by two towers; and in 1369 Hugues Aubriot, at the command of Charles V., changed it into a regular bastille or fort by the addition of six others of massive structure, the whole united by thick walls and surrounded by a ditch 25 feet wide. Various extensions and alterations were afterwards effected; but the building remained substantially what it was made by the vigorous provost, a strong and gloomy structure, with eight stern towers. As the ancient fortifications of the city were superseded, the use of the word bastille as a general designation gradually died out, and it became restricted to the castle of Saint Antoine, the political importance of which made it practically, long before it was actually, the only bastille of Paris. The building had originally a military purpose, and it appears as a fortress on several occasions in French history. When Charles VII. retook Paris from the English in 1436, all his opponents in the city took refuge in the Bastille, which they were prepared to defend with vigour, but the want of provisions obliged them to capitulate. In 1588 the duke of Guise took possession of the Bastille, gave the command of it to Bussy-Leclerc, and soon afterwards shut up the whole parliament within its walls, for having refused their adherence to the League. When Henri IV. became master of Paris he committed the command of the Bastille to Sully, and there he deposited his treasures, which at the time of his death amounted to the sum of 1,870,000 livres. On the 11th of January 1649, the Bastille was invested by the forces of the Fronde, and, after a short cannonade, capitulated on the 13th of that month. The garrison consisted of only twenty-two men. The Frondeurs concluded a peace with the court on the 11th of March; but it was stipulated by treaty that they should retain possession of the Bastille, which, in fact, was not restored to the king till the 21st of October 1651. In that year took place the famous fight of the Porte St Antoine between Condé and Turenne, on which occasion the forces of Condé owed their safe retreat into Paris to the cannon of the Bastille.

At a very early period, however, the Bastille was employed for the custody of state prisoners, and it was ultimately much more of a prison than a fortress. According to the usual account, which one is tempted to ascribe to the popular love of poetical justice, the first who was incarcerated within its walls was the builder himself, Hugues Aubriot. Be this at it may, the duke of Nemours spent thirteen years there in one of those iron cages which Louis XI. called his *fillettes;* and Jacques d'Armagnac, Poyet, and Chabot were successively prisoners. It was not till the reign of Louis XIII. that it became recognized as a regular place of confinement; but from that time till its destruction it was frequently filled to embarrassment with men and women of every age and condition.

Of the treatment of prisoners in the Bastille very various accounts have been given even by those who speak from personal experience, for the simple reason that it varied greatly in different cases. The prisoners were divided into two main classes, those who were detained on grounds of precaution or by way of admonitory correction, and those who lay under presumption or proof of guilt. The former were subject to no investigation or judgment, and the length of their imprisonment depended on the will of the king; the latter were brought to trial in the ordinary courts or before special tribunals, such as that of the Arsénal,—though even in their case the interval between their arrest and their trial was determined solely by the royal decree, and it was quite possible for a man to grow old in the prison without having the opportunity of having his fate decided. Until guilt was established, the prisoner was registered in the king's name, and—except in the case of state prisoners of importance, who were kept with greater strictness and often in absolute isolation—he enjoyed a certain degree of comfort and freedom. Visitors were admitted under restrictions; games were allowed; and, for a long time, at least, exercise was permitted in open parts of the interior. Food was both abundant and good, at least for the better class of prisoners; and instances were not unknown of people living below their allowance and, by arrangement with the governor, saving the surplus. When the criminality of the prisoner was established, his name was transferred to the register of the "commission," and he became exposed to numerous hardships and even barbarities, which, however, belonged not so much to the special organization of the Bastille as to the general system of criminal justice then in force.

Among the more distinguished personages who were confined in this fortress during the reigns of Louis XIV., XV., and XVI., were the famous *Man of the Iron Mask*, Fouquet, the Marshal Richelieu, Le Maistre de Sacy, De Renneville, Voltaire, De Latude, Le Prévost de Beaumont, Labourdonnais, Lally, Cardinal Rohan, Linguet, and La Chalotais. While no detestation is too great for that system of "royal pantheism" which led to the unjust and often protracted imprisonment of even men of great ability and stainless character, it is unnecessary to give implicit credence to all the tales of horror which found currency during the excitement of the Revolution, and which historical evidence, as well as *a priori* considerations, tends to strip of their more dreadful features, and even in many cases to refute altogether. Within the last twenty or thirty years much light of an unexpected kind has been shed on the history of the Bastille from the pages of its own records. These documents had been flung out into the courts of the building by the Revolutionary captors, and after suffering grievous diminution and damage were finally stored up and forgotten in the vaults of the library of the (so-called) Arsénal. Here they were discovered in 1840 by François Ravaisson, who has since devoted himself, with rare patience, learning, and ability, to their arrangement, elucidation, and publication. Of the extent and value of his investigations some idea may be formed from the fact that the six volumes published cover only the interesting period from 1659 to 1681.

