

through Sir Isaac Newton, to the Royal Society a paper entitled "Methodus Differentialis Newtoniana illustrata" (*Phil. Trans.*, 1718, p. 1050; Abridg., vi. p. 428). Fearing assassination on account of having discovered a trade secret of the glass-makers of Venice, he returned to London about the year 1725. In London he remained for ten years, being most part of the time connected with an academy in Tower Street, and devoting his leisure to mathematics and correspondence with eminent mathematicians. In 1730 his most important work was published, the *Methodus Differentialis, sive Tractatus de Summatione et Interpolatione Serierum Infinitarum* (4to, London), which, it must be noted, is something more than an expansion of the paper of 1718. In 1735 he communicated to the Royal Society a paper "On the Figure of the Earth, and on the Variation of the Force of Gravity at its Surface" (*Phil. Trans.*, Abridg., viii. pp. 26-30). In the same year his worldly fortunes changed permanently for the better, through his appointment to be manager for the Scots Mining Company at Leadhills, an appointment which gave scope both to his scientific talents and to his great, though hitherto latent, administrative ability, and which was eminently fortunate for his employers. We are thus prepared to find that his next paper to the Royal Society was concerned, not with pure, but with applied science—"Description of a Machine to blow Fire by the Fall of Water" (*Phil. Trans.*, 1745, p. 315; Abridg., ix. pp. 109, 110). His name is also connected with another practical undertaking since grown to vast dimensions. The accounts of the city of Glasgow show that the very first instalment of ten millions sterling spent in making Glasgow a seaport, viz., a sum of £28; 4s. 4d., was for a silver tea-kettle to be presented to "James Stirling, mathematician, for his service, pains, and trouble in surveying the river towards deepening it by locks." This was in 1752. Stirling died in Edinburgh on 5th December 1770.

See W. Fraser, *The Stirlings of Keir, and their Family Papers*, Edinburgh, 1858; "Modern History of Leadhills," in *Gentleman's Magazine*, June 1853; Brewster, *Memoirs of Sir Isaac Newton*, ii. pp. 300, 307, 411, 516; J. Nicol, *Vital Statistics of Glasgow*, 1881-5, p. 70; *Glasgow Herald*, 5th August 1886.

Another edition of the *Lineæ Tertii Ordinis* was published in Paris in 1797; another edition of the *Methodus Differentialis* in London in 1764; and a translation of the latter into English by Halliday in London in 1749. A considerable collection of literary remains, consisting of papers, letters, and two manuscript volumes of a treatise on weights and measures, are still preserved at Garden by Stirling's great-grandson and namesake.

STOAT. See ERMINE.

STOBÆUS, JOANNES, a native of Stobi in Macedonia,—whence the surname Stobæus or Stobensis,—is known to us as the compiler of a very valuable series of extracts from Greek authors. Of his life nothing is known, but he probably belongs to the latter half of the 5th century. From his silence in regard to Christian authors, it is inferred with some probability that he was not a Christian; that he was a man of wide culture and general reading is clear from the anthology which bears his name.

The extracts were intended by Stobæus for his son Septimius, and were preceded by a letter briefly explaining the purpose of the work and giving a summary of the contents. From this summary (which is preserved in Photius's *Bibliotheca*) we learn that Stobæus divided his work into four books; the first contained sixty chapters, the second forty-six, the third forty-two, and the fourth fifty-eight. In most of our MSS. the work is divided into three books, of which the first and second are generally called *Ἐκλογαὶ φυσικαὶ καὶ ἠθικαὶ*, and the third *Ἀρθολόγιον* (*Florilegium* or *Sermones*). As each of the four books is sometimes called *Ἀρθολόγιον*, it is probable that this name originally belonged to the entire work;

the full title, as we know from Photius, was *Ἐκλογῶν ἀποφθεγγμάτων ἱποθηκῶν βιβλία τέτταρα*. Between the account which Photius gives of Stobæus's work and the form in which we have it there are several marked discrepancies. The second book in particular is little more than a fragment. From this and other indications Wachsmuth has made it probable that our Stobæus is only an epitome of the original work, made about the end of the 11th century at Byzantium, "ab homine Platonis Aristotelisque amantissimo."

The didactic aim of Stobæus's work is apparent throughout. The first book teaches physics—in the wide sense which the Greeks assigned to this term—by means of extracts. It is often untrustworthy: Stobæus betrays a tendency to confound the dogmas of the early Ionic philosophers, and he occasionally mixes up Platonism with Pythagoreanism. For part of this book and much of book ii. he depended on the works of Aetius, a Peripatetic philosopher, and Didymus. The third and fourth books, like the larger part of the second, treat of ethics; the third, of virtues and vices, in pairs; the fourth, of more general ethical and political subjects, frequently citing extracts to illustrate the pros and cons of a question in two successive chapters. In all, Stobæus quotes more than five hundred writers, generally beginning with the poets, and then proceeding to the historians, orators, philosophers, and physicians. It is to him that we owe many of our most important fragments of the dramatists, particularly of Euripides.

