

presence of which is made known by the appearance of a fine powder lying underneath the infected specimens. Insects in this condition should be thoroughly soaked in a solution of spirits of wine and camphor. The appearance of grease on thick-bodied moths is by no means uncommon, but may be removed by dipping the insect in spirits of turpentine and embedding it in calcined magnesia till dry. The collector should be careful to keep a register of all his specimens, giving the localities where they were found, and recording any observations that may have been made at the time on their food, habits, &c. A small ticket attached to the pin of each specimen, and bearing its number in the register, is the best way of connecting the specimens in the cabinet with the entries in the register (J. G.)

BUTTMANN, PHILIPP KARL (1764-1829), a German philologist, was born at Frankfurt-on-the-Main in 1764. He was educated at the gymnasium in his native town and at the university of Göttingen. In 1789 he obtained an appointment in the library at Berlin, and for some years he edited *Spener's Journal*. In 1796 he became professor at the Joachimsthal Gymnasium, a post which he held for twelve years. In 1806 he was admitted to the Academy of Sciences, and in 1811 was made secretary of the Historico-Philological Section. He died in 1829. Buttmann's writings gave a great impetus to the scientific study of the Greek language, and his grammar is still a work of value. The first edition of the *Griechische Grammatik* appeared in 1792, and in 1863 the book was in its 21st edition. It has been translated into English. The *Lexilogus*, a valuable study on some words of difficulty occurring principally in the poems of Homer and Hesiod, was published in 2 vols., 1818-25. The English translation by Fishlake has passed through five editions. Buttmann's other works were *Ausführliche Griechische Sprachlehre*, 2 vols., 1819-27; *Mythologus*, a collection of essays, 1828-9; and editions of some classical authors. Of these last the most important are *Demosthenes in Midiam*, 1823, and the continuation of Spalding's *Quintilian*.

BUTTON, from the French *bouton*, a small piece of metal or other material used to connect different parts of a garment together by means of a button-hole, and also used for ornamentation. These apparently insignificant articles have produced a great alteration in our style of dress, for without them it would have been impossible to have reduced the flowing robes of our forefathers into our present simple costume. By this process we have lost the picturesque, as far as our garments are concerned, but have gained in compactness and utility. Indeed, the occupations of the present age could not be carried on in the togas and dresses of ancient times. The button manufacture did not assume any special form until towards the close of the reign of Elizabeth. In paintings, commencing with the 14th century, studs or buttons appear as ornaments on the dresses of both sexes; but they were ornaments merely, being drawn without button-holes, and placed where they could serve no practical purpose. They are in general represented as of gold or ivory. At the commencement of the 17th century the trade had greatly increased, but the making of buttons by the needle seems to have been the principal method.

Matthew Boulton, who became the senior partner in the afterwards celebrated firm of Boulton and Watt, as early as 1745, introduced great improvements in the manufacture of buttons, particularly inlaid and steel. When the Soho Works were established near Birmingham, one of the departments was occupied in making steel buttons with facets, that produced a hundred and forty guineas the gross. Gilt buttons came into fashion shortly after the accession of George III. A large shipping trade in buttons was then carried on with the Continent and America, and the

workmen's wages at Birmingham averaged from £2 to £4 per week. John Taylor, originally a cabinetmaker, appears to have had a principal hand in promoting improvements in this industry at that time, as far as gilt, plated, and lacquered buttons are concerned. The value of those turned out weekly in his establishment is said to have been about £800. Ralph Heaton improved the making of shanks, a separate branch, shortly before the commencement of the present century.

The metal button trade was in a very flourishing condition, when, indirectly, Lord Nelson may be said to have been the means of overthrowing it. The late B. Sanders was in easy circumstances in Denmark when he was ruined by the bombardment of Copenhagen under our great naval commander. Sanders then came to Birmingham to seek such competence as energy and perseverance could afford. He started in the button manufacture, at first in a small way, introducing a covered button made of cloth or lasting, with an iron shank. His son, of the same name, invented a flexible shank button, that is, one with a tuft of canvas protruding from the back instead of a shank, through which the needle could pass in any direction. It was patented in 1825 and had an enormous sale. The Sanders took out another patent for a similar button covered with silk. A fancy silk button with a central ornament was patented by William Elliott in 1837, which had a great run, so much so that sixty looms were employed in London in making the special material required; and Elliott secured a fortune, although his patent was contested and many imitations were started. But all these kinds of buttons were found to wear on the edges, to remedy which John Chatwin patented a corded edge button. It is said that horn buttons were used as early as 1801, but we find from old Birmingham directories that there were horn-button makers as far back as 1777. At the former period the commonest qualities were 5½d. per gross. Hutton in his *History of Birmingham* refers to "our grandmothers" wearing horn buttons nearly the size of a crown piece. The hoof or horn button is cut into form and dyed and pressed into beautiful designs. This great improvement, however, appears to have been effected by M. Emile Bassot of Paris, who introduced important changes resulting in material progress. The manufacture is still prosecuted in England, but it is of secondary importance.