At the breaking out of the Revolution the Bastille was attacked by the Parisians; and, after a vigorous resistance, it was taken and razed to the ground on the 14th July 1789. At the time of its capture only seven prisoners were found in it. A very striking account of the siege will be found in Carlyle's *French Revolution*, vol. i. The site of the building is now marked by a lofty column of brouze, dedicated to the memory of the patriots of July 1789 and 1830. It is crowned by a gilded figure of Mercury spreading his pinions in the act of flight.

See the *Histories* of the Bastille by Renneville (7 tom. 12mo, 1713–24), Fougeret (8vo, 1833), Dufey de l'Yonne (8vo, 1834), and Arnould (7 tom. 8vo, 1843–44); and the *Memoirs* of Linguet (12mo, 1821, new ed.), Carra (3 tom. 8vo, 1787), Charpentier (3 tom. 8vo, 1789), and Latude (edited by Thierry, 3 tom. 18mo, 1791–92); also François Ravaisson, *Les Archives de la Bastille*, (6 vols. 8vo, 1866–73); and Charles Louandre, in *Revue des Deux Mondes*, 1874.

BASTWICK, Dr John, born at Writtle, in Essex, in 1593, was a physician at Colchester, whose celebrity rests on his strong opposition to the Roman Catholic ceremonial. About 1633 he printed in Holland a Latin treatise, entitled *Elenchus Religionis Papisticæ*, with *Flagellum Pontificis et Episcoporum Latialium;* and as the English prelates thought themselves aimed at, he was fined £1000 in the High Commission Court, excommunicated, and prohibited from practising physic, while his books were ordered to be burnt, and the author himself consigned to prison. Instead of

recanting, however, he wrote *Apologeticus ad Præsules Anglicanos*, and another book called *The Litany*, in which he exclaimed vehemently against the proceedings of that arbitrary court, and charged the bishops with an inclination to popery. Prynne and Burton coming under the lash of the Star-chamber court at the same time, they were all censured as turbulent and seditious persons, and condemned to pay a fine of £5000 each, to be set in the pillory, to lose their ears, and to undergo imprisonment for life in remote parts of the kingdom. The parliament in 1640 reversed these proceedings, and ordered Bastwick a reparation of £5000 out of the estates of the commissioners and lords who had persecuted him. The civil commotions which ensued prevented his receiving this *solatium* for his sufferings; but, in 1644, his wife had an allowance ordered for her own and her husband's maintenance. The place and time of his death are unknown. He seems in his later years to have shown bitter opposition to the Independents.

BAT, the common name of a well marked group of Mammals forming the order *Cheiroptera* (*i.e.*, wing-handed), distinguished from all other members of their class by the possession of true organs of flight. These consist of a delicate membrane stretching from limb to limb on both sides of the body, enclosing the greatly elongated digits of the hand, and in many cases extending beyond the posterior limbs so as to include the tail. Their whole structure bears evidence of special adaptation to the purpose of sustained flight, while their mode of progression on the ground is as awkward as their aerial movements are graceful. The eyes of the bat are usually small, but the organs of the other senses in most cases attain extraordinary development. The external ear is generally large, as in the Long-eared Bat of Britain (*Plecotus auritus*), in which it is equal to the entire length of the body. In the group to which the Horse-shoe Bats (*Rhinolophus ferrum equinum*) belong, the nose is surrounded with leaf-like appendages, the purpose of which is by no means well determined, but which, probably, are as useful to the organ of smelling as is the greatly elongated auricle to that of hearing. In all bats the wing-membrane affords a vast expansion of the sense of touch, which is of such exquisite delicacy that bats which have been deprived of their sight, and as far as possible of hearing and smelling, are yet able by it alone to fly about in perfect security, avoiding, with apparent ease, all the obstacles that may be placed in their way. By Pliny and other early naturalists the bat, although known to suckle its young, was placed among Birds, and was generally regarded as a creature of ill omen, a superstitious feeling by no means extinct at the present day. Virgil, in speaking of the Harpies, generally understood to have been bats, describes them as "diræ obscenæque volucres." Our English ancestors formed a more correct estimate of the zoological position of these creatures as indicated by the name "flitter-mouse," still given to the bat in many parts of Britain. Bats are nocturnal or crepuscular in their habits, remaining suspended by day in the darkest recesses of woods and caverns, or in the most inaccessible parts of unfrequented buildings, and coming forth at twilight in search of food. This in the species found in Europe and America consists mainly of insects; while one species at least, the Vampire of America, sucks the blood of other mammals, although its powers in this respect have probably been much exaggerated. The Fruit-eating Bats (*Pteropus*) are confined to the warmer regions of Asia and Africa, and among these are to be found the largest members of the order, thus the Kalong of Java (*Pteropus javanicus*) measures 5 feet between the tips of its wings. In countries where the winter cold is sufficiently severe to cut off their usual sources of food, bats hibernate. Collecting in enormous numbers in their usual retreats and suspending themselves by their hind limbs, they become torpid, and remain so till the return of spring, bringing with it a revival of insect life, restores them to their wonted activity. About 130 species of bats are known, and these are widely distributed over every quarter of the globe, extending as far northward as latitude 60°; all the larger forms, however, occur in the warmer regions of the earth. Bats are found in most of the islands of the Indian and Pacific Oceans, forming in many of them the only indigenous mammals, a fact readily explained when viewed in connection with their remarkable power of flight. Fossil remains of insectivorous Cheiroptera have been found in the Eocene and later Tertiary deposits. See Mammalia.