The first complete edition of Stobæus was published at Geneva in 1609; the last is Meineke's (Leipsic, 1855-1864). The best critical edition of books i. and ii. is by Wachsmuth (Berlin, 1884); a companion edition of books iii. and iv. (the *Florilegium*) is promised by Otto Hense.

STOCK EXCHANGE, a market for the purchase or sale of all descriptions of public securities. Previous to 1773 the London stockbrokers conducted their business in and about the Royal Exchange, but in that year, having formed themselves into an association under the designation of the Stock Exchange, they, after temporarily locating their headquarters in Sweeting Alley, Threadneedle Street, removed to Capel Court, Bartholomew Lane. The growth of business necessitating improved accommodation, a capital of £20,000 in four hundred shares of £50 each was raised in 1801 for the purpose of erecting a new building in Capel Court, which was finished and occupied in the following year, the members at that date numbering about five hundred. With the occupation of the new building new rules came into force; all future members were admitted by ballot, while both members and their authorized clerks were required to pay a subscription of ten guineas each. As only the wealthier members of the association had provided the capital for the new building, the Stock Exchange henceforth consisted of two distinct bodies—proprietors and subscribers. In 1854, the membership having increased to about one thousand persons, an extension of the premises in Capel Court was effected at a cost of £16,000. A further and very extensive increase in the accommodation was made in 1885, the number of members and authorized clerks having risen at that date to above two thousand five hundred. The extended-buildings now occupy the whole of a triangle to the east of the Bank of England, having as its base Bartholomew Lane, its north side Throgmorton Street, and its south side portions of Threadneedle Street and Old Broad Street. The completed buildings comprise two large halls, where the various markets are held, settlement rooms, reading room, committee rooms, managers' rooms, and various other offices. It is intended ultimately to remove the partition between the two halls, when a vast business apartment,

having an area of about 16,000 square feet, will be available for the use of members. The immensely valuable property of the Stock Exchange is now owned by about 1050 proprietors, additions both to the proprietary and to the capital invested in the buildings having been from time to time effected during the past fifty years. The interests of the proprietors are attended to by nine of their number, who are termed managers, and by a secretary and staff of clerks. The income of the association now amounts to about £130,000 per annum, and is derived from the annual subscriptions of members and their clerks, from entrance fees paid by new members, and from rents and investments. All members of the Stock Exchange are not proprietors, neither are all proprietors necessarily members. Admission as a member is open to any person not engaged in another business. He must, however, be recommended by three members, who each guarantee to the committee of the house payment of £750 in the event of the new member being declared a defaulter within two years of his election. A personal guarantee of this description is imperative, the object being to exclude all persons of doubtful character. Elections are by ballot, and for one year only, all members being theoretically liable to exclusion at the expiry of that period.

The stock exchange opens every morning at 11 o'clock and closes at 4, except on Saturday, on which day the doors are shut at 2 o'clock. All members of the house are either jobbers or brokers, the former term being applied to those who are dealers in stocks. It is contrary to the etiquette of the London Stock Exchange for brokers to deal with brokers, and all transactions are accordingly effected between brokers (representing their clients) and jobbers. Brokers' charges vary from one-sixteenth to as much as one-half per cent., and the jobbers' "turn" or profit from one-eighth to two or three per cent., according to the character of the stock dealt in. The turn of the jobber amounts in the aggregate to an enormous tax upon the British public, and the question of the utility of this intermediary has been much discussed at various times. On buyers and sellers the tax operates in this way:—A wishes to buy and B wishes to sell £1000 of Caledonian Railway stock, but, brokers being forbidden to deal with brokers, recourse is had to the jobber C, who makes a price to the brokers of say 98 to 98½, that is to say, he offers to buy at 98 or to sell at 98½; the buyer A accordingly pays 98½ plus his broker's commission, and the seller B receives 98 minus his broker's commission, the jobber C pocketing the difference or "turn" of ½ per cent. The argument in favour of the jobber is that he supplies at all times and in all circumstances a ready market, and it must be allowed that in ordinary times he is a very convenient functionary. But, as a matter of fact, in excited times the system often breaks down, as the jobbers frequently shut their books and refuse to deal at the very moment when their help is most needed. What are known as the "markets" in the stock exchange are simply groups of jobbers distributed here and there on the floor of the house. Habit or convenience seems to have determined the particular spots occupied, which are known as the consol market, the English railway market, the foreign stock market, and so on.

