et Moribus* (1585, calumnious); Antoine la Faye, *De Vita et Obitu* (1606, eulogistic); Schlosser, *Leben* (1806); Baum, *Th. Beza*, portrait (1843-1851); Heppe, *Leben* (1861).

(A. Go.*)

BEZANT or Byzant (from Byzantium, the modern Constantinople), originally a Byzantine gold coin which had a wide circulation throughout Europe up to about 1250. Its average value was about nine shillings. Bezants were also issued in Flanders and Spain. Silver bezants, in value from one to two shillings, were in circulation in England in the 13th and 14th centuries. In Wycliffe's translation of the Bible he uses the word for a "talent" (*e.g.* in Luke xv. 8). In heraldry, bezants are represented by gold circles on the shield, and were introduced by the crusaders.

BEZANTÉE, in architecture, a name given to an ornamented moulding much used in the Norman period, resembling the coins (bezants) struck in Byzantium.

BEZBORODKO, ALEKSANDER ANDREEVICH, Prince (1747-1799), grand chancellor of Russia, was born at Gluchova on the 14th of March 1747, and educated at home and in the clerical academy at Kiev. He entered the public service as a clerk in the office of Count P.A. Rumyantsev, then governor-general of Little Russia, whom he accompanied to the Turkish War in 1768. He was present at the engagements of Larga and Kaluga, and at the storming of Silistria. On the conclusion of the peace of Kuchuk-Kainarji (1774) the field marshal recommended him to Catharine II., and she appointed him in 1775 her petition-secretary. He thus had the opportunity of impressing the empress with his brilliant gifts, the most remarkable of which were exquisite manners, a marvellous memory and a clear and pregnant style. At the same time he set to work to acquire the principal European languages, especially French, of which he became a master. It was at this time that he wrote his historical sketches of the Tatar wars and of Little Russia.

His activity was prodigious, and Catharine called him her factotum. In 1780 he accompanied

her on her journey through White Russia, meeting the emperor Joseph, who urged him to study diplomacy. On his return from a delicate mission to Copenhagen, he presented to the empress "a memorial on political affairs" which comprised the first plan of a partition of Turkey between Russia and Austria. This document was transmitted almost word for word to Vienna as the Russian proposals. He followed this up by *Epitomised Historical Information concerning Moldavia*. For these two state papers he was rewarded with the posts of "plenipotentiary for all negotiations" in the foreign office and postmaster-general. From this time he was inseparably associated with Catharine in all important diplomatic affairs, though officially he was the subordinate of the vice-chancellor, Count Alexander Osterman. He wrote all the most important despatches to the Russian ministers abroad, concluded and subscribed all treaties, and performed all the functions of a secretary of state. He identified himself entirely with Catharine's political ideas, even with that of re-establishing the Greek empire under her grandson Constantine. The empress, as usual, richly rewarded her *comes* with pensions and principalities. In 1786 he was promoted to the senate, and it was through him that the empress communicated her will to that august state-decoration. In 1787 he accompanied Catharine on her triumphal progress through South Russia in the capacity of minister of foreign affairs. At Kaniev he conducted the negotiations with the Polish king, Stanislaus II., and at Novuiya Kaidaniya he was in the empress's carriage when she received Joseph II.

The second Turkish War (1787-92) and the war with Gustavus III. (1788-90) heaped fresh burdens on his already heavily laden shoulders, and he suffered from the intrigues of his numerous jealous rivals, including the empress's latest favourite, A.M. Mamonov. All his efforts were directed towards the conclusion of the two oppressive wars by an honourable peace. The pause of Verelå with Gustavus III. (14th of August 1790) was on the terms dictated by him. On the sudden death of Potemkin he was despatched to Jassy to prevent the peace congress there from breaking up, and succeeded, in the face of all but insuperable difficulties, in concluding a treaty exceedingly advantageous to Russia (9th of January 1792). For this service he received the thanks of the empress, the ribbon of St Andrew and 50,000 roubles. On his return from Jassy, however, he found his confidential post of secretary of petitions occupied by the empress's last favourite, P.A. Zubov. He complained of this "diminution of his dignity" to the empress in a private memorial in the course of 1793. The empress reassured him by fresh honours and distinctions on the occasion of the solemn celebration of the peace of Jassy (2nd of September 1793), when she publicly presented him with a golden olive-branch encrusted with brilliants. Subsequently Catharine reconciled him with Zubov, and he resumed the conduct of foreign affairs. He contributed more than any other man to bring about the downfall and the third partition of Poland, for which he was magnificently recompensed. But diplomacy by no means exhausted Bezborodko's capacity for work. He had a large share in the internal administration also. He reformed the post-office, improved the banking system of Russia, regulated the finances, constructed roads, and united the Uniate and Orthodox churches.

On the death of Catharine, the emperor Paul entrusted Bezborodko with the examination of the late empress's private papers, and shortly afterwards made him a prince of the Russian empire, with a correspondingly splendid apanage. On the retirement of Osterman he received the highest dignity in the Russian empire—that of imperial chancellor. Bezborodko was the only Russian minister who retained the favour of Paul to the last. During the last two years of his life the control of Russia's diplomacy was entirely in his hands. His programme at this period was peace with all the European powers, revolutionary France included. But the emperor's growing aversion from this pacific policy induced the astute old minister to attempt to "seek safety in moral and physical repose." Paul, however, refused to accept his resignation and would have sent him abroad for the benefit of his health, had not a sudden stroke of paralysis prevented Bezborodko from taking advantage of his master's kindness. He died at St Petersburg on the 6th of April 1799. In private life Bezborodko was a typical Catharinian, corrupt, licentious, conscienceless and self-seeking. But he was infinitely generous and affectionate, and spent his enormous fortune liberally. His banquets were magnificent, his collections of pictures and statues unique in Europe. He was the best friend of his innumerable poor relatives, and the Maecenas of all the struggling authors of his day. Sycophantic he might have been, but he was neither ungrateful nor vindictive. His patriotism is as indisputable as his genius.

See *Sbornik* (Collections) of the *Imperial Russian Historical Society* (Fr. and Russ.), vols. 60-100 (St Petersburg, 1870-1904); Nikolai Ivanovich Grigorovich, *The Chancellor A.A. Bezborodko in Connexion with the Events of His Time* (Rus., St Petersburg, 1879-1881).

(R. N. B.)

BEZEL (from an O. Fr. word, cf. Mod. Fr. *biseau*, *basile*, possibly connected with Lat. *bis*,

twice), a sloping edge, as of a cutting tool, also known as basil. In jewelry, the term is used for the oblique sides or faces of a gem; the rim which secures the crystal of a watch in position or a jewel in its setting, and particularly the enlarged part of a ring on which the device is engraved (see Ring).

BÉZIERS, a town of southern France, capital of an arrondissement in the department of Hérault, 47 m. S.W. of Montpellier by rail. Pop. (1906) 46,262. Béziers is situated in a wine-growing district on a hill on the left bank of the river Orb, which is joined at this point by the Canal du Midi. The Allées Paul Riquet, named after the creator of the canal, occupy the centre of Béziers and divide the old town with its maze of narrow and irregular streets from the new quarter to the east. They form a long and shady promenade, terminating at one end in the Place de la République and the theatre, the front of which is decorated with bas-reliefs by David d'Angers, and at the other in a beautiful park, the Plateau des Poétes. The most interesting portion of the town is the extreme west where the old ramparts overlook the Orb. Above them towers St Nazaire, the finest of the churches of Béziers; it dates from the 12th to the 14th centuries and is a good specimen of the ecclesiastical fortification common in southern France. Its chief artistic features are the rose window in the western façade, and the stained glass and curious iron grilles of the choir-windows, which belong to the 14th century. Adjoining the south transept there are Gothic cloisters of the 14th century. The Orb is crossed by four bridges, the railway bridge, an ancient bridge of the 13th or 14th century, a modern bridge and the fine aqueduct by which the Canal du Midi is carried over the river. About half a mile to the south-west of the town are the locks of Fonserannes, in which in 330 yds. the water of the canal descends 80 ft. to reach the level of the Orb. There are remains of a Roman arena which have been built into the houses of the rue St Jacques. Béziers is seat of a sub-prefect and has tribunals of first instance and of commerce, communal colleges and several learned societies. It is an agricultural market and carries on an active trade in wine, brandy, fruit, leather and sulphur. Its industries are chiefly connected with the wine trade (cask and cork making, &c.) and there are important distilleries. It also has iron-works and tanneries.

The Romans established a colony at Béziers, and it was the headquarters of the seventh legion, under the title of *Baeterrae Septimanorum*. The present name occurs in the form *Besara* as early as Festus Avienus (later 4th century). The town was completely destroyed in 1209 by the forces of Simon de Montfort in the crusade against the Albigenses, on which occasion 20,000 persons were massacred. The walls were rebuilt in 1289; but the town again suffered severely in the civil and religious wars of the 16th century, and all its fortifications were destroyed in 1632.