BATAVIA, a large city and seaport on the north coast of the island of Java, and the capital of all the Dutch settlements in the East. It is situated on both sides of the river Jacatra or Tjiliwong, in a swampy plain at the head of a capacious bay. The streets are for the most part straight and regular, and many of them have a breadth of from 100 to 200 feet. In several cases there is a canal in the centre lined with stone, and defended by low parapets or banks, while almost every street and square is fringed with trees. The old town has greatly changed from what it was in the 18th century. It was then surrounded by strong fortifications, and contained a number of important buildings, such as the town-house (built in 1652 and restored in 1706), the exchange, the infirmary and orphan asylum, and the European churches. But the ramparts were long ago demolished, and most of the public edifices have either fallen into decay or been converted into magazines and warehouses. The great church which was finished in 1760, at an expense of £80,000, had to be taken down in consequence of its foundation having given way. Canals have been filled up, streets have been altered, and the general character of the place considerably modified. All the European inhabitants, except those immediately connected with the shipping, have removed to the New Town, which has been gradually formed by the integration of Weltevreden (*Well-content*), Molenvliet (*Mill-stream*), Rijswijk (*Rice-town*), Noordwijk (*North-town*), Koningsplein (*King's square*), and other suburban villages or stations. The situation of this modern part is higher and healthier; and the grandeur and variety of its buildings far surpass anything to be found in the older section of the city. The misplaced imitation of Dutch arrangements has been happily avoided, and the natural advantages of the situation and climate have been turned to account. The houses are frequently separated from each other by rows of trees.

As the chief city of the Dutch colonies in the East, Batavia contains numerous buildings connected with the civil and military organization of the Government. The chambers of the Council of the East Indies occupy a spacious edifice in Rijswijk, and the governor-general's hotel, or town-residence, is situated in the same quarter. In the district of Weltevreden are the new palace, the barracks, and the artillery school, as well as the military and civil hospital, which can accommodate 600 patients, and not far off is the Frederik-Hendrik citadel, which was built in 1837. Further inland, at Meester Cornelis (known for its lake), is a school for under-officers. The Koningsplein is a large open square for military manœuvres, about 390 feet long and 250 feet broad, surrounded by mansions of the wealthier classes. Noordwijk is principally inhabited by lesser merchants and subordinate officials. There is an orphan-asylum in the district of Parapatta, and a poor-house (*Diaconie armenhaus*) in Molenvliet. Besides those already mentioned, Batavia has various educational and scientific institutions of note. In 1851 the Government founded a medical school for

Javanese, and in 1860 the "Gymnasium William III." in which a comprehensive education is bestowed. A society of arts and sciences was established in 1778, a royal physical society in 1850, and a society for the promotion of industry and agriculture in 1853. In addition to the *Transactions* of these societies—many of which contain valuable contributions to their respective departments in their relation to the East Indies—a considerable number of publications are issued in Batavia. Among miscellaneous buildings of importance may be mentioned the public-hall known as the *Harmonie*, the freemasons' lodge, the theatre, the club-house, and several fine hotels.

The population of Batavia is very varied,—the Dutch residents being a comparatively small class, and greatly intermixed with Portuguese and Malays. Here are found members of the different Indian nations, originally slaves; Moors and Arabs, who are principally engaged in navigation, but also inhabit the Rua Malacoa district, and trade in gold and precious stones; Javanese, who are cultivators; and Malays, chiefly boatmen and sailors, and adherents of Mahometanism. But, perhaps, the most important Asiatic element is the Chinese, who are both numerous and industrious. They were long greatly oppressed by the Dutch Government in various paltry ways, and in 1740 they were massacred to the number of 12,000. But in spite of all this they have maintained their position, and now enjoy a happier lot. In 1832 the population was found to consist of 2800 Europeans, 80,000 natives, 25,000 Chinese, 1000 Arabs, and 9500 slaves, a total of 118,300 persons. The number of inhabitants is at present much less.