In active times the business transacted daily on the London stock exchange amounts to an enormous total. Yet no written contracts or notes pass between jobbers and brokers, verbal communications being alone in use. Notwithstanding this apparent looseness of practice where millions of property are bought and sold almost hourly, there is hardly a single instance of attempted repudiation on record. All transactions are entered into for the fortnightly settlements, the precise dates for which are always fixed a few weeks in advance by the committee of

the house. Each fortnightly settlement includes three days: the first is the continuation or contango day, when all transactions of a merely speculative description are continued for another fortnight, the second the ticket day, when names are passed for actual purchases or sales, and the third the pay day, when all amounts or balances are paid or received. As the great bulk of business is purely speculative, the contango or continuation day is by far the busiest of the entire fortnight. The floor of the house is then crowded with an eager throng of from 2000 to 3000 brokers, jobbers, and clerks, and during the greater part of the day little is done beyond arranging the account. Continuation rates or contangos vary with the value of money and the state of the account. When money is dear, or speculative buying active, rates are high, but when speculative selling has preponderated, and the account has become what is called a "bear" account, rates are light. An enormous amount of capital is engaged in stock exchange speculation in London. Banks, financial companies, and private firms and individuals lend freely on stock exchange securities, and thus encourage, if they do not initiate, most of the great speculative movements. Besides the great central institution in London, stock exchanges exist in nearly all the large cities of the United Kingdom. The principal are those of Glasgow, Liverpool, and Manchester, which provide excellent markets for local stocks and shares.

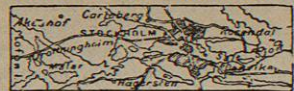
On the Continent the two chief centres for the transaction of stock exchange business are Paris and Berlin. In Paris the business can be traced back for about five hundred years, but it was not until 1726 that the Bourse was legally recognized, sixty agents de change for the transaction of business being appointed that year by the king. The Bourse now consists of two distinct bodies, known as the *parquet* and the *coulisse*. The *parquet* is composed of the sixty official brokers or agents de change appointed by the Government, who alone are admitted to the inner business ring of the Bourse. The *coulisse* are the outside dealers or brokers, but, unlike the same class in London, these comprise firms of solid standing, bankers, and arbitrage houses. Although a partial settlement occurs once a fortnight, the great bulk of the business on the Paris Bourse is settled for once a month, the arrangements connected therewith occupying no less than six days. Another peculiarity in the mode of conducting business in Paris is that sellers can be compelled to deliver stock at any time during the currency of the account. At Berlin the Bourse is not under Government control, and although a certain number of licences are issued any one may act as a broker. The Bourse can be used by the public on payment of an annual subscription, and all debts incurred there are as obligatory in law as ordinary commercial debts. The settlement occupies three days, and occurs at the end of each month.

Although stock exchange business in the United States has now attained enormous proportions, it is of comparatively recent origin. The first organization of brokers in New York dates from about 1820. The mode of conducting business in Wall Street differs in some respects from both the English and the Continental procedure. Transactions entered into on one day are settled on the following, and the full amounts involved, and not the mere differences, are paid and received. The jobber, who is of so much importance under the English system, is unknown in New York, as in all cases brokers deal direct with brokers. While stock exchange business in London is of immense variety, and comprises all descriptions of home and foreign Government bonds, railway stocks, and miscellaneous shares, in New York it is confined almost entirely to American railway bonds and shares. In these securities, however, the volume of business in active times is enormous, the vast railway system of the United States providing an ample choice for the investor and a wide field for speculative manipulation. (W. P. H.)

STOCKHOLM, the capital of Sweden, is situated at the point where Lake Mälaren mixes its waters with those of the Baltic, and at the meeting-place of two provinces, Upland and Södermanland. The old cities of Sweden are regularly found in places where in early times the inhabitants of neighbouring districts came together for purposes of exchange or sometimes of worship, or where a river brought the interior of the country into closer connexion with the coast. By the passages that wind among the numerous isles off Stockholm ships at an early date came to the mouth of the lake, only to continue their voyage into its

remoter parts. The two provinces mentioned were densely peopled, and the cultivated regions extended to the mouth of the lake, as is shown by groups of tumuli still to be seen in the immediate neighbourhood of the present city. Still Stockholm does not rank among the oldest cities of Sweden; the exceedingly eligible site had long been neglected owing to its exposure to the incursions of pirates.¹

Stockholm was first founded by Birger Jarl, it is said, in the middle of the 13th century, at a time when pirate



Environs of Stockholm.



1. Church of St John.
2. Humlegård.

3. Kungsträdgård.
4. Carl XII. Torg.

5. Mint.
6. Church of St Nicholas.

7. Stortorg.
8. Riddarholmstorg.

9. Birger Jarls Torg.

which had been enclosed was found to be insufficient, and houses were built outside the walls, which thus lost their defensive character. The castle, two towers belonging to the older works, and some newer walls nearer the water became the sole fortifications. The citizens began also to build on the neighbouring shores, though there, in the event of a siege, all houses had to be destroyed, so as not to give shelter to the enemy. A tendency to increased