The materials of which buttons are made are as various as their forms. Gold, silver, and other metals, glass, porcelain, horn, bone, india-rubber, mother-of-pearl, and other nacreous productions of shell-fish,<sup>1</sup> various woods, vegetable ivory, &c.,<sup>2</sup> are employed; and for covered buttons, lasting, brocade, twist, velvet, silk, mohair, &c. The *Birmingham Directory* for 1784 mentions paper buttons; and, according to the same authority, a button was produced by "an artist of eminence," which was inlaid with divers other metals; it was first attempted about sixty years previously; and then, "though in no respect so complete as at present, met with great and merited encouragement." Buttons have been often expensively jewelled, and the gold and silver are plain or ornamented, sometimes resembling drops in filigree-work. There was one in use in England about the middle of the last century

<sup>1</sup> The shells are brought from various parts of the world, and vary considerably in price. The white-edged Macassar are the best; the yellow-edged Manilla the next. Those from the Persian Gulf and Red Sea vary much in value, which depends upon the purposes to which they can be applied. Those from the Pacific are beautiful, but being generally dark in colour, their value is much affected by the turns of fashion. The "Panama shells" are the least valuable, and are generally only used for inferior sorts of buttons.

<sup>2</sup> Vegetable ivory is not very suitable for buttons; it is too soft, and the unavoidable waste in manufacture renders it expensive.

formed of polished brass and ruled with such fine lines that light was reflected in prismatic colours. Some buttons have fetched enormous prices, even when made of what is now a common material. Mother-of-pearl buttons have been sold at a guinea each. In 1790 Henry Clay of Birmingham patented a method of manufacturing buttons of slate or slit stone; and, in 1800, Joseph Barnett introduced a button with two shanks or other fastenings on one button.

Such was the origin of the button industry in England, and other nations have not been behind. The *Scientific American* gives the following account of its commencement in the United States:—

"The first manufacturer of buttons in this country was Samuel Williston. While he was dragging along as a country store-keeper,—his eyes having failed him while studying for the ministry,—his wife bethought her that she could cover by hand the wooden buttons of the time, and thus earn an honest penny. From this the couple advanced in their ambition until they had perfected machinery for covering buttons, the first employed in this country. From this sprang an immense factory, and then others, until Samuel Williston made half the buttons of the world. His factories are still running at Easthampton, coining wealth for the proprietors. . . . He is now (1871) between seventy and eighty years of age, is worth five or six millions, and has given four hundred thousand dollars to Easthampton for a seminary and for churches; two hundred thousand dollars to South Hadley Female seminary; and two hundred thousand dollars to Amherst College, besides lesser gifts."

The factories of Samuel Williston & Co., above referred to, at Easthampton, Massachusetts, were established about the year 1848, and give employment to about 250 operatives. The annual cost of the materials used is estimated at \$75,000, and the value of the produce exceeds \$200,000. The button manufacture is also carried on extensively in New York and Philadelphia, and at Waterbury (Conn.). Buttons are also imported extensively. There are five importers in New York (1876). Joel Hayden of Haydenville began to make flexible buttons in the States in the year 1834.

Other countries have not been backward in this branch of industry. Bohemia, particularly at Prague and the neighbouring towns, is the great seat of the glass button manufacture, and great numbers are made in France. The porcelain button manufacture has been taken possession of by France, Minton and Co., the celebrated Staffordshire firm, who worked the invention of R. Prosser of Birmingham, having been driven out of the field by the good work, attended by greater cheapness, of the foreign makers. There is one factory at Milan, and great numbers of the cheaper kinds of buttons are made in the Rhenish provinces of Prussia. Vienna has suppressed the competition of English makers in some kinds of pearl buttons. Its operations in this branch are of a most extensive character, quite rivalling those of Birmingham.

"Button making," says the *Birmingham Directory* for 1777, "was originally a very tedious and expensive process. The button consisted of one solid piece of metal; and the ornaments upon the face of it were the work of an engraver. To obviate this, the press, stamp, and engine for turning the moulds were invented. This led to other improvements, the bones and hoofs of animals were introduced into the manufacture; by these various means the prices of buttons were reduced."

In the manufacture of covered buttons the sheet-iron is first scaled by the use of acids, and then cut into proper shape and size by a machine. The neck or collet of the button is japanned after having been stamped and cut. The hollow between the neck and shell is filled in with brown paper or button board. When the parts are put together they are pressed, which brings them into shape and consolidates them.