Batavia is still a great commercial depôt, though it has had to contend against the rivalry of Singapore. The bay is rendered secure by a number of islands at its mouth, and is capacious enough for a much larger traffic than it has ever seen; but it unfortunately grows very shallow towards the shore. Ships of 300 or 400 tons anchor about a mile and a half out; the river is navigable a couple of miles inland for vessels of 30 or 40 tons, but the entrance is narrow, and requires continual attention to keep it open.

The exports from Batavia to the other islands of the archipelago, and to the ports in the Malayan peninsula, are rice, sago, coffee, sugar, salt, oil, tobacco, teak timber and planks, Java cloths, brass wares, &c., and European, Indian, and Chinese goods. The produce of the Eastern Islands is also collected at its ports for re-exportation to India, China, and Europe,—namely, gold-dust, diamonds, camphor, benzoin, and other drugs; edible bird-nests, trepang, rattans, bees' wax, tortoise-shell, and dyeing woods from Borneo and Sumatra; tin from Banca; spices from the Moluccas; fine cloths from Celebes and Bali; and pepper from Sumatra. From Bengal are imported opium, drugs, and cloths; from China, teas, raw silk, silk piece-goods, varnished umbrellas, coarse China wares, nankeen, paper, and innumerable smaller articles for the Chinese settlers. British manufactures also are largely introduced. The number of British ships that entered in 1870 was 103, with a tonnage of nearly 31,000 tons, the total number of vessels of all nationalities being 783, with a tonnage of nearly 194,000.

Almost the only manufactures of any importance are the distillation of arrack, which is principally carried on by Chinese, the burning of lime and bricks, and the baking of pottery; and even the brick-making is in a decaying condition. The principal establishment for monetary transactions is the Java Bank, established in 1828 with a capital of £500,000; but there are also agencies belonging to the Bank of Rotterdam, and the Chartered Bank of India, Australia, and China, as well as a public savings bank.

The Government has a naval establishment at the island of Onrust, about six miles from the city; and among its other accommodations is a large iron floating dock capable of holding vessels 400 feet long. Since 1869, however, entrance has been refused to merchant ships, which, consequently, feel the lack of proper docks in the harbour. Proposals to build these and to extend the harbour, though frequently under discussion, have had no result. Tramways were introduced into the city in 1867, and are greatly patronized by the native population. A railway to Buitenzorg, where the Government botanical gardens are situated, was opened in 1871, the distance being about 40 miles inland.

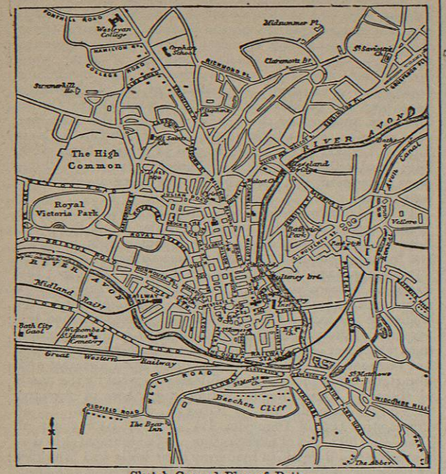
Batavia owes its origin to the Dutch general John Petersen Coen, who, in 1619, took the town of Jacatra (which had been built on the ruins of the old Javanese town of Sunda Calappa), destroyed it, and founded in its stead the present city, which soon acquired a flourishing trade and increased in importance. The ruins of Jacatra are to be found between Batavia and Anjol. In 1699 Batavia was visited by a terrible earthquake, and the streams were choked by the mud from the volcano of Gunong Salak (7244 feet high), by which the climate was so affected that the city became notorious for its unhealthiness, and was in great danger of being altogether abandoned. In the twenty-two years from 1730 to 1752, 1,100,000 deaths are said to have been recorded. General Daendals, who was governor from 1808 to 1811, caused the ramparts of the town to be demolished, and began to form the nucleus of a new city at Weltevreden. By 1816 nearly all the Europeans had left the old town. In 1811 a British armament was sent against the Dutch settlements in Java, which had been incorporated by France, and to this force Batavia surrendered on the 8th of August. It was restored, however, to the Dutch by the treaty of 1814.