¹ Before the rise of Stockholm Björkö, Sigtuna, and Upsala were places of great importance. Björkö ("the isle of birches"), by foreign authors called Birca, was a kind of capital where the king lived occasionally at least; history speaks of its relations with Dorestad in the Netherlands, and the extensive refuse heaps of the old city, as well as the numerous sepulchral monuments, show that the population must have been large. But, though situated at a central point on the Mälars Lake, it was destroyed, apparently before the beginning of the 11th century, we do not exactly know when nor by whom; and, once destroyed, it never recovered. Sigtuna, lying on the shore of a far-reaching northern arm of Lake Mälars, also a royal residence and the seat of the first mint in Sweden, where English workmen were employed by King Olaf at the beginning of the 11th century, was, though much more sheltered than Björkö, destroyed in the course of the 12th century

fleets were less common than they had been, and the Government was anxious to establish commercial relations with the towns which were now beginning to flourish on the southern coast of the Baltic. The city was originally founded as a fortress on an island at the mouth of Lake Mälars; this island, which is not large, consists of a hill of gravel resting upon rocky ground, having its highest side towards the north, and sloping in the other directions. The castle was erected on the north-eastern corner, and the city was surrounded with walls having fortified towers on the north and south. It came to be called Stockholm ("the isle of the log," Lat. *Holmia*, Germ. *Holm*); the true explanation of the name is not known. Soon the space

development has steadily showed itself throughout the Middle Ages and in modern times. On an islet in the stream, between the original Stockholm and the northern shore, was founded, in the 14th century, a hospital of the Holy Ghost, and a new tower was erected to defend the approach to the city. On another islet closely adjoining the original Stockholm on the west, a Franciscan monastery was founded towards the end of the 13th century.

The present city has an area of 12.6 square miles (4.4 being water); its extreme length from north to south is about 3.8 miles and its circumference 14. The different parts of the actual city are the following. (1) *Staden* is the old "city"; its ancient origin is apparent in the narrow and winding streets. The individual houses are not very old, owing to the ravages of frequent fires; still, some are to be seen with very narrow frontage and gables turned towards the street, as in North Germany. The old market, still called *Stortorget* ("the great market"), is now one of the smallest in Stockholm. The royal palace, dating from the Middle Ages, but enlarged and partly rebuilt at a later

period, was destroyed by fire in 1697, the body of Charles XI. being with difficulty rescued from the flames. A new palace, after plans by Nicodemus Tessin, was not completed (owing to wars and the general distress) until 1754; it is a quadrangular structure on the summit of the hill, with two wings towards the east and four towards the west (two straight and two in a semicircle). The style of the building is noble and refined, the royal apartments rich in treasures of art. In the immediate vicinity of the palace is the church of St Nicholas, the oldest in Stockholm, but in many parts changed from what it was; the chancel was demolished in the 16th century to give more room for the palace. *Staden* is the commercial centre of the city, containing the exchange, the bank of Sweden, and the custom-house, as well as the offices of many merchants. On the eastern side a very large quay, called the *Skeppsbro* ("the bridge of ships"), extends from the statue of Gustavus III. opposite the palace to where the traffic between Lake Mälars and the Baltic is carried on through a sluice or lock. The *Skeppsbro* is the landing-place for steamers to the northern provinces of Sweden and foreign ports. On the other side of the palace is the *Kanslihus*, containing the offices of most of the ministries; and a little farther on is a market, named from the palace on its northern side, the *Riddarhus*, belonging to the Swedish nobility. The principal hall of the *Riddarhus* has its walls adorned with the armorial bearings of the noble families of Sweden. The representatives of these families meet here every third year for consultation as to their common interests. In front of the building stands the statue of Gustavus I. The town-hall stands in the same square. (2) *Riddarholmen* contains the old Franciscan church, which, however, is not now used for divine service. Since the time of Gustavus Adolphus it has been the burial-place of the royal family; it also contains many trophies from the European wars of Sweden. On one side of the church stand the houses of parliament; on the other is the statue of Birger Jarl, the founder of Stockholm. A large part of the island is occupied by Government offices, including the record office. Along the shore most of the steamers for different parts of Lake Mälars and farther on through the canal of *Södertelge*, for the Baltic, have their landing-places. (3) *Helgeandsholmen* ("the isle of the Holy Ghost") is at present occupied by the royal stables. The *Norrbrö* ("north bridge"), connecting the old town with the northern shore, passes the eastern extremity of the island. (4) *Norrmalmen* ("the northern suburb") begins at the *Norrbrö* with the market of Gustavus Adolphus, where his statue stands between the theatre royal and the crown prince's palace. *Norrmalmen* is one of the best-built parts of the city, with broad straight streets; it contains four parish churches and also the English church, the Roman Catholic church, and the Jewish synagogue. In the south-eastern corner is a large open space, *Kungsträdgården* ("the royal garden"), with the statues of Charles XII. and Charles XIII. and a fountain, one of the principal playgrounds for children. Near it is another park, with the statue of Berzelius. *Norrmalmen* has several public buildings, such as the post-office, the principal railway station, the academy of art, the academy of sciences, the high technical school, and the school of metallurgy, the technical school, the observatory, &c. On the northern side of *Norrmalmen* lies the principal cemetery. (5) *Blasieholm*, united with *Norrmalmen* since the filling up of the canal which formerly separated them, contains the national museum, the academy of music, &c. (6) *Skeppsholmen* ("the isle of ships") and (7) *Kastellholmen* both belong to the admiralty. (8) *Kungsholmen* ("the isle of the king"), to the west of *Norrmalmen*, contains a parish church, the mint, the high school of medicine, several hospitals, and