BÉZIQUE (probably from Span. *besico*, little kiss, in allusion to the meeting of the queen and knave, an important feature in the game), a game at cards played with two similar packs from which the twos, threes, fours, fives and sixes have been rejected, shuffled together and used as one. It is modelled on a group of card games which possess many features in common; the oldest of these is *mariage*, then follow *brusquembille, l'homme de brou, briscan* or *brisque*, and *cinq-cents*. Bézique (also called *besi* and *besigue*) is, in fact, *brisque* played with a double pack, and with certain modifications rendered necessary by the introduction of additional cards. The cards rank as follows:—Ace, ten, king, queen, knave, nine, eight, seven.

The usual game is for two players. The players cut for deal, and the higher bézique card deals. The objects of the play are: (1) to promote in the hand various combinations of cards, which, when declared, entitle the holder to certain scores; (2) to win aces and tens, known as "brisques"; (3) to win the so-called last trick. The dealer deals eight cards to each, first three, then two, and again three. The top card of those remaining (called the "stock") is turned up for trumps. As sometimes played, the first marriage, or the first sequence, decides the trump suit; there is then no score for the seven of trumps (see below). The stock is placed face downwards between the players and slightly spread. The non-dealer leads any card, and the dealer plays to it, but need not follow suit, nor win the trick. If he wins the trick by playing a higher card of the same suit led, or a trump, the lead falls to him. In case of ties the leader wins. Whoever wins the trick leads to the next; but before playing again each player takes a card from the stock and adds it to his hand, the winner of the trick taking the top card. This alternate playing and drawing a card continues until the stock (including the trump card or card exchanged for it, which is taken up last) is exhausted. The tricks remain face upwards on the table, but must not be searched during the play of the hand.

The scores are shown as follows:—

Table of Bézique Scores.

Seven of trumps, turned up, dealer marks	10
Seven of trumps, declared (see below) or exchanged, player marks	10
Marriage (king and queen of any suit) declared	20
Royal marriage (king and queen of trumps) declared	40
Bézique (queen of spades and knave of diamonds) declared	40
Double bézique (all the four bézique cards) declared	500
Four aces (any four, whether duplicates or not) declared	100
Four kings (any four) declared	80
Four queens (any four) declared	60
Four knaves (any four) declared	40
Sequence (ace, ten, king, queen, knave of trumps) declared	250
Aces and tens, in tricks, the winner for each one marks	10
Last trick of all (as sometimes *played*, the last trick before the stock is exhausted) the winner marks	10

A "declaration" can only be made by the winner of a trick immediately after he has won it, and before he draws from the stock. It is effected by placing the declared cards (one of which at least must not have been declared before) face upwards on the table, where they are left, unless they are played, as they may be. A player is not bound to declare. A card led or played cannot be declared. More than one declaration may be made at a time, provided no card of one combination forms part of another that is declared with it. Thus four knaves and a marriage may be declared at the same time; but a player cannot declare king and queen of spades and knave of diamonds together to score marriage and bézique. He must first declare one combination, say bézique; and when he wins another trick he can score marriage by declaring the king. A declaration cannot be made of cards that have already all been declared. Thus, if four knaves (one being a bézique knave) and four queens (one being a bézique queen) have been declared, the knave and queen already declared cannot be declared again as bézique. To score all the combinations with these cards, after the knaves are declared and another trick won, bézique must next be made, after which, on winning another trick, the three queens can be added and four queens scored. Lastly, a card once declared can only be used again in declaring in combinations of a different class. For example: the bézique queen can be declared in bézique, marriage and four queens; but having once been declared in single bézique, she cannot form part of another single bézique. Two declarations may, in a sense, be made to a trick, but only one can be scored at the time. Thus with four kings declared, including the king of spades, bézique can be declared and scored, but the spade marriage cannot be scored till the holder wins another trick. The correct formula is "Forty, and 20 to score." The seven of trumps may be either declared or exchanged for the turn-up after winning a trick, and before drawing. When exchanged, the turn-up is taken into the player's hand, and the seven put in its place. The second seven can, of course, be declared. A seven when declared is not left on the table, but is simply shown.

The winner of the last trick can declare anything hitherto undeclared in his hand. After this all declarations cease. The winner of the last trick takes the last card of the stock, and the loser the turn-up card (or seven exchanged for it). All cards on the table, that have been declared and not played, are taken up by their owners. The last eight tricks are then played, but the second player must follow suit if able, and must win the trick if able. Finally, each player counts his tricks for the aces and tens they may contain, unless (as is often done) they are scored at the time. If a player revokes in the last eight tricks, or does not win the card led, if able, the last eight tricks belong to his adversary. The deal then passes on alternately until the game (1000) is won. If the loser does not make 500, his opponent counts a double game, or double points, according as they have agreed. The score is best kept by means of a special bézique-marker.

Three- and Four-Handed Bézique.—When three play, three packs are used together. All play against each other. The player on the left of the dealer is first dealt to and has the first lead. The rotation of dealing goes to the left. If double bézique has been scored, and one pair has been played, a second double bézique may be made with the third pair and the pair on the table. Triple bézique scores 1500. All the cards of the triple bézique must be on the table at the same time and unplayed to a trick. All may be declared together, or a double bézique may be added to a single one, or a third bézique may be added to a double bézique already declared. The game is 2000 up. Sometimes the three players cut, the one who cuts the highest card plays against the other two in consultation, and continues to do so till the allies win a game, when the two cut as before to see who shall be the single player. Only two packs are then used.

When four play four packs are used. The players may then score independently or may play as partners. A second double bézique or triple bézique may be scored as before; to form them the béziques may be declared from the hand of either partner. A player may declare when he or his partner takes a trick. In playing the last eight tricks, the winner of the last trick and the adversary to his left play their cards against each other, and then the other two similarly play theirs. Four people may also play in pairs by consultation, only two packs being then required.

Polish Bézique (also called “Open Bézique” and “Fildniski”) differs from ordinary bézique in the following particulars. The game is not less than 2000 up. Whenever a scoring card is played, the winner of the trick places it face upwards in front of him (the same with both cards if two scoring cards are played to a trick), forming rows of aces, kings, queens, knaves and trump tens (called *open* cards). Cards of the same denomination are placed overlapping one another lengthwise from the player towards his adversary to economise space. When a scoring card is placed among the open cards, all the sevens, eights, nines, and plain suit tens in the tricks are turned down and put on one side. Open cards cannot be played a second time, and can only be used in declaring. Whether so used or not they remain face upwards on the table until the end of the hand, including the last eight tricks. A player can declare after winning a trick and before drawing again, when the trick won contains a card or cards, which added to his open cards complete any combination that scores. Every declaration must include a card played to the trick last won. Aces and tens must be scored as soon as won, and not at the end of the hand. The seven of trumps can be exchanged by the winner of the trick containing it; and if the turn-up card is one that can be used in declaring, it becomes an open card when exchanged. The seven of trumps when not exchanged is scored for by the player winning the trick containing it.

Compound declarations are allowed, *i.e.* cards added to the open cards can at once be used, without waiting to win another trick, in as many combinations of different classes as they will form with the winner’s open cards. For example: A has three open kings, and he wins a trick containing a king. Before drawing again he places the fourth king with the other three, and scores 80 for kings. This is a simple declaration. But suppose the card led was the queen of trumps, and A wins it with the king, and he has the following open cards—three kings, three queens, and ace, ten, knave of trumps. He at once declares royal marriage (40); four kings (80); four queens (60); and sequence (250); and scores in all, 430. Again: ace of spades is turned up, and ace of hearts is led. The second player has two open aces, and wins the ace of hearts with the seven of trumps and exchanges. He scores for the exchange, 10; for the ace of hearts, 10; for the ace of spades, 10; and adds the aces to his open cards, and scores 100 for aces; in all, 130. If a declaration or part of a compound declaration is omitted, and the winner of the trick draws again, he cannot amend his score.

The ordinary rule holds that a second declaration cannot be made of a card already declared in the same class. Thus: a queen once married, cannot be married again; a fifth king added to four already declared does not entitle to another score for kings. The fundamental point to be borne in mind is, that no declaration can be effected by means of cards held in the hand. Thus: A having three open queens and a queen in hand cannot add it to his open cards. He must win another trick containing a queen, when he can declare queens. Declarations continue during the play of the last eight tricks just the same as during the play of the other cards.