See Stavorinus, *Voyages to the East Indies;* Barrow, *Voyage to Cochin China;* Sir George Staunton, *Embassy to China;* Daendel, *Staat der Nederl. O. Ind. Bezittungen;* Junghuhn, *Reisen der Java;* Thorn, *Mem. of the Conquest of Java;* Sir S. Raffles, *History of Java;* Temminck, *L'Inde Archip.;* Veth, *Woordenboek v. Nederl. Ind.*

BATES, William, D.D., an eminent Nonconformist divine, born in November 1625. He was admitted to Emmanuel College, Cambridge, and removed thence to King's College in 1644. He was one of the commissioners at the conference in the Savoy, for reviewing the public liturgy, and was concerned in drawing up the exceptions to the Book of Common Prayer. Notwithstanding this he was appointed chaplain to Charles II. soon after the Restoration, and became minister of St Dunstan's in the West; but he was afterwards deprived of his benefice for nonconformity. Bates was of an amiable character, and enjoyed the friendship of the Lord-Keeper Bridgeman, the Lord-Chancellor Finch, the earl of Nottingham, and Archbishop Tillotson. He published *Select Lives of Illustrious and Pious Persons*, in Latin; and after his death all his works, except his *Select Lives*, were printed in one vol. fol.; again in 1723; and in 4 vols. 8vo, in 1815. He died in July 1699, in the 74th year of his age.

BATH, the chief town of Somersetshire, and, from the elegance of its buildings and the beauty of its situation, one of the finest cities in England, is situated mainly on the right bank of the river Avon, though a considerable extension has also taken place on the left. Communication between the two portions is afforded by several bridges, of which the most important are the Pulteney, the North Parade, the Cleveland, and the Grosvenor Suspension. The heights and slopes of the great western oolitic range, that rise like an amphitheatre from the river valley, are covered with the terraces and crescents of the city; it contains many fine public walks, and the vicinity presents a great variety of beautiful landscape. Its sheltered position renders the climate mild and agreeable. The houses are

mostly built of white freestone. Jointly with Wells, Bath is the head of a diocese, which is co-extensive with the county of Somerset. The Abbey Church is a handsome

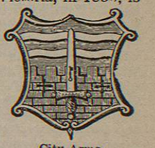


Sketch Ground-Plan of Bath.

1. Guildhall.
2. Assembly Rooms.
3. Theatre.
4. Post-Office.
5. Market.
6. Pump-Room.
7. King's and Queen's Bath.
8. Cross Bath.
9. Hot Bath Pump-Room.
10. Kingston Baths.
11. Royal Private Baths.

cruciform edifice, dating from 1499, with a quadrangular tower 162 feet high rising from the point of intersection. It is 210 feet in length from E. to W., and 126 in breadth from N. to S. The west front contains a curious representation of the founder's dream of the angels ascending and descending on Jacob's ladder. In the interior are the tombs of Quin, Nash, Malthus, Broome, Melmoth, and numerous minor celebrities; while several of the monuments are from the chisels of Bacon, Chantrey, and Flaxman. The church has been recently restored under the direction of Sir Gilbert Scott, at a cost of £20,000. There are about thirty other parish churches or chapels in Bath, as well as numerous nonconformist places of worship. St Swithin's, Walcot, may be mentioned as containing the tombs of Christopher Anstey and Madame d'Arblay. Among the most important educational institutions are the Free Grammar School, founded by Edward VI.; the Somersetshire College, established in 1858; the Royal School, for the education of the daughters of military officers, founded in 1865; the Bath College in Sydney Place; the School of Art; the Roman Catholic College at Prior Park, which was formerly the mansion of Ralph Allen, the friend and patron of Fielding; and the Wesleyan College at Kingswood. There are several buildings of considerable pretension connected with the baths from which the town derives its name. The springs supply six distinct establishments, namely, the King's, Queen's, Hot, Cross, Abbey, and Grand Pump Room Hotel baths. Of these the oldest is the King's,

Device of Bishopric.



City Arms.

which was enclosed in 1236. The pump-room is 85 feet in length by 56 in breadth and 34 in height; it contains a marble statue to Beau Nash. The Queen's was built in 1597; and the Cross Bath dates from 1790. The temperature varies in the different springs from 117° to 120° Fahr., and the specific gravity of the hot bath is 1·002. Dr Daubeny in 1833 found that the daily evolution of nitrogen gas amounted to 250 cubic feet; and Professor Ramsay has calculated that if the mineral ingredients of the waters were solidified they would form in one year a column 9 feet in diameter and 140 feet in height. The principal substances in solution are sulphates of lime and soda and chlorides of sodium and magnesium. The waters are very beneficial in cases of palsy, rheumatism, gout, leprosy, neuralgia, sciatica, chorea, diseases of the liver, and cutaneous and scrofulous affections. The influx of visitors, varying from 10,000 to 14,000 during the season, has greatly stimulated the adornment of the town. The Assembly rooms, built by Wood the younger, at a cost of £20,000, were opened in October 1771, and for elegance, comfort, and convenience, are not surpassed by any similar rooms in the kingdom. The theatre, which is one of the best out of London, was opened in 1863, the former building having been burnt in 1862. The Literary and Scientific Institution, founded in 1826, is a handsome building of the Doric order, and contains a laboratory, a lecture-room, a museum (with numerous Roman antiquities and ornithological specimens), and an extensive library, in which is the Chapman collection illustrative of the history of Bath. The Rev. Leonard Blomefield (late Jenyns) has presented his fine library of natural history and science (including his herbarium) to the institution. The Guild-hall, with an elegant Grecian front, was founded in 1766; and the market-halls were reconstructed about 1863. Among the charitable institutions are the Mineral Water Hospital, opened in 1742, and extended in 1861; the Royal United Hospital, opened in 1826; Bellot's Hospital, which dates from 1611, though the present building was erected in 1859; St Catherine's Hospital, founded by Edward VI.; St John's, founded by Bishop Fitz Joceline in 1174; and the Ear-and-Eye Infirmary, established in 1837. There are six banks, besides a savings-bank. The Sydney gardens have been open since 1795, and are frequently employed for public exhibitions and amusements; the Victoria Park, opened by the queen, when Princess Victoria, in 1830, is such as any city might be proud of.