It would be impossible in the space that could be devoted

to the subject here, to describe in detail the various modes in which the numerous forms of buttons are manufactured,—especially as it would require elaborate illustration. We must, therefore, confine ourselves to noticing some of the special and more recent patents, referring the reader to works where he can obtain such further information as he may require. In 1840 Joseph Parkes took out a patent for improvements in the manufacture of covered buttons made by dies and pressure, by the application of horn as a covering material. Harris's patent for improvements in horn buttons and their dies was obtained in April 1841. This invention related to applying flexible shanks to horn buttons, a mode of ornamentation by inlaying the front surfaces, and also gilding or silvering their surfaces, and to a mode of constructing dies so as to facilitate the process of engraving, the die being also so formed that the horn or hoof employed could not be expressed outside the circumference of the button. Hugh Willoch's patent, dated 5th May 1874, related to a button with a removable head to enable the shank to pass through the button-hole. The head is hollow and is partly filled with caoutchouc. It is perforated to admit the shank top, a short transverse bar which, on being turned one-fourth round, falls into an internal groove in the material of the button head, and is retained in that position by the elasticity of the india-rubber. Empson and Palmer's patent, dated 4th July 1874, refers to improvements in linen buttons, and is also applicable to buttons covered with other fabrics. They are composed of a front and back shell, with a bar formed across the face of a raised concentric circle from the back shell (which is all the metal that need be visible in the finished button), the shells permitting ample room for the covering fabrics to be gathered in and held between them. They are considered to resist the injury common to linen buttons during the processes of washing, mangling, and ironing. Tylor's patent, of 13th July 1874, relates to polishing ivory, bone, and similar buttons in a revolving drum with revolving brushes inside. Harrison's invention (8th September 1874) consists in arranging the piercing tools, so that the thread holes for the buttons are made in the pierced metal in front of the shaping and cutting-out tools, and the metal around the groups of piercings is shaped or "domed," and cut out. The result is that at each descent of the compound tool three or more groups of the thread holes are pierced in the sheet metal, and three or more finished buttons are made. The piercings in the sheet metal made by the last descent of the compound tool form the thread holes of the buttons made by the next descent of the said compound tool. When the thread-holes of the button are made in a central depression, a shaping tool for making the said depression is placed between each piercing tool and cutting-out tool. This invention is also applicable to the manufacture of washers, rings, links for chains, and other like articles from sheet-metal. The patent of G. F. Champorez of Berlin, Prussia, relates to improvements in the manufacture of steel or iron and steel dies, and to certain contrivances for producing the same, the said dies being in depression or relief, without recourse to the hitherto universally employed engraving tool. Cole's patent (10th February 1875) relates to a composition for dress-fastenings generally, consisting of black composition of equal parts by weight of gas tar or tar varnish, whitening or chalk or clay, and lamp black or vegetable black. For a coloured composition transparent varnish, or the waste refuse of it, is substituted for gas tar or tar varnish, and a powdered pigment of the required colour is added. The materials should be thoroughly mixed and converted into a plastic, pasty mass, which is consolidated and hardened by rolling and drying. To give

toughness short pieces of fibrous material may be introduced. The articles are shaped from the composition by stamping in stamps or presses, and then varnished and polished.

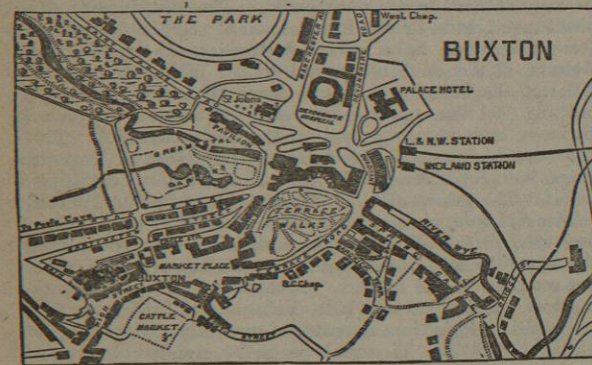
Messrs Green, Cadbury, & Richards, Birmingham, manufacture a linen button called "The very Button" (Shakespeare), in addition to others of innumerable kinds, and studs for shirts, collars, and wristbands; not only of plain materials but of gold and silver and jewelled. They employ about 400 hands, and turn out weekly from 10,000 to 15,000 gross (12 dozen to the gross) of their linen buttons. The proprietors of this establishment take great interest in the welfare of their workpeople, and few of the adults have been in their employment less than from eight to eighteen years. There is a sick club in connection with the works, and a library containing at present about 1000 volumes. Fines are inflicted for certain irregularities; these, however, are not appropriated by the firm; but are expended, half in the purchase of books, and half as a contribution to the sick club.

The following is a comparative statement of the number of button manufactories at the localities where these articles are principally made, taken from the *Directories of 1875*:—

London, 58; Birmingham, 161; Paris, 140; Berlin, 49; Hamburg, 5; Darmstadt, 3; Offenbach on the Maine, 3; Lubeck, 2; Barmen (Prussia), 27; Elberfeld, 9; Breslau, 2; Lüdenschied (Westphalia), 14; Stuttgart, 6; Vienna—metal, 15; porcelain, 5; shirt, 6; silk, 11; Brussels, 5; New York city, 19; Brooklyn (N.Y.), 3; Philadelphia, 13; Waterbury (Conn.), 8; Boston (Mass.), 3; Attleborough (Mass.), 3; Springfield (Mass.), 2; Newark (N. Jersey), 4.

*Abstracts of Specifications of Patents* (Patent office); *Ure's Dictionary of Arts and Manufactures; Resources, Products, &c., of Birmingham and Midland Hardware District*; *Strutt's Habits of the English*; *Newton's London Journal*; *Birmingham Directories, 1777, &c.*; *Hutton's History of Birmingham*; *Great Industries of the United States*. (J. J. L.)