Rubicon Bézique.—Four packs are used. Nine cards are dealt by three to each player. The rules of Polish bézique hold good in regard to dealing, leading, playing to lead, drawing and declaring; but a player who receives a hand containing no picture-card (king, queen, or knave) scores 50 for *carte blanche*, which he shows. If he does not draw a picture-card, he can again score for *carte blanche*. The trump suit is decided by the first sequence or marriage declared. As four packs are used, triple and quadruple bézique may be made. Triple bézique counts 1500, quadruple 4500. Tricks are left face upwards till a *brisque* (ace or ten) is played, when the winner takes all the played cards and puts them in a heap; their only value is the value of the *brisques*, which are only counted when the scores are very close; then they are used to decide the game. They may be counted during the play, provided there are not more than twelve cards in the stock. Declarations can only be made after winning a trick and before drawing. In addition to the ordinary bézique declarations, sequence, counting 150, can be made in plain suits. Declared cards, except *carte blanche*, remain on the table. If the holder of *carte blanche* hold four aces and wins the first trick, he can declare his aces. With the exceptions already made, the scores for declarations are the same as at ordinary bézique. Declaration is not compulsory. Cards led or played cannot be declared. There are three classes of declarations, their order being (1) marriage and sequence, (2) bézique, (3) fours. A card once declared can be used for a second declaration, but only in an equal or superior class. If a card of a declared combination be played to a trick, another card of the same rank may be used to form a second similar combination; *e.g.* if aces be declared and one of them be played by the playing of a fifth ace, aces can be declared again. If a player has a chance of a double declaration he can declare both, but can only score one at the time. As in other variations of bézique he announces, say, “forty, and twenty to score.” He should repeat, “Twenty to score,” after every trick, until he can legally score it, but if he plays a card of the combination he cannot score the points. To the last nine tricks, after the stock is exhausted, the second player must follow suit and win the trick by trumping or over-playing, if he can. The winner of the odd trick scores 50. The game consists of one deal. In reckoning the score all fractions of 100 are neglected; the winner scores 500 for game in addition to the difference between his own points and his opponent’s. The loser is “rubiconed” if he does not score 1000 points, in which case the winner adds the loser’s points to his own, takes 300 for *brisques* and 1000 for game, but the loser may claim his *brisques* to save a rubicon, though they are not reckoned among his points. If a rubiconed player has scored less than 100 the opponent counts the score as 100.

BEZWADA, a town of British India, in the Kistna district of Madras, on the left bank of the river Kistna, at the head of its delta. Pop. (1901) 24,224. Here are the headquarters of the Kistna canal system, which irrigates more than 500,000 acres, and also provides navigation throughout the delta. The anicut or dam at Bezwada, begun in 1852, consists of a mass of rubble, fronted with masonry, 1240 yds. long. Here also is the central junction of the East Coast railway from Madras to Calcutta, 267 m. from Madras, where one branch line comes down from the Warangal coalfield in the Nizam's Dominions, and another from Bellary on the Southern Mahratta line. Ancient cuttings on the hills west of Bezwada have been held by some to mark the site of a Buddhist monastery; by others they are considered to have been quarries. At Undavalle to the south are some noted cave-shrines.

BHAGALPUR, a city of British India, in the Behar province of Bengal, which gives its name to a district and to a division; situated on the right bank of the Ganges, 265 m. from Calcutta. It is a station on the East Indian railway. Pop. (1901) 75,760, showing an increase of 9% in the decade. The chief educational institution is the Tejnarayan Jubilee college (1887), supported almost entirely by fees. Adjacent to the town are the two Augustus Cleveland monuments, one erected by government, and the other by the Hindus, to the memory of the civilian, who, as collector of Bhagalpur at the end of the 18th century, "by conciliation, confidence and benevolence, attempted and accomplished the entire subjection of the lawless and savage inhabitants of the Jungleterry of Rajmahal."

The District of Bhagalpur stretches across both banks of the Ganges. It has an area of 4226 sq. m. In 1901 the population was 2,088,953, showing an increase of 3% in the decade. Bhagalpur is a long and narrow district, divided into two unequal parts by the river Ganges. In the southern portion of the district the scenery in parts of the hill-ranges and the highlands which connect them is very beautiful. The hills are of primary formation, with fine masses of contorted gneiss. The ground is broken up into picturesque gorges and deep ravines, and the whole is covered with fine forest trees and a rich undergrowth. Within this portion also lie the lowlands of Bhagalpur, fertile, well planted, well watered, and highly cultivated. The country north of the Ganges is level, but beautifully diversified with trees and verdure. Three fine rivers flow through the district-the Ganges, Kusi and Ghagri. The Ganges runs a course of 60 m. through Bhagalpur, is navigable all the year round, and has an average width of 3 m. The Kusi rises in the Himalayas and falls into the Ganges near Colgong within Bhagalpur. It is a fine stream, navigable up to the foot of the hills, and receives the Ghagri 8 m. above its debouchure.

In the early days of British administration the hill people, the Nats and Santals, gave much trouble. They were the original inhabitants of the country whom the Aryan conquerors had driven back into the barren hills and unhealthy forests. This they avenged from generation to generation by plundering and ravaging the plains. The efforts to subdue or restrain these marauders proved fruitless, till Augustus Cleveland won them by mild measures, and successfully made over the protection of the district to the very hill people who a few years before had been its scourge. Rice, wheat, barley, oats, Indian corn, various kinds of millet, pulses, oil-seeds, tobacco, cotton, indigo, opium, flax and hemp and sugar-cane, are the principal agricultural products of Bhagalpur district. The jungles afford good pasturage in the hot weather, and abound in lac, silk cocoons, catechu, resin and the *mahuá* fruit, which is both used as fruit and for the manufacture of spirits. Lead ores (chiefly argentiferous galena) and building stone are found, and iron ore is distributed over the hilly country. Attempts made to work the galena in 1878-79 and 1900 were abandoned, and the iron ore is little worked. Gold is washed from the river sand in small particles.

The climate of Bhagalpur partakes of the character both of the deltaic districts of Bengal and of the districts of Behar, between which it is situated. The hot season sets in about the end of March, and continues till the beginning of June, the temperature at this time rising as high as 110° Fahr. The rains usually begin at the end of June and last till the middle of September; average annual rainfall, 55 in. The cold season commences at the beginning of November and lasts till March. During December and January the temperature falls as low as 41° Fahr. The average annual temperature is 78°. Bhagalpur formed a part of the ancient Sanskrit kingdom of Anga. In later times it was included in the powerful Hindu kingdom of Magadha or Behar, and in the 7th century A.D. it was an independent state, with the city of Champa for its capital. It

afterwards formed a part of the Mahommedan kingdom of Gaur, and was subsequently subjugated by Akbar, who declared it to be a part of the Delhi empire. Bhagalpur passed to the East India Company by the grant of the emperor Shah Alam in 1765.

There are indigo factories, and other industries include the weaving of tussur silk and the making of coarse glass. A large trade is carried on by rail and river with Lower Bengal. The tract south of the Ganges is traversed by the loop-line of the East Indian railway, and there is also a railway across the northern tract.

The Division of Bhagalpur stretches across the Ganges from the Nepal frontier to the hills of Chota Nagpur. It comprises the five districts of Monghyr, Bhagalpur, Purnea, Darjeeling, and the Santal Parganas. The total area is 19,776 sq. m.; and in 1901 the population was 8,091,405.

BHAMO, a town and district of Burma. The town was in ancient times the capital of the Shan state of Manmaw, later the seat of a Burmese governor. It is now the headquarters of a district in the Mandalay division of Upper Burma (Chinese frontier). It is situated about 300 m. up the river from Mandalay. It is the highest station on the Irrawaddy held by British troops, and the nearest point on the river to the Chinese frontier. In 1901 it contained 10,734 inhabitants, of whom a considerable number were Chinamen, natives of India and Shan-Chinese. It stretches for a distance of nearly 4 m. along the Irrawaddy bank in a series of small villages, transformed into quarters of the town, but the town proper is confined mainly to the one high ridge of land running at right angles to the river. The surface of the ground is much cut up by ravines which fill and dry up according to the rise and fall of the river. When the Irrawaddy is at its height the lower portion of the town is flooded, and the country all round is a sheet of water, but usually for no very long time. Here or hereabouts has long been the terminus of a great deal of the land commerce from China. For years after its annexation by Great Britain in 1885 the trade routes were unsafe owing to attacks from Kachins. These have now ceased, and the roads, which were mere bridle-tracks, have been greatly improved. The two chief are the so-called Santa and Ponlaing route, through Manyün (Manwaing) and Nantien to Momein, and the southern or Sawadi route by way of Namhkam. Cart roads are now being constructed on both routes, and that south of the Taiping river could easily be continued through Manyün to Momein if the Chinese should be induced to co-operate. There is a fairly large military garrison in Bhamo distributed between two forts to the north and east of the town. There are in general stationed here a native regiment, two sections of a battery and the wing of a European regiment. Besides the barracks there are a circuit house, dâk bungalow, courthouse, and post and telegraph offices. There is a branch railway from Myitkyina to Katha, whence there is daily communication by river to Bhamo.