many factories. (9) *Ladugårdslandet* takes its name from the farm yard (*ladugård*) of the royal castle, which formerly occupied a great part of its area. It became a part of the city in the middle of the 17th century, but until recently played a very subordinate part, owing to want of water. Since the introduction of the new water-supply this part of Stockholm has grown wonderfully, and is now the finest part of the city, with more than 40,000 inhabitants. It has a fine park, *Humlegården* ("hop garden"), with the royal library and the statue of Linnæus. Most of the barracks of Stockholm, as well as the high military school, are situated in this quarter of the town. (10) *Djurgården* ("deer garden") is a royal park, with villas, restaurants, shipbuilding yards, &c. (11) *Södermalmen* ("the southern suburb") is separated from *Staden* by the sluice already mentioned. On an open space at the side of the channel stands the statue of Charles XIV. (Bernadotte). The larger part of this suburb, with its two parish churches, chapels, hospitals, &c., stands at a considerable elevation, and communication has been facilitated by the construction of two elevators. On the outskirts are factories, foundries, &c.

A glance at the map at once shows how important have been its water-facilities in forming the character of Stockholm. From all sides the water permeates the different parts of the city, separating them, yet at the same time helping to unite them. Stretching far away to east and to west between shores and islands sometimes open and cultivated, sometimes rocky and covered with trees, the water entices the inhabitants to make excursions and to reside for a part of the year in the country; in the summer the city is largely deserted. The site is universally recognized as extremely picturesque. The great water-surface has also a beneficent influence upon the climate. In 1884 the mean temperature was 42°-47° Fahr., the highest temperature of the year being 72°-4° Fahr. (2nd and 5th July), the lowest -0°-4° Fahr. (30th November). The year's rainfall amounted to 18.3 inches, the number of rainy days being 129. The best time for visiting Stockholm is the latter half of June, when the evening and morning lights, reflected from the water and seen through the young and luxuriant verdure, produce singularly beautiful and varied effects.

In Sweden the cities formerly played a comparatively subordinate part. During the Swedish Middle Ages the prominent classes were the nobility, the clergy, and the peasantry. The anti-aristocratic revolution of the 14th and the 15th centuries had in Sweden its principal supporters among the peasants. But the importance of the cities has gradually increased, and recent times have witnessed an accelerated development, which is best exemplified by the history of Stockholm. The number of inhabitants was, in 1800, 75,517; in 1825, 79,473; in 1850, 93,070; in 1860, 112,391; in 1870, 136,016; in 1880, 163,775; in 1884, 205,123; and in December 1885, 215,688. In 1884 11,916 were qualified to take part in the election of members of the lower house of parliament. Along with the rapid increase of population went a correspondingly increased industrial activity and a considerable development in the means of communication. The number of mechanics in 1884 was 11,064 (8716 of the wage-earning class), the corresponding numbers for 1880 being 9664 and 7483. The number of factories in 1884 was 275, employing 9810 workpeople (including 2638 women), and producing to the value of 32,356,565 Swedish crowns (£1,797,531). The merchants in 1884 numbered 3823, with 6554 assistants. In the same year 37,561 vessels entered (21,460 steamers), while 37,699 (21,565 steamers) cleared. Of these 1688 entered from and 1159 cleared for foreign ports. In former times Stockholm had the command of all the foreign commerce for the country round Lake Mälars, and for the whole of northern Sweden; but more recently the northern cities have made themselves to a certain extent independent of the capital.

For communication between the different parts of Stockholm omnibuses and small rowing boats have now given place to small steamers; in 1884 sixty-three of these were in use in the city and its immediate vicinity. In 1880 tramways were constructed for *Staden*, *Norrmalmen*, *Kungsholmen*, and *Ladugårdslandet*.

The city forms a separate administrative district under a governor (*öfverståthållare*). In ecclesiastical matters it belongs to the archbishopric of Upsala, and the archbishop has the right to preside in its consistory, of which the president generally is the pastor *primarius*, the rector of St Nicholas. The members of this consistory are the rectors of the other seven territorial parishes and the rectors of the Finnish and German congregations. There is also a court consistory, presided over by the chief court preacher.