BUXTON, a market-town and fashionable watering-place of England, in the county of Derby, 31 miles N.W. of Derby, and 160 from London, connected with Derby by the Buxton and Rowsley extension line, and with Manchester by the Stockport, Disley, and Buxton Railway. It occupies a high position, being 900 feet above the sea-level, in an open hollow, surrounded at a distance by hills of considerable elevation, except on the S. E. side, where the



Plan of Buxton.

Wye, which rises about half a mile off, makes its exit. The old town (High Buxton) is rather higher than the new, and consists of one wide street, and a considerable market place with an old cross. With the exception of some good inns and lodging-houses, the buildings in this part are commonplace. The new town is of a more elegant char-

acter, and has been greatly extended within the last twenty or thirty years. The crescent is a fine range of buildings in the Doric style, erected by the duke of Devonshire in 1779-86, at a cost of £120,000. It contains hotels, a ball-room, a bank, a library, and other establishments, and the surrounding open grounds have been laid out in terraces and gardens under the control of the Buxton Improvements Company. The Old Hall Hotel at the west end of the crescent is remarkable as the site of the mansion built by the earl of Shrewsbury in the reign of Queen Elizabeth, which was the residence of Queen Mary of Scotland when she visited the town. The new church was erected in 1812 by the duke of Devonshire; the edifice which it superseded has since been restored. The mineral waters of Buxton, the most noted in England, are particularly efficacious in cases of rheumatism and gout. There are numerous public and private baths, the most important of which are those in the new and spacious establishment at the eastern end of the crescent. The springs supply hot and cold water at a very short distance of each other, flowing at the rate of 60 gallons a minute. The former possesses a uniform temperature of 82° Fahr., and the principal substances in solution are, according to the analysis of Dr Muspratt in 1860—carbonate of lime, carbonate of magnesia, chloride of sodium, chloride of calcium, and silica. There is also a chalybeate spring known as St Anne's well, situated at the S.W. corner of the crescent, the water of which when mixed with that of the other springs proves purgative. The Devonshire Hospital, formerly known as the Bath Charity, is a benevolent institution, supported entirely by voluntary subscriptions, for the reception and free treatment of poor patients from any part of the country. About 900 or 1000 persons are annually indebted to its founders. The Buxton season extends from June to October, and during that period the town is visited by thousands annually. The public walks are tastefully laid out. The Cavendish Terrace, 500 yards long, forms a fine promenade; there are excellent drives in the park, which occupies more than 100 acres, and the neighbourhood of the town is rich in objects of interest. Of these the chief are—Poole's Hole, a vast stalactite cave, about half a mile distant, now lighted with gas for the convenience of visitors; Diamond Hill, which owes its name to the quartz crystals which are not unfrequent in its rocks; and Chee Tor, a remarkable cliff, on the banks of the Wye, 300 feet high. Ornaments are manufactured by the inhabitants from alabaster and spar; and excellent lime is burned at the quarries near Poole's Hole. Other places of interest, but more distant, are the caverns and mines of Castleton, Haddon Hall, and Chatsworth, the seat of the duke of Devonshire. The population in 1871 within the jurisdiction of the Local Board of Health was 3717; but the fluctuating population during summer varies from 4000 to 5000 at a time.

To judge from the remains of baths and other structures which have at various times been discovered, and the fact that they are situated near the crossing of two military roads, it seems almost certain that the mineral springs of Buxton were known to the Romans; but by what name they were then designated has not been ascertained. We find them a favourite resort in the period before the Reformation, when the patients were in the habit of offering their crutches or articles of attire to the image of St Anne, the tutelary saint, in token of their gratitude for benefit derived from the springs. Sir William Basset, at the command of Henry VIII., destroyed the "tabernacle" and prohibited the practice; but the wells seem to have lost none of their reputation by the loss of their saint, and continued to be a favourite resort in the last part of the century. Their praises were sounded in 1572 by John Jones, "Physician at the King's Mede, near Darby," in *The Benefits of the Ancient Baths of Buckstones*, and at a later period they were celebrated by Hobbes and Cotton in their respective accounts of the wonders of the Peak. See also Thomas Brown's *Tour in Derbyshire*, and among modern works, Sir Charles Scudamore's *Tepid Springs of Buxton*, 1839; Robertson's *Mineral Waters*, 1854; L. Jewitt's *History of Buxton*.

BUXTON, JEDEDIAH, a prodigy of skill in numbers, was born in 1704, at Elmton, near Chesterfield in Derbyshire. Although his father was schoolmaster of the parish, and his grandfather had been the vicar, his education had been so neglected that he could not write; and his knowledge, except of numbers, was extremely limited. How he came first to know the relative proportions of numbers, and their progressive denominations, he did not remember; but on such matters his attention was so constantly rivetted, that he frequently took no cognizance of external objects, and when he did, it was only with reference to their numbers. He worked out every question after his own method, without any external aid, and without understanding the common rules of arithmetic. He would stride over a piece of land or a field, and tell the contents of it almost as exactly as if it had been measured by the chain. In this manner he measured the whole lordship of Elmton, consisting of some thousand acres, and gave the contents not only in acres, roods, and perches, but even in square inches. After this, for his own amusement, he reduced them into square hairs' breadths, reckoning forty-eight to each side of the inch. His memory was so great, that in resolving a question he could leave off and resume the operation again at the same point after the lapse of a week, or even of several months. His perpetual application to figures prevented the smallest acquisition of any other knowledge. On his return from church it never appeared that he had brought away one sentence, his mind having been busied in his favourite occupation. His wonderful faculty was tested in 1754 by the Royal Society of London, who acknowledged their satisfaction by presenting him with a handsome gratuity. During his visit to the metropolis he was taken to see the tragedy of Richard III. performed at Drury Lane theatre, but his whole mind was given to the counting of the words uttered by Garrick. Similarly, he set himself to count the steps of the dancers; and he declared that the innumerable sounds produced by the musical instruments had perplexed him beyond measure. He lived till about the age of seventy, and died at the place of his birth.