The District of Bhamo lies wholly in the basin of the Irrawaddy, which, as well as its tributaries, runs through the heart of it. On the east of the river is the Shan plateau, running almost due north and south. West of the Irrawaddy there is a regular series of ranges, enclosing the basins of the Kaukkwe, Mosit, Indaw and other streams, down which much timber is floated. Beyond the Kaukkwe there is a ridge of hills, which starts at Leka, near Mogaung, and diverges to the south, the eastern ridge dividing the Kaukkwe from the Mosit, and the western forming the eastern watershed of the Nam Yin and running south into Katha. It is an offshoot from the latter of these ridges that forms the third defile of the Irrawaddy between Bhamo and Sinbo. The district covers an area of 4146 sq. m., and the population in 1901 was 79,515. It is mainly composed of Shan-Burmese and Kachins. The Shan-Burmese inhabit the valleys and alluvial plains on each side of the river. The Kachins, who probably came from the sub-regions of the Himalayas, occupy the hills throughout the district. There are also settlements of Shans, Shan-Chinese, Chinese and Assamese. There are extensive fisheries in the Shwegu and Mo-hnyin circles, and in the Indaw, a chain of lakes just behind the Mosit, opposite Shwegu. The district abounds in rich teak forests, and there are reserves representing 60,000 acres of teak plantation. The whole of the country along the banks of the Irrawaddy, the Mole, Taiping and Kaukkwe, is generally in a water-logged condition during the rains. The climate in the district is therefore decidedly malarious, especially at the beginning and end of the rains. From November to March there is very bracing cold weather. The highest temperatures range a few degrees over 100° F. up to 106°, and the lowest a few degrees under 40°. The average maximum for the year is about 87°, the average minimum about 62°. The rainfall averages 72 in. a year.

(J. G. Sc.)

BHANDARA, a town and district of British India, in the Nagpur division of the Central Provinces. The town (pop. in 1901, 14,023) is situated on the left bank of the river Wainganga, 7 m. from a station on the Bengal-Nagpur railway. It has considerable manufactures of cotton cloth and brass-ware, and a first-grade middle school, with a library.

The District of Bhandara has an area of 3965 sq. m. In 1901 the population was 663,062, showing a decrease of 11% since 1891 compared with an increase of 8% in the preceding decade. The district is bounded on the N., N.E. and E. by lofty hills, inhabited by Gonds and other aboriginal tribes, while the W. and N.W. are comparatively open. Small branches of the Satpura range make their way into the interior of the district. The Ambagarh or Sendurjhari hills, which skirt the south of the Chandpur pargana, have an average height of between 300 and 400 ft. above the level of the plain. The other elevated tracts are the Balahi hills, the Kanheri hills and the Nawegaon hills. The Wainganga is the principal river in the district, and the only stream that does not dry up in the hot weather,—its affluents within the district being the Bawanthari, Bagh, Kanhan and Chulban. There are 3648 small lakes and tanks in Bhandara district, whence it is called the "lake region of Nagpur"; they afford ample means of irrigation. More than one-third of the district lies under jungle, which yields gum, medicinal fruit and nuts, edible fruits, lac, honey and the blossoms of the *mahuá* tree (*Bassia latifolia*), which are eaten by the poorer classes, and used for the manufacture of a kind of spirit. Tigers, panthers, deer, wild hogs and other wild animals abound in the forests, and during the rainy season many deaths occur from snake-bites. Iron is the chief mineral product. Gold is also found in the bed of the Sone river. Laterite, shale and sandstone occur all over the district. Native cloth, brass wares, pot-stone wares, cartwheels, straw and reed baskets, and a small quantity of silk, form the only manufactures. The principal crops are rice, wheat, millet, other food-grains, pulse, linseed, and a little sugar-cane. The district is traversed by the main road from Nagpur to the east, and also by the Bengal-Nagpur railway. It suffered in the famine of 1896-1897, and yet more severely in 1900.

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Bhandara district contains 25 semi-independent chiefships. These little states are exempted from the revenue system, and only pay a light tribute. Their territory, however, is included within the returns of area and population above given. The climate of Bhandara is unhealthy,—the prevailing diseases being fever, small-pox and cholera. Nothing is known of the early history of the district. Tradition says that at a remote period a tribe of men, called the Gaulis or Gaulars, overran and conquered it. At the end of the 17th century it belonged to the Gond raja of Deogarh. In 1743 it was conquered by the Mahrattas, who governed it till 1853, when it lapsed to the British government, the raja of Nagpur having died without an heir.

BHANG, an East Indian name for the hemp plant, *Cannabis sativa* (see Hemp), but applied specially to the leaves dried and prepared for use as a narcotic drug. In India the products of the plant for use as a narcotic and intoxicant are recognized under the three names and forms of Bhang, Gunja or Ganja, and Churrus or Charas. Bhang consists of the larger leaves and capsules of the plant on which an efflorescence of resinous matter has occurred. The leaves are in broken and partly agglutinated pieces, having a dark-green colour and a heavy but not unpleasant smell. Bhang is used in India for smoking, with or without tobacco; it is prepared in the form of a cake or manjan, and it is made into an intoxicating beverage by infusing in cold water and straining. Gunja is the flowering or fruit-bearing tops of the female plants. It is gathered in stalks of several inches in length, the tops of which form a matted mass, from the agglutination of flowers, seeds and leaflets by the abundant resinous exudation which coats them. Churrus is the crude resinous substance separated from the plant. The use of preparations of hemp among the Mussulman and Hindu population of India is very general; and the habit also obtains among the population of central Asia, the Arabs and Egyptians, extending even to the negroes of the valley of the Zambezi and the Hottentots of South Africa. The habit appears to date from very remote times, for Herodotus says of the Scythians, that they creep inside huts and throw hemp seeds on hot stones.

BHARAHAT, or Barhut, a village in the small state of Nagod in India, lying about 24° 15′ N. by 80° 45′ E., about 120 m. S.W. of Allahabad. General A. Cunningham discovered there in 1873 the remains of a *stūpa* (*i.e.* a burial mound over the ashes of some distinguished person) which

were excavated, in 1874, by his assistant, J.D. Beglar. The results showed that it must have been one of the most imposing and handsome in India; and it is especially important now from the large number of inscriptions found upon it. The ancient name of the place has not been yet traced, but it must have been a considerable city and its site lay on the high road between the ancient capitals of Ujjenī and Kosāmbī. The *stūpa* was circular, 70 ft. in diameter and 42 ft. high. It was surrounded by a stone railing 100 ft. in diameter, so that between railing and *stūpa* there was an open circle round which visitors could walk; and the whole stood towards the east side of a paved quadrangle about 300 ft. by 320 ft., surrounded by a stone wall. On the top of the *stūpa* was an ornament shaped like the letter T, and as the base of the *stūpa* was above the quadrangle, the total height of the monument was between 50 and 60 ft. But its main interest, to us, lies in the railing. This consisted of eighty square pillars, 7 ft. 1 in. in height, connected by cross-bars about 1 ft. broad. Both pillars and cross-bars were elaborately carved in bas-relief, and most of them bore inscriptions giving either the name of the donor, or the subject of the bas-relief, or both. There were four entrances through the railing, facing the cardinal points, and each one protected by the railing coming out at right angles, and then turning back across it in the shape of the letter **L**. This gave the whole ground plan of the monument, and no doubt designedly so, the shape of a gigantic *swastika* (*i.e.* a symbol of good fortune). By the forms of the letters of the inscriptions, and by the architectural details, the age of the monument has been approximately fixed in the 3rd century B.C. The bas-reliefs give us invaluable evidence of the literature, and also of the clothing, buildings and other details of the social conditions of the peoples of Buddhist India at that period. The subjects are taken from the Buddhist sacred books, more especially from the accounts given in them of the life of the Buddha in his last or in his previous births. Unfortunately, only about half the pillars, and about one-third of the cross-bars have been recovered. When the *stūpa* was discovered the villagers had already carried off the greater part of the monument to build their cottages with the stones and bricks of it. The process has gone on till now nothing is left except what General Cunningham found and rescued and carried off to Calcutta. Even the mere money value of the lost pieces must be immense, and among them is the central relic box, which would have told us in whose honour the monument was put up.

See A. Cunningham, *The Stūpa of Bharhut* (London, 1879); T.W. Rhys Davids, *Buddhist India* (London, 1903).

(T. W. R. D.)

BHARAL, the Tatar name for the “blue sheep” *Ovis* (Pseudois) *nahura*, of Ladak and Tibet. The general colour is blue-grey with black “points” and white markings and belly; and the horns of the rams are olive-brown and nearly smooth, with a characteristic backward curvature. In the absence of face-glands, as well as in certain other features, the bharal serves to connect more typical sheep (*q.v.*) with goats.

BHARATPUR, or BHURTPORE, a native state of India, in the Rajputana agency. Its area covers 1982 sq. m. The country is generally level, about 700 ft. above the sea. Small detached hills, rising to 200 ft. in height, occur, especially in the northern part. These hills contain good building stone for ornamental architecture, and in some of them iron ore is abundant. The Banganga is the only river which flows through the state. It takes its rise at Manoharpur in the territory of Jaipur, and flowing eastward passes through the heart of the Bharatpur state, and joins the Jamna below Agra.