The corporation consists of a mayor, fourteen aldermen, and forty-two councillors, and the town returns two members to parliament. Several newspapers are published weekly. The Great Western Railway connects Bath with London, Bristol, Salisbury, Wells, Weymouth, &c., from the first of which it is 107 miles distant; the Midland line is connected with Bath by a junction at Mangotsfield; and ready access to the south has recently been obtained by the opening of the Somerset and Dorset line. The Kennet and Avon canal, which joins the Thames at Reading, affords water communication with the metropolis. The population of the municipal borough was 54,240 in 1851, 52,528 in 1861, and 52,557 in 1871, nearly 60 per cent. of the last number being females. In 1871 the parliamentary borough contained 53,704 persons.

According to the legend to which the inhabitants adhered till the middle of the 18th century, Bath was founded by the British king Bladud; but its origin cannot be historically traced to an earlier date than the 1st century, when the Romans established here the city of *Aquæ Solis*, numerous remains of which have at various times been

discovered. During the Saxon period the chief events in its annals are the foundation of an abbey by Offa in 775, and the coronation of Edgar in 973. In the reign of William Rufus the city was reduced to ashes, but it soon recovered its prosperity under its abbot John of Villula, and his successors. Richard Cœur de Lion granted its first charter as a free borough, and about the same time the foundations were laid of its wool manufactures. In 1297 the city was first represented in parliament; in 1447 it obtained a charter from Henry VI., and one from Queen Elizabeth in 1590. In the 18th century it became the most fashionable watering-place in England, and was greatly extended under the direction of the architects Wood.

See Warner's *History and Antiquities of Bath*, 1801; Mainwaring's *Collectanea*; C. P. Russell, *On the Growth of Bath*, read before the Arch. Inst., 1858; *Ancient Landmarks of Bath*, by C. E. Davis; Wright's *Hist. Guide to Bath*, 1864; Earle's *Guide to Bath*, 1864; Lyell's *Inaugural Address before Brit. Assoc.*, 1864; Sir G. Jackson's *Archives of Bath*, 2 vols., 1873; Peach, *Rambles about Bath*, 1875; Scarth, *Aquæ Solis, or Notices of Roman Bath*, 1864.

BATH, a city and port of the United States of North America, chief town of the county of Sagadahock in Maine. It is situated on the W. bank of the Kennebec, about twelve miles from the sea, and forms a station on the branch railway from Brunswick to Rockland. The prosperity of the town depends almost entirely on its shipping and fisheries; and its manufacturing industries are nearly all auxiliary to the one department of shipbuilding, in which it competes with the chief American centres of the trade. It has a fine custom-house built of granite. The city was settled in 1756, incorporated in 1780, and raised to the rank of a city in 1850. Population (1870), 7371.

BATH, KNIGHTS OF THE. See HERALDRY and KNIGHTHOOD.

BATHGATE, a town of Scotland, in the county of Linlithgow, 19 miles from Edinburgh, and 26 from Glasgow, with both which it has direct communication by railway. The town is irregularly built, and has no buildings of importance except a well-endowed academy. The district is rich in limestone, coal, shale, and ironstone, which afford employment to a large part of the population. Paraffin and chemicals are extensively manufactured, and there are glass-works and flour-mills. Population (1871), 4491.

BATHS. In the ordinary acceptation of the word a bath is the immersion of the body in a medium different from the ordinary one of atmospheric air, which medium is usually common water in some form. In another sense it includes the nature of the different media that may be used, and of the various arrangements by which they are applied. Perhaps the simplest method of presenting a general view of the whole subject is first to give an outline of the history of baths in all ages, and next to give some account of the principles on which baths act on the human system.