It was not until modern times that Stockholm became the capital of Sweden. The mediæval kings visited year by year

different parts of the kingdom, where they lived for a shorter or longer time. When, from the development of state affairs, the need of a capital came to be felt, no city could compete with the claims of Stockholm. It is the usual residence of the king; in the summer he lives generally in one of the palaces in the neighbourhood; some part of every year he passes in his Norwegian capital. The supreme court of justice has its seat in Stockholm, as well as the *Svea Hofrätt*, the next highest tribunal for central and northern Sweden. It is also the seat of all the other central governmental boards.

Stockholm is also the seat of seven academies. (1) The Swedish Academy, with eighteen members, founded in 1786, deals with the language and literature of Sweden. It is engaged upon a Swedish dictionary, and celebrates every year the memory of some renowned Swede. (2) The academy of sciences, founded in 1739, with 100 ordinary members, distributed into nine classes, and 75 foreign members, has charge of the royal museum of natural history, the physical, astronomical, and meteorological institutes, and the botanical garden. (3) The academy of belles lettres, history, and antiquities, founded in 1753, reformed in 1786, now occupies itself only with history and antiquities; it has 14 honorary members, 20 ordinary members, 16 foreign members and correspondents. The secretary of this academy is, at the same time, as royal antiquary of Sweden and garde des médailles, director of the archaeological, historical, and numismatical state collections, and inspector of the antiquities of the kingdom. (4) The academy of agriculture, founded in 1811, with 24 honorary members, 136 ordinary and 75 foreign members, occupies itself with agriculture and fisheries. It has an experimental institution for agricultural chemistry, physiology of plants, gardening, and practical agriculture. (5) The academy of fine arts, founded in 1735, has charge of the official school of art. (6) The academy of music, founded in 1771, has the care of the state conservatory of music. (7) The academy of military sciences was founded in 1796. Each of these academies is a distinct body; most of them publish their transactions, and each has its own library.

There are several private societies of a scientific character, such as the society for publication of historical documents, the historical society, the society of anthropology and geography, the society of national antiquities, the geological society, the society of natural sciences, the entomological society, &c.

Stockholm has no state university, but there is a high school of medicine (*Caroliniska Institute*), which has several professors of mathematics and natural science. The city has also a high technical school, a technical school, a high military school, and a military school (in the palace of Carlberg, outside of the city), a veterinary school, a school of pharmacy, seven more or less complete secondary schools, and two seminaries for female teachers, besides private schools. The number of pupils in the secondary schools in 1884 was 2294 and in the primary schools 14,351.

The following are the principal public collections. (1) The royal historical museum (in the national museum) contains a remarkably rich series of the prehistoric antiquities of the country. Founded in the 17th century, it has made greatest progress since 1837. (2) The royal numismatical collection (in the national museum) contains about 90,000 coins and medals. The series of Anglo-Saxon coins found in Sweden is very important. (3) The numismatical collection of the Bank of Sweden (in the bank offices) contains very good series of Swedish coins and medals. (4) The royal collection of armour and royal dresses (in the royal palace) is very rich in specimens of the 17th and 18th centuries. (5) The royal museum of fine and industrial arts (in the national museum) contains sculptures, pictures, engravings, drawings, &c. The collection of Swedish art is, of course, very rich. Of foreign schools that of the Netherlands is best represented. The collection illustrating the development of industrial arts consists principally of gifts of Charles XV. and Count A. Bjelke. (6) The royal museum of natural history (in the palace of the academy of sciences), with very rich zoological, botanical, paleontological, and mineral series, is exceedingly rich in objects from the arctic regions. Other collections deserving mention are (7) the museum of the geological survey of Sweden; (8) the museum of the school of medicine; (9) the northern museum, a private institution, a very rich collection representing the life of all social classes of the north; (10) the royal library, very rich in books and manuscripts; and (11) the royal archives.

See *Elers, Stockholm*, 4 vols., 1800-1801; *Verlin, Stockholms Stad; Derütelseer angående Stockholms Kommunalförvaltning* (H. III).

STOCKINGS. See **HOSIERY.**

STOCKPORT, a market-town and municipal and parliamentary borough of England, in Cheshire and partly in Lancashire, is situated on an elevation above the Mersey at the junction of the Tame and Goyt, and of a number of railway lines, 46 miles east-north-east of Chester, 37 east of Liverpool, and 6 south-south-east of Manchester. Owing to the lie of the ground the streets are very irre-

gular and uneven, and occasionally precipitous, while in the south they rise above the river in tiers. The Mersey is crossed by a number of bridges, including one of eleven arches opened in 1826 at a cost of £40,000. None of the ecclesiastical buildings are of special interest, the principal being the church of St Mary, erected in 1817, at a cost of £30,000, on the site of one of the 15th century, of which the chancel and vestry remain. The free grammar school was founded and endowed in 1487 by Sir Edward Shaa or Shaw, knight. The present building was erected in 1831 by the Goldsmiths' Company, who further endowed it with £290 a year, and handed it over to the corporation. The Stockport Sunday school, erected in 1805, has accommodation for 4000 scholars. There is a free public library, established in 1875. The principal public buildings are the court-house, the market-house, the union workhouse, the mechanics' institute, the infirmary, the institution for the blind and deaf and dumb, and the fine new public baths. In St Peter's Square there is a statue, unveiled 27th November 1886, of Richard Cobden, who was elected member for the borough in 1841 and 1847. Vernon Park, finely situated about a mile from the town, contains a free museum, built in 1858 at the expense of the members for the borough, and since enlarged by the corporation. The staple industries are the spinning and weaving of cotton and felt-hat making. There are also breweries, foundries, machine-works, and flour-mills. The limits of the municipal and parliamentary boroughs are co-extensive. The area is 2200 acres, with a population in 1871 of 53,014 and in 1881 of 59,553.