BUXTON, SIR THOMAS FOWELL (1786-1845), a distinguished philanthropist, whose name is inseparably associated with that of Wilberforce in the abolition of slavery, was born in Essex, April 1, 1786. He was not educated at any of the public schools, and at about the age of eighteen he entered Trinity College, Dublin, with a very slender stock of acquirements. But he was aware of his defects, and laboured so earnestly that he came out one of the first men of his time, and with an extraordinarily high reputation as a speaker. In 1809 he married Harriet Gurney, sister of the celebrated Mrs Fry. As his own means were not of themselves sufficient to support his family, he entered in 1808 the brewery establishment of Truman, Hanbury, and Co., of which his uncles, the Hanburys, were partners. He devoted himself to business with characteristic enthusiasm, became a partner in 1811, and soon had the whole concern in his hands. In 1816 he brought himself into notice by his speech in behalf of the Spitalfields weavers, and in 1818 he published his able *Inquiry into Prison Discipline*. The same year he was elected member for Weymouth, a borough for which he continued to sit till 1837. In the House of Commons he had a high reputation as an able and straightforward speaker, devoted to philanthropic schemes. Of these plans the most important was that for the abolition of slavery in the British colonies. Buxton devoted his life to this object, and through defeat and opposition, despite the attacks of enemies and the remonstrances of faint-hearted friends, he remained true to it. Not till 1833 was he successful, and even then only partially, for he was compelled to admit some clauses

against which his better judgment had decided. In 1837 he ceased to sit in the House of Commons. He travelled on the Continent in 1839 to recruit his health, which had given way, and took the opportunity of inspecting Continental prisons. He was made a baronet in 1840, and then devoted himself to a plan for ameliorating the condition of the African negroes. The failure of the Niger expedition was a blow from which he never recovered. He died on the 19th February 1845. (See *Memoir and Correspondence of Sir T. F. Buxton*, edited by his son, Charles Buxton, 1848.)

BUXTORF, or BUXTORFF, JOHN (1564-1629), the first of a line of distinguished scholars, whose Hebrew and rabbinical learning shed lustre upon the university of Basel during the 17th century, was born at Camen in Westphalia on the 25th December 1564. The original form of the name was Bockstrop, or Boxtrop, from which was derived the family crest or insignia, which bore the figure of a goat (*Bock* in German signifying "he-goat"). His early education was received at the schools of Hamm and Dortmund. After the death of his father, who was minister of Camen, Buxtorf resumed his studies, which had been interrupted for a short time by that event, at Marburg, and the newly-founded university of Herborn, at the latter of which Olevian and Piscator had been recently appointed professors of theology. It was under the teaching of Piscator that Buxtorf first imbibed a love for the Hebrew language and literature, that department in which he was destined afterwards to become so famous. So great was his progress in these studies, that Piscator acknowledged that he was far surpassed by his pupil. At a later date Piscator received the assistance of Buxtorf in the preparation of his Latin translation of the Old Testament, which was published at Herborn in 1602-3. From Herborn Buxtorf repaired to Heidelberg, and thence to Basel, to which latter university he was attracted by the reputation of John James Grynæus and Hospinian. After a residence of some time at Basel, Buxtorf proceeded to Zurich, for the purpose of attending the lectures of Bullinger, and after that to Geneva, where he enjoyed for a short time the instructions of Beza. On his return to Basel, Grynæus, who had been greatly impressed by the character, talents, industry, and great learning of the youth, and was desirous that the services of one who promised to become a scholar of great distinction should be secured to the university, procured him a situation as tutor in the family of Leo Curio, son of Coelius Secundus Curio, so celebrated for his sufferings on account of the Reformed faith. This arrangement exercised a decisive influence upon the future life, public and private, of Buxtorf. At the instance of Grynæus, Buxtorf undertook the duties of the Hebrew chair in the university, and discharged them for two years with such ability and acceptance, that at the end of that time he was unanimously appointed to the vacant office. From this date (1590) to his death in 1629, a period of thirty-nine years, Buxtorf remained in Basel, and devoted himself to the study of Hebrew and rabbinical literature with an energy and zeal that have rarely been paralleled in the history of any scholar. He is said never to have devoted fewer than eight or ten hours daily to study. Not satisfied with perusing the works of the rabbins, he received into his own house many learned Jews, that he might discuss with them the more difficult and abstruse points treated of in the writings of their countrymen. So great, indeed, became his reputation for profound and extensive knowledge of rabbinical books, that he was frequently consulted by Jews themselves on matters relating to their ceremonial law. Probably no Protestant scholar ever possessed so complete a knowledge of the contents of the rabbinical writings as Buxtorf, and he