Ancient Baths.—Bathing, as serving both for cleanliness and for pleasure, has been almost instinctively practised by nearly every people. The most ancient records mention bathing in the rivers Nile and Ganges. From an early period the Jews bathed in running water, used both hot and cold baths, and employed oils and ointments. So also did the Greeks; their earliest and commonest form of bathing was swimming in rivers, and bathing in them was practised by both sexes. Warm baths were, according to Homer, used after fatigue or exercise. The Athenians appear for a long time only to have had private baths, but afterwards they had public ones: the latter seem to have originated among the Lacedæmonians, who invented the hot-air bath, at least the form of it called after them, the *Laconicum*. Although the baths of the Greeks were not so luxurious as those of some other nations, yet effeminate people were accused among them of using warm baths in excess; and the bath servants appear to have been rogues and thieves, as in later and larger establishments. The Persians must have had handsomely equipped baths, for Alexander the Great admired the luxury of the baths of Darius.

But the baths of the Greeks, and probably of all Eastern nations, were on a small scale as compared with those which eventually sprung up among the Romans. In early times the Romans used after exercise to throw themselves into the Tiber. Next, when ample supplies of water were brought into the city, large *piscinæ*, or cold swimming baths, were constructed, the earliest of which appear to have been the *piscina publica* (312 B.C.), near the Circus Maximus, supplied by the Appian aqueduct, the *lavacrum* of Agrippina, and a bath at the end of the Clivus Capitolinus. Next, small public as well as private baths were built; and with the empire more luxurious forms of bathing were introduced, and warm became far more popular than cold baths.

Public baths or *balneæ* were first built in Rome after Clodius brought in the supply of water from Prænestе. After that date baths began to be common both in Rome and in other Italian cities; and private baths, which gradually came into use, were attached to the villas of the wealthy citizens. Mæcenas was one of the first who built public baths at his own expense. After his time each emperor, as he wished to ingratiate himself with the people, lavished the revenues of the state in the construction of enormous buildings, which not only contained suites of bathing apartments, but included gymnasia, and sometimes even theatres and libraries. Such enormous establishments went by the name of *thermæ*. The principal thermæ were those of Agrippa 21 B.C., of Nero 65 A.D., of Titus 81, of Domitian 95, of Commodus 185, of Caracalla 217, and still later those of Diocletian 302, and of Constantine. The technical skill displayed by the Romans in rendering their walls and the sides of reservoirs impervious to moisture, in conveying and heating water, and in constructing flues for the conveyance of hot air through the walls, was of the highest order.

The Roman baths contained swimming baths, warm baths, baths of hot air, and vapour baths. The chief rooms (which in the largest baths appear to have been mostly distinct, whereas in smaller baths one chamber was made to do duty for more than a single purpose) were the following:—(1.) The *apodyterium* or *spoliatorium*, where the bathers undressed; (2.) the *alipterium* or *unctuarium*, where oils and ointments were kept (although the bathers often brought their own pomades), and where the *aliptæ* anointed the bathers; (3.) the *frigidarium* or cool room, *cella frigida*, in which usually was the cold bath, the *piscina* or *baptisterium*; (4.) The *tepidarium*, a room moderately heated, in which the bathers rested for a time, but which was not meant for bathing; (5.) The *calidarium* or heating room, over the *hypocaustum* or furnace; this in its commonest arrangement had at one end a warm bath, the *alveus* or *calida lavatio*; at the other end in a sort of alcove was (6.) The *sudatorium* or *laconicum*, which usually had a *labrum* or large vessel containing water, with which bathers sprinkled themselves to help in rubbing off the perspiration. In the largest baths the laconicum was probably a separate chamber, a circular domical room with recesses in the sides, and a large opening in the top; but there is no well-preserved specimen, unless that at Pisa may be so regarded. In the drawing of baths from the thermæ of Titus (fig. 1), the laconicum is represented as a small cupola rising in a corner of the calidarium. It is known that the temperature of the laconicum was regulated by drawing up or down a metallic plate or *clypeus*. Some think that this clypeus was directly over the flames of the hypocaustum, and that when it was withdrawn, the flames must have sprung into the laconicum. Others, and apparently they have Vitruvius on their side, think that the clypeus was

drawn up or down only from the aperture in the roof, and that it regulated the temperature simply by giving more or less free exit to the hot air. The question must for the present remain unsettled; if the laconicum was only one end of the calidarium, it is difficult to see how that end of the room was kept so much hotter than the rest of it; on the other hand to have had flames actually issuing from the laconicum, must have caused smoke and soot, and have been very unpleasant. The most usual order in which the rooms were employed seems to have been the following, but there does not appear to have been any absolute uniformity of practice then, any more than in modern Egyptian and Turkish baths. Celsus recommends the bather first to sweat a little in the tepidarium with his clothes on, to be anointed there, and then to pass into the calidarium; after he has sweated freely there he is not to descend into the solium or cold bath, but to have plenty of water poured over him from his head,—first warm, then tepid, and then cold water,—the water being poured longer over his head than on the rest of the body; next to be scraped with the strigil, and lastly to be rubbed and anointed.