Bharatpur rose into importance under Suraj Mall, who bore a conspicuous part in the destruction of the Delhi empire. Having built the forts of Dig and Kumbher in 1730, he received in 1756 the title of raja, and subsequently joined the great Mahratta army with 30,000 troops. But the misconduct of the Mahratta leader induced him to abandon the confederacy, just in time to escape the murderous defeat at Panipat. Suraj Mall raised the Jat power to its highest point; and Colonel Dow, in 1770, estimated the raja’s revenue (perhaps extravagantly) at £2,000,000 and his military force at 60,000 or 70,000 men. In 1803 the East India Company concluded a treaty, offensive and defensive, with Bharatpur. In 1804, however, the raja assisted the Mahrattas against the British. The English under Lord Lake captured the fort of Dig and besieged Bharatpur, but were compelled to raise the siege after four attempts at storming. A

treaty, concluded on the 17th of April 1805, guaranteed the raja's territory; but he became bound to pay £200,000 as indemnity to the East India Company. A dispute as to the right of the succession again led to a war in 1825, and Lord Combermere captured Bharatpur with a besieging force of 20,000 men, after a desperate resistance, on the 18th of January 1826. The fortifications were dismantled, the hostile chief being deported to Benares, and an infant son of the former raja installed under a treaty favourable to the company. In 1853 the Bharatpur ruler died, leaving a minor heir. The state came under British management, and the administration was improved, the revenue increased, a system of irrigation developed, new tanks and wells constructed and an excellent system of roads and public buildings organized. Owing to the hot winds blowing from Rajputana, the climate of Bharatpur is extremely sultry till the setting in of the periodical rains.

In 1901 the population was 626,665, a decrease of 2%. The estimated revenue is £180,000. The maharaja Ram Singh, who succeeded his father in 1893, was deprived of power of government in 1895 on the ground of intemperate conduct; and in 1900 was finally deposed for the murder of one of his personal attendants. He was succeeded by his infant son Kishen Singh. During his minority the administration was undertaken by a native minister, together with a state council, under the general superintendence of the political agent. Imperial service cavalry are maintained. The state is traversed for about 40 m. by the Rajputana railway.

The City of Bharatpur is 34 m. W. of Agra by rail. The population in 1901 was 43,601, showing a decrease of over 23,000 in the decade. The immense mud ramparts still stand. It has a handsome palace, a new hospital and a high school. There are special manufactures of *chauris*, or flappers, with handles of sandalwood, ivory or silver, and tails also made of strips of ivory or sandalwood as fine as horse-hair.

BHATGÁON, a town of Nepal, 8 m. from Khatmandu. It is a celebrated place of Hindu superstition, the favourite residence of the Brahmans of Nepal, and contains more families of that order than either Khatmandu or Patan. It has a population of about 30,000, and its palace and buildings generally are of a more striking appearance than in other Nepalese towns. The town is said to possess many Sanskrit libraries.

BHATTIANA, a tract of country in the Punjab province of India, covering the Ghaggar valley from Fatehabad in the district of Hissar to Bhatnair in Bikanir. It derives its name from the Bhattis, a wild Rajput clan, who held the country lying between Hariana, Bikanir and Bahawalpur. It skirts the borders of the great sandy desert, and only contains a small and scattered population. This tract was ravaged by Timur in his invasion of India; and in 1795 paid a nominal allegiance to George Thomas, the adventurer of Hariana. After the victories of Lord Lake in 1803 it passed with the rest of the Delhi territory under British rule, but was not settled until 1810. A district of Bhattiana was formed in 1837, but in 1858 it was merged in the Sirsa district, which was divided up in 1884. The Bhattis number some 350,000, and are a fine tall race, making capital soldiers.

BHAU DAJI (Ramkrishna Vithal) (1822-1874), Hindu physician of Bombay, Sanskrit scholar and antiquary, was born in 1822 at the village of Manjare, in the native state of Sawantwari, of humble parents dealing in clay dolls. Dr Bhau's career is a striking instance of great results arising from small accidents. An Englishman noticing his cleverness at chess induced his father to give the boy an English education. Accordingly Bhau was brought to Bombay and was educated at the Elphinstone Institution. He relieved his father of the cost of his education by winning many prizes and scholarships, and on his father's death two years later he cheerfully undertook the burden of supporting his mother and a brother (Narayen), who also in after-life became a distinguished physician and surgeon. About this time he gained a prize for an essay on infanticide, and was appointed a teacher in the Elphinstone Institution. He began to devote his

time to the study of Indian antiquities, deciphering inscriptions and ascertaining the dates and history of ancient Sanskrit authors. He then studied at the Grant Medical College, and was one of the first batch who graduated there in 1850. In 1851 he set up as a medical practitioner in Bombay, where his success was so great that he soon made a fortune. He studied the Sanskrit literature of medicine, and also tested the value of drugs to which the ancient Hindus ascribed marvellous powers, among other pathological subjects of historical interest investigating that of leprosy. Being an ardent promoter of education, he was appointed a member of the board of education, and was one of the original fellows of the university of Bombay. As the first native president of the students' literary and scientific society, and the champion of the cause of female education, a girls' school was founded in his name, for which an endowment was provided by his friends and admirers. In the political progress of India he took a great and active interest, and the Bombay Association and the Bombay branch of the East Indian Association owe their existence to his ability and exertions. He was twice chosen sheriff of Bombay, in 1869 and 1871. Various scientific societies in England, France, Germany and America conferred on him their membership. He contributed numerous papers to the journal of the Bombay branch of the Royal Asiatic Society. He found time to make a large collection of rare ancient Sanskrit manuscripts at great cost and trouble. He died in May 1874. His brother, Dr Narayen Daji (who helped him to set up the charitable dispensary in Bombay), did not long survive him. Dr Bhau was a man of the most simple and amiable character and manners; his kindness and sympathy towards the poor and distressed were unbounded, and endeared his memory among the Hindus of Bombay.

(N. B. W.)

BHAUNAGAR, or Bhavnagar, a native state of India in the Kathiawar agency, Bombay. Its area covers 2860 sq. m. In 1901 the population was 412,664, showing a decrease of 12% in the decade; the estimated revenue is £255,800, and the tribute £10,300. The chief, whose title is thakor sahib, is head of the famous clan of the Gohel Rajputs of Kathiawar. The enlightened system of administration formed during the rule of the thakor sahib maharaja Sir Takhtsinghji Jaswatsinghji, G.C.S.I., was continued with admirable results under the personal supervision of his son, the maharaja Bhausinghji, K.C.S.I. (b. 1875), and forms a model for other native states. The Gohel Rajputs are said to have settled in the district about 1260. Bhaunagar suffered terribly from the famine of 1899-1900. About 60 m. of the Bhaunagar-Gondal railway run through the state, with its terminus at the town of Bhaunagar, which is the principal port. The town of Bhaunagar is situated on the west coast of the gulf of Cambay. The population in 1901 was 56,442. It is the chief port in Kathiawar, though only admitting vessels of small burden. It was founded in 1723 by the thakor sahib Bhausinghji, after whom it is named, in place of his former capital, Sihor, which was considered too exposed to the Mahratta power.

BHEESTY (from the Persian *bihisti*, paradise), the Hindustani name for a water carrier, the native who supplies water from a pigskin or goat-skin bag.

BHERA, a town of British India, in the Shahpur district of the Punjab, situated on the river Jhelum. Pop. (1901) 18,680. It is the terminus of a branch of the North-Western railway. It is an important centre of trade, with manufactures of cotton goods, metal-work, carving, &c. Bhera was founded about 1540 on its present site, but it took the place of a city on the opposite bank of the river, of far greater antiquity, which was destroyed at this period.

BHILS, or Bheels ("bowmen," from Dravidian *bil*, a bow), a Dravidian people of central India,

probably aborigines of Marwar. They live scattered over a great part of India. They are found as far north as the Aravalli Hills, in Sind and Rajputana, as well as Khandesh and Ahmedabad. They are mentioned in Sanskrit works, and it is thought that Ptolemy (vii. I. 66) refers to them as Φυλλῖται ("leaf wearers"), though this word might equally apply to the Gonds. Expelled by the Aryans from the richer lowlands, they are found to-day in greatest numbers on the hills of central India. In many Rajput states the princes on succession have their foreheads marked with blood from the thumb or toe of a Bhil. The Rajputs declare this a mark of Bhil allegiance, but it is more probably a relic of days when the Bhils were a power in India. The Bhils eagerly keep the practice alive, and the right of giving the blood is hereditary in certain families. The popular legend of the Bhil origin assigns them a semi-divine birth, Mahadeva (Siva) having wedded an earth maiden who bore him children, the ugliest of whom killed his father's bull and was banished to the mountains. The Bhils of to-day claim to be his descendants. Under the Moguls the Bhils were submissive, but they rebelled against the Mahrattas, who, being unable to subdue them, treated them with the utmost cruelty. The race became outlaws, and they have lived their present wild life ever since. Their nomad habits and skill with their bows helped them to maintain successfully the fight with their oppressors. An unsuccessful attempt was made in 1818 by the British to conquer them. Milder measures were then tried, and the Bhil Agency was formed in 1825. The Bhil corps was then organized with a view to utilizing the excellent fighting qualities of the tribesmen. This corps has done good service in gradually reducing their more lawless countrymen to habits of order, and many Bhils are now settled in regular industries.