seems to have well deserved the title which was conferred upon him of "Master of the Rabbins." His partiality for Jewish society exposed him, indeed, on one occasion to considerable annoyance. He had received a Jew named Abraham into his house in order to assist him in the editing of his great Rabbinical Bible. Abraham's wife was confined of a boy, whose circumcision, agreeably to Hebrew usage, had to take place on the eighth day after birth, and it was necessary that at least two Jewish witnesses should be present at the ceremony. Buxtorf obtained permission from the chief officer of the town council to allow two Jews from a distance to assist on the occasion, while he himself, his son-in-law, and two citizens of Basel, were also present. This proceeding, however, gave great offence to the authorities of the city, the laws against the Jews being at this time exceedingly stringent. The result was that Buxtorf and his son-in-law were each fined 100 florins, the father of the boy 400 florins, while the officer of the municipality and the two citizens were punished with three days' imprisonment. Notwithstanding this occurrence, however, Buxtorf's relations with the city of Basel were of a friendly kind. He remained firmly attached to the university which first recognized his merits, and declined two invitations which were offered him, from Leyden and Saumur successively, to fill the Hebrew chair in these famous schools. His correspondence with the most distinguished scholars of the day, was very extensive, and in the rich collection of letters preserved in the library of the university of Basel, are contained materials for a literary history of the time which it is hoped may be one day utilized.

The works which Buxtorf published during his life are too numerous to be all enumerated in this brief notice, and for a complete list of them the reader is referred to the authorities cited at the close of the article. The following, however, may be mentioned. In 1603 appeared his *Manuale Hebraicum et Chaldaicum*, which reached a seventh edition in the year 1658. In the following year was published his *Synagoga Judaica*, which appeared first in German, and was afterwards translated into Latin in an enlarged form, and which constitutes a valuable repertory of information regarding the opinions and ceremonies of the Jews. In 1607 he published his *Lexicon Hebraicum et Chaldaicum cum brevi Lexico Rabbinico Philo-osophico*, which was reprinted at Glasgow so recently as 1824. In 1618 there appeared in two folio volumes his great *Rabbinical Bible*, containing, in addition to the Hebrew text, the Chaldee Paraphrases or Targums, which he punctuated after the analogy of the Chaldee passages in Ezra and Daniel (a proceeding which has been condemned by Richard Simon and others), and the Commentaries of the more celebrated Rabbins, with various other treatises. Of this work it may be said that Rosenmüller's judgment will approve itself to most Hebrew scholars,—that "this edition is indispensable to every one who desires thoroughly to study the criticism and exposition of the Old Testament." (Rosenmüller, *Handbuch für die Literatur der Biblischen Kritik und Exegese*, vol. i. p. 259). The Bible was followed by his *Tiberias, sive Commentarius Masoreticus*, so named from the great school of Jewish criticism which had its seat in the town of Tiberias. It was in this work that Buxtorf controverted the views of Elias Levita regarding the late origin of the Hebrew vowel points, a subject which gave rise to the famous controversy between Cappellus and his son John Buxtorf, which will be referred to in the following article. Buxtorf did not live to complete the two works on which his reputation chiefly rests, viz., his great *Lexicon Chaldaicum, Talmudicum, et Rabbinicum*, and the *Concordantiae Bibliorum Hebraicorum*, both of which were edited by his son. They are monuments of untiring labour and industry, and possess an enduring value. The former work has been recently (1869) re-published at Leipzig with some additions by Bernard Fischer, Ph.D., and the latter was assumed by Fürst as the basis of his great Hebrew concordance, which appeared in 1840. For additional information regarding his writings the reader is referred to *Athena Ravennae*, pp. 444-448; to the article "Buxtorf" in Ersch and Gruber's *Encyclopædia*; to the *Theological Cyclopædias* of Herzog, and of Wetzer and De Welte, *sub voce* "Buxtorf"; to Nicéron's *Mémoires*, vol. xxxi. pp. 206-215; to Schrockh's *Kirchengeschichte*, vol. v. (Post-Reformation period) pp. 72 sq., Leipzig, 1806; and to Meyer's *Geschichte der Schrift-Erklärung*, vol. iii., Göttingen, 1804. (F. C.)

BUXTORF, or BUXTORFF, JOHN (1599-1664), commonly called "junior," to distinguish him from his father,