The warmest of the heated rooms, *i.e.*, the calidarium and laconicum, were heated directly from the hypocaustum, over which they were built or suspended (*suspensura*); while from the hypocaustum tubes of brass, or lead, or pottery carried the hot air or vapour to the walls of the other rooms. The walls were usually hollow, so that the hot air could readily circulate.

The water was heated ingeniously. Close to the furnace, about 4 inches off, was placed the *calidarium*, the copper (*ahenum*) for boiling water, near which, with the same interval between them, was the copper for warm water, the *tepidarium*, and at the distance of 2 feet from this was the receptacle for cold water, or the *frigidarium*, often a plastered reservoir. A constant communication was kept up between these vessels, so that as fast as hot water was drawn off from the calidarium a supply was obtained from the tepidarium, which, being already heated, but slightly reduced the temperature of the hotter boiler. The tepidarium, again, was supplied from the frigidarium, and that from an aqueduct. In this way the heat which was not taken up by the first boiler passed on to the second, and instead of being wasted, helped to heat the second—a principle which has only lately been introduced into modern furnaces. In the case of the large thermæ the water of an aqueduct was brought to the *castellum*, or top of the building, and was allowed to descend into chambers over the hypocaustum, where it was heated and transmitted in pipes to the central buildings. Remains of this arrangement are to be seen in the baths of Caracalla. The general plan of such buildings will be more clearly understood after an examination of the accompanying illustrations. In the

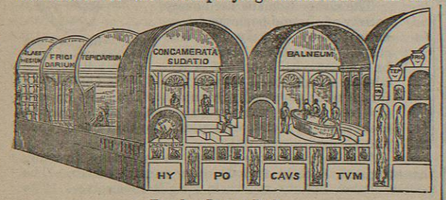


FIG. 1.—Roman Baths.

well-known drawing (fig. 1) found in the baths of Titus, the name of each part of the building is inscribed on it. The small dome inscribed laconicum directly over the furnace, and having the clypeus over it, will be observed in the corner of the chamber named concamerata sudatio. The vessels for water are inscribed, according to their temperature, with the same names as some of the chambers, frigidarium, tepidarium, and calidarium.

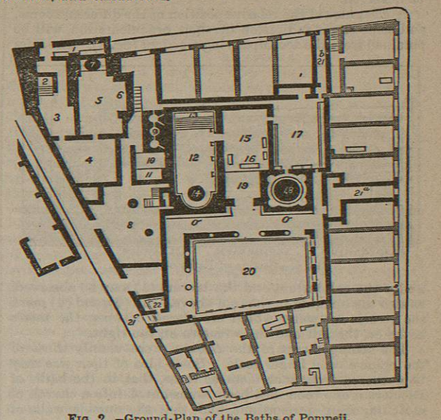


FIG. 2.—Ground-Plan of the Baths of Pompeii.

The baths of Pompeii (as shown in fig. 2) were a double set, and were surrounded with tabernæ or shops, which are marked by a lighter shade. There were streets on four sides; and the reservoir supplying water was across the street in the building on the left hand of the cut. There were three public entrances—21*a*, 21*b*, 21*c*—to the men's baths and one to the women's. The furnaces (9) heated water, which was conveyed on one side to the larger baths of the men, on the other to the women's. Entering from the street at 21*c* there was a latrina on the left hand (22). From this it was usual to proceed to a court (20) surrounded by pillars, where servants were in attendance. There is some doubt as to the purpose to which the room (19) was devoted. Leaving the hall a passage conducted to the apodyterium or dressing-room (17), at one end of it is the frigidarium, baptisterium, or cold plunge bath (18). Entering out of the apodyterium is the tepidarium, or warming-room (15), which most probably was also used as the alipterium or anointing-room. From it bathers passed into the hot room or calidarium (12), which had at one end the alveus or calida lavatio (13), at the other end the labrum (14). This end of the calidarium served as the laconicum. The arrangements of the women's baths were similar, but on a smaller scale. The calidarium (5) had the labrum (7) at one end, and the alveus (6) was in one side of the room. The general arrangements of a calidarium are well illustrated by the accompanying section (fig. 3) of a bath discovered at Tusculum. The disposition of the parts is the same as at Pompeii. We here have the calidarium supported on the pillars of the fornax, the suspensura. The alveus (3) is

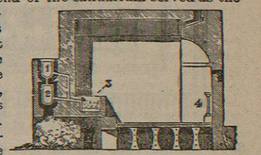


FIG. 3.—Section of Bath discovered at Tusculum, showing the calidarium (hot room).