The pure Bhil is to-day much what he has always been, a savage forest dweller. The Bhils are a stunted race, but well built, active and strong, of a black colour, with high cheek-bones, wide nostrils, broad noses and coarse features. Like all Dravidians the hair is long and wavy. The lowland Bhils are not now easily distinguished from the low-caste Hindus. Surgeon-major T.H. Hendley writes:—"The Bhil is an excellent woodman, knows the shortest cuts over the hills; can walk the roughest paths and climb the steepest crags without slipping or feeling distressed. Though robbers, and timorous owing to ages of ill-treatment, the men are brave when trusted, and very faithful. History proves them always to have been faithful to their nominal Rajput sovereigns, especially in their adversity. The Bhil is a merry soul, loving a jest." The hill Bhils wear nothing but a loin-cloth, their women a coarse robe; lowland Bhils wear turban, coat and waist-cloth. The Bhils have oaths none of them will break. The most sacred is that sworn by a dog, the Bhil praying that the curse of a dog may fall on him if he breaks his word. Their chief divinity is Hanuman, the monkey-god. Offerings are made to the much-feared goddess of small-pox. Stone worship is found among them, and some lowland Bhils are Moslems, while many have adopted Hinduism.

The Bhils of pure blood number upwards of a million, and there are some 200,000 Bhils of mixed descent.

See Gustav Oppert, *The Original Inhabitants of India* (1893); T.H. Hendley, "Account of Marwar Bhils," in *Bengal Asiatic Journal*, vol. 44; W.I. Sinclair in *Indian Antiquary*, vol. iv. pp. 336-338; Col. W. Kincaid, "On the Bheel Tribes of the Vindhyan Range," *Jour. Anthrop. Institute*, vol. ix.

BHIMA (Sanskrit, "The Terrible"), in Hindu mythology, a hero, one of the Pandava princes who figure in the *Mahabharata*. He was distinguished by his huge body, strength and voracity.

BHIWANI, a town of British India, in the Hissar district of the Punjab, 38 m. S.E. of Hissar town by rail. Pop. (1901) 35,917. It is an important centre of trade with Rajputana, and has factories for ginning and pressing cotton, and metal manufactures. Its rise dates from 1817, when it was made a free market.

BHOPAL, a native state of India, in the central India agency. Its area is 6902 sq. m., and its population in 1901 was 665,961, showing a decrease of 30% in the decade. This seems to be in part due to a difference in numeration, but the state suffered heavily from famine in 1896-1897 and 1899-1900. Bhopal is the principal Mussulman state in central India, ranking next to Hyderabad among the Mahommedan states of India. The surface of the country is uneven, being traversed by the Vindhya ranges, a peak of which near Raysen is upwards of 2500 ft. above sea-level. The general inclination of the country is towards the north, in which direction most of the streams of the state flow, while others, passing through the Vindhya ranges, flow to the Nerbudda.

Bhopal state was founded in 1723 by Dost Mahommed Khan, an Afghan adventurer. In 1778, when General Thomas Goddard made his bold march across India, the state of Bhopal was the only Indian power that showed itself friendly; and in 1809 when another British expedition under General Close appeared in the same parts, the nawab of Bhopal petitioned earnestly but in vain to be received under British protection. But in 1817, at the outbreak of the Pindari War, a treaty of dependence was concluded between the chief and the British government. Since then Bhopal has been steadily loyal to the British government, and during the Mutiny it rendered good services. The throne has descended in the female line since 1844, when Sikandar Begum became ruler. Succeeding begums have taken a great interest in the work of governing the state, which they carried on with marked success. The sultan Jahan Begum, succeeded on the death of her mother, Shah Jahan Begum, in June 1901, being the only female ruler in India.

The estimated revenue of the state is £250,000, and the state pays a subsidy of £13,000 for the Bhopal battalion. Besides the Bhopal battalion, a regiment of imperial service cavalry is maintained, under the name of the Victoria Lancers. There is a branch railway from Itarsi to Bhopal city, continued to Jhansi. The British currency has been introduced, and in 1897-1898, Rs. 71,00,000 of Bhopali coins were converted. The residence of the political agent and the headquarters of the Bhopal battalion are at Sehore, 20 m. west of Bhopal city. The city of Bhopal, a railway station, had a population in 1901 of 76,561. The palace, with its rock fortress, is called Fatehgarh. An excellent water-supply has been provided from two large artificial lakes. There are two hospitals. There is an export trade in opium.

Bhopal Agency, an administrative section of central India, takes its name from the state of Bhopal, which is included in it. The Bhopal agency is administered by the agent to the governor-general in central India. Its area is 11,653 sq. m., and its population in 1901 was 1,157,697. It was created in 1818. In 1900 this district suffered severely from famine owing to the complete failure of the monsoon, and the cultivated area decreased by 50 or 60%; but, on the whole, trade has improved of late years owing to the new railways, which have stimulated commerce and created fresh centres of industry.

BHOPAWAR, an agency in central India. It consists of the Dhar and Barwani states, three minor states, Ali Rajpur, Jhabua and Jobat, and a number of districts and estates. Its total area is 7684 sq. m., and its population on this area in 1901 was 547,546. But in 1901 and 1904 certain districts were transferred from this agency to the Indore residency, created in 1899, and the area of Bhopawar was thus reduced by 3283 sq. m. The chief towns are Dhar (pop. 17,792), Barwani (6277) and Kukshi (5402).

BHOR, a native state of India, in the Poona political agency, Bombay, forming one of the Satara Jagirs; situated among the higher peaks of the Western Ghats. Its area covers 925 sq. m. The population in 1901 was 137,268, showing a decrease of 12% in the decade; the estimated gross revenue is £21,437; the tribute, £310. The chief, whose title is *pant sachiv*, is a Brahman by caste. The town of Bhor is 25 m. south of Poona. In 1901 the population was 4178. The Bhor Ghat, on the northern border of the state, has always been the main pass over the Western Ghats, or means of communication between the sea-coast and the Deccan. Since 1861 it has been traversed by the main line of the Great Indian Peninsula railway.

BHUJ, a town of India, the capital of the native state of Kach, in the Gujarat division of Bombay, situated at the base of a fortified hill. Pop. (1901) 26,362. It contains some interesting examples of architecture of the middle of the 16th century and later; it was a place sacred to the snake-god Bhujanga.

BHUTAN, an independent kingdom in the Eastern Himalayas, lying between the Brahmaputra and the southern face of the mountains. It is under various commercial and other arrangements with the government of India, from whom it receives an annual subsidy of £3333. It is bounded on the N. by Tibet; on the E. by a tract inhabited by various uncivilized independent mountain tribes; on the S. by the British province of Assam, and the district of Jalpaiguri; and on the W. by the independent native state of Sikkim. The whole of Bhutan presents a succession of lofty and rugged mountains abounding in picturesque and sublime scenery. This alpine region sends out numerous rivers in a southerly direction, which, forcing their passage through narrow defiles, and precipitated in cataracts over the precipices, eventually pour themselves into the Brahmaputra. Of the rivers traversing Bhutan, the most considerable is the Manas, flowing in its progress to the Brahmaputra under the walls of Tasgaon, below which it is unfordable. At the foot of Tasgaon Hill it is crossed by a suspension bridge. The other principal rivers are the Machu, Tchinchu, Torsha, Manchi and Dharla. Information respecting the country accumulates but slowly. In 1863 Captain Godwin Austen accompanied Sir Ashley Eden's mission to the court of the Deb raja, and made a survey of the route to Punakha. There has also been a certain amount of geographical sketching combined with trigonometrical observations; and there are the route surveys of native explorers. In 1887-1888 two native Indian explorers "R. N." and "P. A." traversed a part of Western Bhutan, but were forced to retire owing to the disturbed state of the districts. They re-entered the country on the east from Dewangiri. Here they explored the Kuru, or Lhobrak Chu, which proves to be the largest river in Bhutan. It drains the tract between the Yamdok Tso and Tigu Lakes, and is fed by the glaciers of the Kulha Kangri and other great ranges. The Lhobrak was finally identified with the Manas river, a geographical discovery of some importance. A previously unknown tribe, the Chingmis, were discovered in Eastern Bhutan, who are socially on a higher level than the Bhutias, and differ from them chiefly in the matter of wearing pigtails. Some excellent survey work was done in Bhutan by a native surveyor during the progress of the Tibetan Expedition in 1904. The Monla Kachung pass (17,500 ft.), by which "R. N." crossed into Tibet, is nearly on the meridian of Gualpara, and is one of the most important passes between Bhutan and Tibet. East of Bhutan, amongst the semi-independent hill states which sometimes own allegiance to Tibet and sometimes assert complete freedom from all authority, the geographical puzzle of the course of the Tsanpo, the great river of Tibet, has been solved by the researches of Captain Harman, and the explorations of the native surveyor "K. P." The Tsanpo has been definitely ascertained to be the same river as the Brahmaputra. The tracts inhabited by the aboriginal tribes entitled Lo Nakpo, Lo Karpo and Lo Tawa ("Lo" signifies "barbarous" in Tibetan), are described as a pleasant country; the lands on either side of the Tsanpo being well cultivated and planted with mangoes, plantains and oranges.