Though not referred to in any of the Roman itineraries, and possessing neither Roman nor Saxon remains, Stockport is supposed to have been a Roman camp or outpost, which occupied the hill on which the Normans afterwards built a baronial castle. It is not mentioned in Domesday. The castle was held in 1173 by Geoffrey de Costentyn against Henry II., but whether in his own right or not is uncertain. In the beginning of the 13th century it was possessed by the first Baron Ranulf de Dapifer, progenitor of the Despensers, from whom it passed to Robert de Stockport, who in the reign of Henry III. made the town a free borough, and in 1260 received for it from the earl of Chester the grant of a market. The town was visited by the plague in 1605-6. It was of some importance during the Civil War, and was taken by the Royalists under Prince Rupert in May 1644. During the insurrection of 1745 Prince Charles Edward rested at the town on the 28th November. The town was enfranchised in 1832, with the right, which it still retains, of returning two members, and was incorporated under the Corporations Act in 1835.

STOCKS, as a form of punishment, are now quite obsolete. They were originally established in England after the passing of the Statute of Labourers, 23 Edw. III. c. 1. That Act enjoined that stocks (*ceppes*) should be made in every town between the passing of the Act and Pentecost of that year (1350). By numerous other statutes, until comparatively modern times, the punishment of the stocks was inflicted for offences of a less heinous kind, e.g., breaches of the Sunday Observance Acts of Charles I. and Charles II. In the United States the stocks were formerly used as a means of punishing slaves.

STOCKTON, a city of the United States, county seat of San Joaquin county, California, at the head of the Stockton navigable channel which joins the San Joaquin river, and 48 miles south-south-east of Sacramento, by the western division of the Central Pacific Railroad. It is the business centre of the San Joaquin valley, a great wheat market, and the seat of the State lunatic asylum (founded in 1853). Artesian wells 80 to 1000 feet deep provide the city with a perennial supply of water. Two public libraries, several public schools, and a convent may be mentioned among its important institutions; and it manufactures leather, agricultural implements, paper, flour, &c. The population was 10,066 in 1870 and 10,282 in

1880. Stockton was laid out in 1849, and was incorporated as a city in 1850.

STOCKTON-ON-TEES, a market-town and municipal and parliamentary borough and seaport of Durham, on the borders of the North Riding of Yorkshire, into which the parliamentary borough extends, is situated on the Tees, which is crossed by an iron bridge (completed in 1887 at a cost over £80,000, to supersede the stone bridge of 1769) leading to South Stockton, and on the Stockton and Darlington and the Sunderland and West Hartlepool branches of the North-Eastern Railway, 20 miles south-south-west of Durham, and 4 miles west-south-west of Middlesborough. The principal street is about a mile in length. Of the ancient castle commanding the Tees, which was destroyed in 1652, the last remains were removed in 1865. Among the principal public buildings are the town-hall, with a clock-tower and spire, the borough hall (erected in 1852 at a cost of £32,000), the freemasons' hall, the temperance hall, the theatre, the exchange hall, the literary institute, the hospital, the dispensary, the free library, and the blue-coat school. Stockton is a seaport of considerable importance. The management of the Tees, vested in 1808 in the Tees Navigation Company, was in 1852 vested in the Tees Conservancy Commissioners, incorporated by Act of Parliament, under whose auspices the river has been greatly improved. The trade of the port is chiefly with Holland and the ports of the Baltic, and there is a considerable coasting trade with the Tyne ports and with Hull and London. Its chief exports are iron manufactures, coal, coke, and agricultural produce, the average annual value for the five years 1880-84 being about £72,000. The principal imports are timber, iron, grain, and provisions, the average annual value for the five years 1880-84 being about £240,000. In 1885 the number of vessels that entered the port was 649, of 149,628 tons, the number that cleared 700, of 175,647 tons. The rapid increase of the town within the last quarter of a century is largely owing to the development of the iron and steel trade in the district. There are extensive steel works, blast-furnaces, iron and brass foundries, and rolling-mills, and iron-shipbuilding is also an important industry. There are also sailcloth works, potteries, breweries, and brick and tile works. The population of the municipal borough (area 1189 acres) in 1871 was 27,738, and in 1881 it was 41,015. The population of the parliamentary borough (area 7157 acres) in the same years was 37,612 and 55,457. The parliamentary borough includes the suburb of South Stockton on the opposite side of the river, forming a separate urban sanitary district (area 1052 acres), with a population in 1871 of 6794 and in 1881 of 10,665. It has a temperance hall, a mechanics' institute, and a national school, and its manufactures are similar to those of Stockton.