the subject of the preceding notice. He was born at Basel on the 13th August 1599, and at a very early age displayed remarkable aptitude for the acquisition of languages. When only four years old he was sent to school, at which age he is said to have been able to read Latin, Greek, and Hebrew, in which he had been instructed by his father. At the age of twelve he entered the university, where he speedily distinguished himself above not only his equals, but his seniors in years, to so great a degree that when only sixteen he received the diploma of master of arts from the hands of his own father. From this time he devoted himself to the study of theology, turning his attention especially to the Hebrew language and its cognate dialects, and then proceeding to the study of rabbinical Hebrew, in which he soon attained such proficiency, that he is said, while still a young man, to have read through not only the Mishna, but also the Jerusalem and Babylonian Gemaras, or commentaries upon the text of the Talmud. In conformity with the excellent custom, so long prevalent on the Continent, of visiting several universities before finally settling down to life-long professional work, Buxtorf proceeded to Heidelberg in 1617, where he listened to the prelections of the theologians Pareus, Scultetus, and the elder Altling. In 1619 he repaired to Dort, while the famous Synod was still sitting, and there made the acquaintance of many of the divines who took part in its proceedings. At the close of the Synod he made a short journey in company with the deputies from Basel, through the Netherlands and England, and thence through France back to Basel. On his return he found that his father's great Rabbinical Bible was in course of publication, and as there was no lexicon suitable for the study of the Chaldee Targums, comprised in the work, he undertook the compilation of such a lexicon, which appeared at Basel in 1622 under the title of *Lexicon Chaldaicum et Syriacum*, with a recommendatory preface from his father, detailing the circumstances under which the work had been executed. Still thirsting for knowledge, he repaired in 1623 to Geneva, to enjoy the instructions of the elder Turretin, Diodati, and Tronchin; while in return Turretin and Dav. Clericus did not disdain to avail themselves as pupils of his pre-eminent knowledge of Hebrew and of the rabbinical dialect. So great by this time had become his reputation as a scholar, that he was offered by the authorities of the city of Bern the chair of logic at Lausanne, which he declined, preferring to return to Basel, where in 1624, he was appointed general deacon to the church of Basel (*Communis Ecclesie Basileensis Diaconus*), and three years later deacon of St Peter's church. On the death of his father in 1629, Buxtorf was unanimously designated as the fittest person to succeed so distinguished a Hebraist; and by the advice of his physicians, who were of opinion that the labours involved in the discharge of the duties of a public preacher would be injurious to one whose constitution was feeble, he finally accepted the office. From this date until his death he remained at Basel, declining two offers which were made to him from Groningen and Leyden, to accept the Hebrew chair in these two celebrated schools. To mark their appreciation of his patriotic conduct, the governing body of the university founded in 1647, specially for his behoof, a third theological professorship, that of "Commonplaces and Controversies," the duties of which Buxtorf discharged for seven years along with those of the Hebrew chair. When, however, the professorship of the Old Testament became vacant in 1654 by the death of Theodore Zuinger, Buxtorf resigned the chair of theology, and accepted that of the Old Testament instead, holding both offices, and for some time that also of chief librarian to the university, until his death in 1664. The course of his private life was chequered by many domestic bereavements. He was four times married

his three first wives dying shortly after marriage, and the fourth predeceasing her husband by seven years. His children also all died young, with the exception of two boys, the younger of whom, John James, became first his father's colleague, and shortly after his successor in the chair of Hebrew.

A considerable portion of his public life was spent in controversy regarding disputed points in Biblical criticism, in reference to which he had to defend the views advanced by his father. The attitude of the Reformed churches at that time, as opposed to the Church of Rome, led them to take up and maintain many opinions in regard to Biblical questions, which were not only erroneous in point of fact, but which were altogether unnecessary for the stability of their position. Having renounced the dogma of an infallible church, it was deemed necessary to maintain as a counterpoise, not only that of an infallible Bible, but, as the necessary foundation of this, of a Bible which had been handed down from the earliest ages to the present time without the slightest alteration or change in its text. The letters in which the Old Testament was written, were, it was asserted, the same as those in which the two tables of the law had been written; the vowel points and accents which accompanied them had been given by divine inspiration; and the words themselves had not undergone the slightest change from the time they had flowed from the pens of the respective writers. The Masoretic text of the Old Testament, therefore, as compared either with that of the recently discovered Samaritan Pentateuch, or of the Septuagint, or of the Vulgate, was alone the "Hebrew Verity," wherein the true words of the sacred writers were to be found. Although many of the Reformers, as well as learned Jews, had long seen that these assertions could not be made good, there had been as yet no formal controversy upon the subject. It was reserved for a learned and acute Frenchman, Ludovicus Cappellus the younger, professor of Hebrew at Saumur, to enter the field, and by a series of controversial writings effectually to dispel the illusions which had long prevailed in many minds. As early as 1622 or 1623, Cappellus had submitted in manuscript to the elder Buxtorf a work on the modern origin of the vowel points and accents, which he had been led to undertake in consequence of the statements made by the Swiss professor in his *Tiberias*, or *Commentary on the Masora*, in which he had controverted the views of Elias Levita on the late origin of the points. Buxtorf saw the force of the arguments employed by Cappellus, but counselled him not to publish his work, pointing out the injury which it would afford to the Protestant cause, and the advantage which it would afford to Romish controversialists on the question of the infallible accuracy of the text of Scripture. Cappellus, however, was not to be deterred by fear of consequences. He sent his MS. to Thomas Erpenius of Leyden, the most learned Orientalist of his day, by whom it was published in 1624, under the title *Arcanum Punctuationis revelatum*, with a laudatory preface, but without the author's name. In this work Cappellus adduced those arguments and considerations which have satisfied most scholars since his day that the vowels and accents are the invention of the Masoretes, and that they are not older than the fifth century of the Christian era. It is worth noting that although the elder Buxtorf lived five years after the publication of the work, he made no public reply to it; and it was not until 1648, nearly a quarter of a century afterwards, that Buxtorf, junior, published his *Tractatus de punctationum origine, antiquitate, et auctoritate, oppositus Arcano punctationis revelato Ludovici Cappelli*. In this treatise he endeavoured to prove by copious citations from the rabbinical writers, and by arguments of various kinds, that the points, if not so ancient as the time of Moses, were at least as old as that of Ezra, and thus possessed the authority of divine inspiration. In the course of the work he allowed himself frequently to employ contemptuous epithets towards Cappellus, such as "innovator," "prophet," "revealer," "a seer of visions," "dreams," &c. Cappellus was not the man to remain silent in such circumstances. He speedily prepared a second edition of his work, in which, besides replying to the arguments of his opponent, and fortifying his position with new ones, he retorted his contemptuous epithets with interest. Owing to various causes, however, among which may be mentioned the distrust with which Cappellus was coming to be regarded on account of his critical opinions among Protestants themselves, this second edition did not see the light until thirty years after his death, when it was published at Amsterdam in 1685, in the edition of his collected works. Besides this controversy, Buxtorf engaged in three others with the same antagonist, on the subject of the integrity of the Masoretic text of the Old Testament, on the antiquity of the present Hebrew characters, and on the Lord's Supper. Into the details of these, however, our space does not allow us to enter. In the two former Buxtorf supported the untenable position that the text of the Old Testament had been transmitted to us without any errors or alteration, and that the present square or so-called Chaldee characters were coeval with the original composition of the various books. These views were triumphantly refuted by his great oppo-