Nothing is known certainly about the area and population of Bhutan, the former being estimated at 16,800 sq. m. At the head of the Bhutan government there are nominally two supreme authorities, the Dharm raja, the spiritual head, and the Deb raja, the temporal ruler. Recently official correspondence has been written in the name of the Dharm raja, but it is not known whether this change really signifies anything. To aid these rajas in administering the country, there is a council of permanent ministers, called the Lenehen. Practically, however, there is no government at all. Subordinate officers and rapacious governors of forts wield all the power of the state, and tyranny, oppression and anarchy reign over the whole country. The Dharm raja succeeds as an incarnation of the deity. On the death of a Dharm raja a year or two elapses, and the new incarnation then reappears in the shape of a child who generally happens to be born in the family of a principal officer. The child establishes his identity by recognizing the cooking utensils, &c., of the late Dharm raja; he is then trained in a monastery, and on attaining his majority is recognized as raja, though he exercises no more real authority in his majority than he did in his infancy. The Deb raja is in theory elected by the council. In practice he is merely the nominee of whichever of the two governors of East and West Bhutan happens for the time to be the more powerful. The people are industrious, and devote themselves to agriculture, but from the geological structure of the country, and from the insecurity of property, regular husbandry is limited to comparatively few spots. The people are oppressed and poor. "Nothing that a Bhutia possesses is his own," wrote the British envoy in 1864; "he is at all times liable to lose it if it attracts the cupidity of any one more powerful than himself. The lower

classes, whether villagers or public servants, are little better than the slaves of higher officials. In regard to them no rights of property are observed, and they have at once to surrender anything that is demanded of them. There never was, I fancy, a country in which the doctrine of ‘might is right’ formed more completely the whole and sole law and custom of the land than it does in Bhutan. No official receives a salary; he has certain districts made over to him, and he may get what he can out of them; a certain portion of his gains he is compelled to send to the durbar, and the more he extorts and the more he sends to his superior, the longer his tenure of office is likely to be.”

Physically the Bhutias are a fine race, although dirty in their habits and persons. Their food consists of meat, chiefly pork, turnips, rice, barley-meal and tea made from the brick-tea of China. Their favourite drink is *chong*, distilled from rice or barley and millet, and *Marwá*, beer made from fermented millet. A loose woollen coat reaching to the knees, and bound round the waist by a thick fold of cotton cloth, forms the dress of the men; the women’s dress is a long cloak with loose sleeves. The houses of the Bhutias are of three and four storeys; all the floors are neatly boarded with deal; and on two sides of the house is a verandah ornamented with carved work generally painted. The Bhutias are neat joiners, and their doors, windows and panelling are perfect in their way. No iron-work is used; the doors open on ingenious wooden hinges. The appearance of the houses is precisely that of Swiss chalets, picturesque and comfortable—the only drawback being a want of chimneys, which the Bhutias do not know how to construct. The people nominally profess the Buddhist religion, but in reality their religious exercises are confined to the propitiation of evil spirits, and the mechanical recital of a few sacred sentences. Around the cottages in the mountains the land is cleared for cultivation, and produces thriving crops of barley, wheat, buckwheat, millet, mustard, chillies, &c. Turnips of excellent quality are extensively grown; they are free from fibre and remarkably sweet. The wheat and barley have a full round grain, and the climate is well adapted to the production of both European and Asiatic vegetables. Potatoes have been introduced. The Bhutias lay out their fields in a series of terraces cut out of the sides of the hills; each terrace is riveted and supported by stone embankments, sometimes 20 ft. high. Every field is carefully fenced with pine branches, or protected by a stone wall. A complete system of irrigation permeates the whole cultivated part of a village, the water being often brought from a long distance by stone aqueducts. Bhutias do not care to extend their cultivation, as an increased revenue is exacted in proportion to the land cultivated, but devote their whole energies to make the land yield twice what it is estimated to produce. The forests of Bhutan abound in many varieties of stately trees. Among them are the beech, ash, birch, maple, cypress and yew. Firs and pines cover the mountain heights; and below these, but still at an elevation of eight or nine thousand feet, is a zone of vegetation, consisting principally of oaks and rhododendrons. The cinnamon tree is also found. Some of the roots and branches were examined by Captain Samuel Turner during his journey to Tibet; but the plant being neither in blossom nor bearing fruit, it was impossible to decide whether it was the true cinnamon or an inferior kind of cassia. The leaf, however, corresponded with the description given of the true cinnamon by Linnaeus. The lower ranges of the hills abound in animal life. Elephants are so numerous as to be dangerous to travellers; but tigers are not common, except near the river Tista, and in the dense reed jungle and forests of the Dwars. Leopards abound in the Hah valley; deer everywhere, some of them of a very large species. The musk deer is found in the snows, and the barking deer on every hill side. Wild hogs are met with even at great elevations. Large squirrels are common. Bears and rhinoceros are also found. Pheasants, jungle fowls, pigeons and other small game abound. The Bhutias are no sportsmen. They have a superstitious objection to firing a gun, thinking that it offends the deities of the woods and valleys, and brings down rain. A species of horse, which seems indigenous to Bhutan, and is used as a domestic animal, is called *tángan*, from Tangastan, the general appellation of that assemblage of mountains which constitutes the territory of Bhutan. It is peculiar to this tract, not being found in any of the neighbouring countries of Assam, Nepal, Tibet or Bengal, and unites in an eminent degree the two qualities of strength and beauty. The *tángan* horse usually stands about thirteen hands high, is short-bodied, clean-limbed, deep in the chest and extremely active, his colour usually inclining to piebald. In so barren and rude a country the manufacturing industry of its people is, as might be expected, in a low stage, the few articles produced being all destined for home consumption. These consist of coarse blankets and cotton cloths made by the villagers inhabiting the southern tract. Leather, from the hide of the buffalo, imperfectly tanned, furnishes the soles of snow boots. Circular bowls are neatly turned from various woods. A small quantity of paper is made from a plant described as the *Daphne papyrifera*. Swords, iron spears and arrow-heads, and a few copper caldrons, fabricated from the metal obtained in the country, complete the list of manufactures.

Trade connections are rather with Tibet than with India. In 1901-1902 the value of the import and export trade with British India amounted only to £57,000. The military resources of the country are on an insignificant scale. Beyond the guards for the defence of the various castles, there is nothing like a standing army. The total military force was estimated by the British envoy in 1864 at 6000. The climate of Bhutan varies according to the difference of elevation. At the

time when the inhabitants of Punakha (the winter residence of the rajas) are afraid of exposing themselves to the blazing sun, those of Ghasa experience all the rigour of winter, and are chilled by perpetual snows. Yet these places are within sight of each other. The rains descend in floods upon the heights; but in the vicinity of Tasisudon, the capital, they are moderate; there are frequent showers, but nothing that can be compared to the tropical rains of Bengal. Owing to the great elevation and steepness of the mountains, dreadful storms arise among the hollows, often attended with fatal results.

History.—Bhutan formerly belonged to a tribe called by the Bhutias Tephu, generally believed to have been the people of Kuch Behar. About A.D. 1670 some Tibetan soldiers subjugated the Tephus, took possession of the country and settled down in it. The relations of the British with Bhutan commenced in 1772, when the Bhutias invaded the principality of Kuch Behar, a dependency of Bengal. The Kuch Behar Raja applied for aid, and a force under Captain James was despatched to his assistance; the invaders were expelled and pursued into their own territories. Upon the intercession of Teshu Lama, then regent of Tibet, a treaty of peace was concluded in 1774 between the East India Company and the ruler of Bhutan. In 1783 Captain S. Turner was deputed to Bhutan, with a view of promoting commercial intercourse, but his mission proved unsuccessful. From this period little intercourse took place with Bhutan, until the occupation of Assam by the British in 1826. It was then discovered that the Bhutias had usurped several tracts of low land lying at the foot of the mountains, called the Dwars or passes, and for these they agreed to pay a small tribute. They failed to pay, however, and availed themselves of the command of the passes to commit depredations within the British territory. Captain R.B. Pemberton was accordingly deputed to Bhutan to adjust the points of difference. But his negotiations yielded no definite result; and every other means of obtaining redress and security proving unsuccessful, the Assam Dwars were wrested from the Bhutias, and the British government consented to pay to Bhutan a sum of £1000 per annum as compensation for the resumption of their tenure, during the good behaviour of the Bhutias. Continued outrages and aggressions were, however, committed by the Bhutias on British subjects in the Dwars. Nothwithstanding repeated remonstrances and threats, scarcely a year passed without the occurrence of several raids in British territory headed by Bhutia officials, in which they plundered the inhabitants, massacred them, or carried them away as slaves. In 1863 Sir Ashley Eden was sent as an envoy to Bhutan to demand reparation for these outrages. He did not succeed in his mission; he was subjected to the grossest insults; and under compulsion signed a treaty giving over the disputed territory to Bhutan, and making other concessions which the Bhutan government demanded. On Sir A. Eden's return the viceroy at once disavowed his treaty, sternly stopped the former allowance for the Assam Dwars, and demanded the immediate restoration of all British subjects kidnapped during the last five years. The Bhutias not complying with this demand, the governor-general issued a proclamation, dated the 12th of November 1864, by which the eleven Western or Bengal Dwars were forthwith incorporated with the queen's Indian dominions. No resistance was at first offered to the annexation; but, suddenly, in January 1865, the Bhutias surprised the English garrison at Dewangiri, and the post was abandoned with the loss of two mountain guns. This disaster was soon retrieved by General Sir Henry Tombs, and the Bhutias were compelled to sue for peace, which was concluded on the 11th of November 1865. The Bhutan government formally ceded all the eighteen Dwars of Bengal and Assam, with the rest of the territory taken from them, and agreed to liberate all kidnapped British subjects. As the revenues of Bhutan mainly depended on these Dwars, the British government, in return for these concessions, undertook to pay the Deb and Dharm rajas annually, subject to the condition of their continued good behaviour, an allowance beginning at £2500 and rising gradually to the present figure. Since that time the annexed territories have settled down into peaceful and prosperous British districts. The recent relations between the Indian government and Bhutan have been satisfactory; and during the troubles with Tibet in 1904 the attitude of the Bhutias was perfectly correct and friendly.