The place is of great antiquity, and is supposed to have been occupied by the Romans. Before the Conquest the manor belonged to the see of Durham. It was probably first incorporated by Bishop Hugh de Pudsey, who in the reign of Richard I. occupied the castle. The castle, which was for a long time the residence of the bishops, stood on the north bank of the Tees. The town was destroyed by the Scots in 1322, but the castle seems to have escaped. During the Civil War it was garrisoned for the king, but was afterwards delivered up to the Parliamentary party, and in 1645 was held by the Scots. The town suffered severely from inundations of the Tees in 1771, 1788, and 1822. Though Stockton was placed under the Municipal Act of 1835 it remained divided into two parts, the one called the "borough," where the land was freehold, governed by the corporation, and the other called the "town," where the land was copyhold or leasehold, held under the vicar and vestrymen, and outside the corporate jurisdiction. To remedy this state of matters an "Extension and Improvement Act" was passed in 1852. The town was enfranchised in 1867, and returns one member.

STOICS, a school of philosophers founded at the close of the 4th century B.C. by Zeno of Citium, and so called from the Stoa or painted corridor (*στοὰ ποικίλη*) on the

north side of the market-place at Athens, which, after its restoration by Cimon, the celebrated painter Polygnotus had adorned with frescos representing scenes from the Trojan War. But, though it arose on Hellenic soil, from lectures delivered in a public place at Athens, the school is scarcely to be considered a product of purely Greek intellect, but rather as the firstfruits of that interaction between West and East which followed the conquests of Alexander. Hardly a single Stoic of eminence was a citizen of any city in the heart of Greece, unless we make Aristo of Chios, Cleanthes of Assus, and Panætius of Rhodes exceptions. Such lands as Cyprus, Cilicia, and Syria, such cities as Citium, Soli, Heraclea in Pontus, Sidon, Carthage, Seleucia on the Tigris, Apamea by the Orontes, furnished the school with its scholars and presidents; Tarsus, Rhodes, and Alexandria became famous as its university towns. As the first founder was of Phœnician descent, so he drew most of his adherents from the countries which were the seat of Hellenistic (as distinct from Hellenic) civilization; nor did Stoicism achieve its crowning triumph until it was brought to Rome, where the grave earnestness of the national character could appreciate its doctrine, and where for two centuries or more it was the creed, if not the philosophy, of all the best of the Romans. Properly therefore it stands in marked antithesis to that fairest growth of old Hellas, the Academy, which saw the Stoa rise and fall,—the one the typical school of Greece and Greek intellect, the other of the Hellenized East, and, under the early Roman empire, of the whole civilized world. The transcendent genius of its author, the vitality and romantic fortunes of his doctrine, claim our warmest sympathies for Platonism. But it should not be forgotten that for more than four centuries the tide ran all the other way. It was Stoicism, not Platonism, that filled men's imaginations, and exerted the wider and more active influence upon the ancient world at some of the busiest and most important times in all history. And this was chiefly because before all things it was a practical philosophy, a rallying point for strong and noble spirits contending against odds. Nevertheless, in some departments of theory, too, and notably in ethics and jurisprudence, Stoicism has dominated the thought of after ages to a degree not easy to exaggerate.

The history of the Stoic school may conveniently be divided in the usual threefold manner: the old Stoa, the middle or transition period (Diogenes of Seleucia, Boethus of Sidon, Panætius, Posidonius), and the later Stoicism of Roman times. By the old Stoa is meant the period (c. 304-205 B.C.) down to the death of Chrysippus, the second founder; then was laid the foundation of theory, to which hardly anything of importance was afterwards added. Confined almost to Athens, the school made its way slowly among many rivals. Aristo of Chios and Herillus of Carthage, Zeno's heterodox pupils, Persæus, his favourite disciple and housemate, the poet Aratus, and Sphaerus, the adviser of the Spartan king Cleomenes, are noteworthy minor names; but the chief interest centres about Zeno, Cleanthes, Chrysippus, who in succession built up the wondrous system. What originality it had—at first sight it would seem not much—belongs to these thinkers; but the loss of all their works except the hymn of Cleanthes, and the inconsistencies in such scraps of information as can be gleaned from unintelligent witnesses, for the most part of many centuries later, have rendered it a peculiarly difficult task to distinguish with certainty the work of each of the three. The common standpoint, the relation to contemporary or earlier systems, with all that goes to make up the character and spirit of Stoicism, can, fortunately, be more certainly established, and may with reason be attributed to the founder. Zeno's residence at Athens