nent in his *Critica Sacra*, and in his *Diatriba de veris et antiquis Ebraicorum literis*. Besides the works which have been already mentioned in the course of this article, Buxtorf edited the great *Lexicon Chaldaicum, Talmudicum, et Rabbinicum*, on which his father had spent the labour of twenty years, and to the completion of which he himself gave ten years of additional study, and the great Hebrew *Concordance*, which his father had little more than begun. In addition to these, he published new editions of many of his father's works, as well as others of his own, complete lists of which may be seen in the *Athena Ravennae*, and other works enumerated at the close of the preceding article. (F. C.)

BUZZARD, a word derived from the Latin *Buteo*, through the French *Busard*, and used in a general sense for a large group of Diurnal Birds-of-prey, which contains, among many others, the species usually known as the Common Buzzard (*Buteo vulgaris*, Leach), though the English epithet is now-a-days hardly applicable. The name Buzzard, however, belongs quite as rightfully to the birds called in books "Harriers," which form a distinct subfamily of *Falconidae* under the title *Circinae*, and by it one species, the Moor-Buzzard (*Circus aruginosus*), is still known in such places as it inhabits. "Puttock" is also another name used in some parts of the country, but perhaps is rather a synonym of the Kite (*Milvus icinus*). Though ornithological writers are almost unanimous in distinguishing the Buzzards as a group from the Eagles, the grounds usually assigned for their separation are but slight, and the diagnostic character that can be best trusted is probably that in the former the bill is decurved from the base, while in the latter it is for about a third of its length straight. The head, too, in the Buzzards is short and round, while in the Eagles it is elongated. In a general way Buzzards are smaller than Eagles, though there are several exceptions to this statement, and have their plumage more mottled. Furthermore, most if not all of the Buzzards, about which anything of the kind is with certainty known, assume their adult dress at the first moult, while the Eagles take a longer time to reach maturity. The Buzzards are fine-looking birds, but are slow and heavy of flight, so that in the old days of falconry they were regarded with infinite scorn, and hence in common English to call a man "a buzzard" is to denounce him as stupid. Their food consists of small mammals, young birds, reptiles, amphibians, and insects,—particularly beetles,—and thus they never could have been very injurious to the game-preserver, though they have fallen under his ban, if indeed they were not really his friends, but at the present day they are so scarce that in this country their effect, whatever it may be, is inappreciable. Buzzards are found over the whole world with the exception of the Australian region, and have been split into many genera by systematists. In the British Islands we have two species, one resident (the *B. vulgaris* already mentioned), and now almost confined to a few wooded districts; the other the Rough-legged Buzzard (*Archibuteo lagopus*), an irregular winter-visitant, sometimes arriving in large bands from the north of Europe, and readily distinguishable from the former by being feathered down to the toes. The Honey-buzzard (*Pernis apivorus*), a summer-visitor from the south, and breeding, or attempting to breed, yearly in the New Forest, does not come into the subfamily *Buteoninae*, but is probably the type of a distinct group, *Perninae*, of which there are other examples in Africa and Asia. (A. N.)

BYNG, GEORGE (1663-1733), Viscount Torrington, a distinguished English admiral, was born at Wrotham, Kent, and at the age of fifteen went to sea as a volunteer. After being several times advanced, he was in 1702 raised to the command of the "Nassau," a third rate, and was at the taking and burning of the French fleet at Vigo; and the next year he was made rear-admiral of the red. In 1704 he served in the grand fleet sent to the Mediterranean, under Sir Cloudesley Shovel, as rear-admiral