See *Report on Explorations in Sikkim, Bhutan and Tibet* (Deva Dun, 1889); Tanner, "Our present Knowledge of the Himalayas," *R.G.S. Proceedings*, vol. xiii.

(T. H. H.*)

BIANCHINI, FRANCESCO (1662-1729), Italian astronomer and antiquary, was born of a noble family at Verona on the 13th of December 1662. In 1684 he went to Rome, and became librarian to Cardinal Ottoboni, who, as Pope Alexander VIII. (1689), raised him to the offices of papal chamberlain and canon of Santa Maria Maggiore. Clement XI. sent him on a mission to Paris in 1712, and employed him to form a museum of Christian antiquities. He died at Rome on the 2nd of March 1729. A paper by him on G.D. Cassini's new method of parallaxes was inserted

in the *Acta Eruditorum* of Leipzig in 1685. He published separately:—*Istoria Universale* (Roma, 1697), only one volume of which appeared; *De Calendario et Cyclo Caesaris* (1703); *Hesperi et Phosphori nova Phaenomena* (1729), in which he asserted Venus to rotate in 24⅓ days; and (posthumously) *Astronomicae et Geographicae Observaliones Selectae* (1737) and *Opuscula Varia* (1754).

See Fontenelle's "Éloge" (*Mémoires de l'Acad. de l'Histoire*, p. 102, Paris, 1729); Mazzoleni, *Vita di Francesco Bianchini* (Verona, 1735); Tipaldo, *Biografia degli Italiani Illustri*, vii. 288 (Venezia, 1840); Mazzuchelli, *Scrittori d' Italia*; Maffei, *Verona Illustrata*, p. 254, &c.

BIARRITZ, a watering-place of south-western France, in the department of Basses-Pyrénées, on the sea-coast about 5 m. W.S.W. of Bayonne. Pop. (1906) 13,629. From a mere fishing village, with a few hundred inhabitants in the beginning of the 19th century, Biarritz rose rapidly into a place of importance under the patronage of the emperor Napoleon III. and the empress Eugénie, with whom it was a favourite resort. The town is situated on a promontory jutting north-west into the Bay of Biscay and on the coast which extends on each side of it. The beach to the north-east is known as the Grande Plage, that to the south-west as the Côte des Basques. The Grande Plage is more than half a mile long and stretches to the Cap St Martin, on which stands a lighthouse. It is divided into two parts by a small headland once the site of the villa of the empress Eugénie, between which and the main promontory are the two casinos, the principal baths and many luxurious villas and fine hotels. Towards the north-east the promontory of Biarritz ends in a projection known as the Atalaye, crowned by the ruins of a castle and surrounded by rocky islets. Some of these are united to the mainland and to each other by jetties which curve round so as to form the Port de Refuge, a haven available only in fair weather. South-west of the Atalaye lies the Port-Vieux, a sheltered cove now used only as a bathing-place. The Port des Pêcheurs, the principal of the three harbours, is on the south-east side of the Atalaye and is that most used by the fishermen of the town. Apart from unimportant manufactures of pottery, chocolate, &c., fishing is the only industry; Biarritz depends for its prosperity on the visitors who are attracted by its mild climate and the bathing. The season is almost continuous; in the winter the English, in the summer Russians, Spaniards and French fill the hotels of the town. Among its attractions is a golf club, established in 1888, with a course of 18 holes.

BIAS of Priene in Ionia, one of the so-called Seven Sages of Greece, son of Teutamus, flourished about 570 B.C. He was famous for his patriotism, the nobility of his character and his eloquence. A number of gnomes or aphorisms are attributed to him, which may be found collected in F.W.A. Mullach, *Fragmenta Philosophorum Graecorum* (1860). He is said to have written a poem on the best means of making Ionia prosperous. His advice to its inhabitants, at the time of the Persian invasion, to migrate to Sardinia and there found a single pan-Ionic city (Herodotus i. 170), has generally been regarded as historical. One much-quoted saying of his may be mentioned. When his native town was besieged by the enemy, the inhabitants resolved to escape with their most valuable belongings. One of them seeing Bias without anything, advised him to follow the example of the rest. "I am doing so," said lie, "for I carry all my belongings with me" (*omnia mea mecum porto*). He was honoured with a splendid funeral, and a sanctuary called Teutamium was dedicated to him.

See Bohren, *De Septem Sapientibus* (1860).

BIAS (from the Fr. *biais*, of unknown origin; the derivation from Lat. *bifax*, two-faced, is wrong), something oblique or slanting. The term is used especially of a piece of cloth cut obliquely across the texture, or of a seam of two such pieces brought together; and in the game of bowls (*q.v.*) it is applied alike to the one-sided construction of the bowl, flattened on one side and protruding on the other, and to the slanting line the bowl takes when thrown. The figurative

sense of the word, prejudice or undue leaning to one side of a subject, is derived from this bowling term.

BIBACULUS, MARCUS FURIUS, Roman poet, flourished during the last century of the republic. According to Jerome, he was born at Cremona in 103 B.C., and probably lived to a great age. He wrote satirical poems after the manner of Catullus, whose bitterness he rivalled, according to Quintilian (*Instit.* x. i. 196), in his iambics. He even attacked Augustus (and perhaps Caesar), who treated the matter with indifference. He was also author of prose *Lucubrationes* and perhaps of an epic poem on Caesar’s Gallic wars (*Pragmatia Belli Gallici*). Otto Ribbeck attributes to him one of the shorter poems usually assigned to Virgil. It is doubtful whether he is the person ridiculed by Horace (*Satires*, ii 5. 40) and whether he is identical with the *turgidus Alpinus* (*Satires*, i. 10. 36), the author of an Aethiopis dealing with the life and death of Memnon and of a poem on the Rhine. Some critics, on the ground that Horace would not have ventured to attack so dangerous an adversary, assume the existence of a poet whose real name was Furius (or Cornelius) Alpinus. Bibaculus was ridiculed for his high-flown and exaggerated style and manner of expression.

See Weichert, “De M. Furio Bibaculo,” in his *Poetarum Latinorum Reliquiae* (1830); fragments in L. Müller’s edition of *Catullus* in the Teubner Series (1870).

BIBER, HEINRICH JOHANN FRANZ VON (1644-1704), German violinist and composer, was for some time musical conductor at Salzburg, and was ennobled by the emperor Leopold in 1681. He is regarded as the earliest important German composer for the violin, his works including sonatas and church music.

BIBERACH, a town of Germany, in the kingdom of Württemberg, on the Riss, a small affluent of the Danube, 22 m. S.S.W. from Ulm. Pop. (1900) 8390. It is still surrounded by medieval walls and towers, and is strikingly picturesque. Its principal church dates from the 12th century, and it possesses a hospital with rich endowments. Its main industries are cloth, bell-casting, toys and zinc wares, and its fruit markets are famous.

Biberach appears as a village in the 8th century, and in 1312 it became a free imperial city. During the Thirty Years’ War it underwent various vicissitudes, and was for a while held by the Swedes. In 1707 it was captured and put to ransom by the French, who afterwards, in 1796 and 1800, defeated the Austrians in the neighbourhood. In 1803 the city was deprived of its imperial freedom and assigned to Baden, and in 1806 was transferred to Württemberg. Biberach is the birthplace of the sculptor Johann Lorenz Natter (1705-1763) and the painter Bernhard Neher (1806-1886); Christoph Martin Wieland, born in 1733 at the neighbouring village of Oberholzheim, spent several years in the town.

BIBIRINE, or BEBEERINE, $C_{19}H_{21}NO_3$, an alkaloid obtained from the bark and fruit of the greenheart (*q.v.*) tree, *Nectandra rodiaei*, called *bibiru* or *sipiri* in Guiana, where the tree grows. The substance was discovered about the year 1835 by Hugh Rodie, a surgeon in Demerara, who used it as a febrifuge in substitution for quinine.

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