GLASGOW, the most populous city in Great Britain next to London, is situated on the banks of the river Clyde, in the Scottish county of Lanarkshire, about 20 miles above Greenock, where the river spreads out into a noble estuary, with branching lochs running deep into the heart of the Western Highlands. It is within ten hours' railway run (405½ miles) of the metropolis, and an hour and a quarter (45 miles) of Edinburgh, the latitude being 55° 51′ 32″ N., and the longitude 4° 17′ 54″ W. The extreme breadth of the city is about 3¼ miles from north to south, and the extreme length 5 miles from east to west. The circumference is about 10 miles; and the area embraced within the municipal boundaries is now (1879) 6111½ acres. The population when the last census was taken in 1871 was 477,732, but during the eight years that have elapsed, the increase of inhabitants both in the city proper and in its suburbs has been very great. It is within the mark to say that above 100,000 have been added to the population of the city; this indeed is the estimate given in official registration returns, which set down the population estimated to the middle of 1879 as 578,156. The smaller burghs which have sprung up round Glasgow within the last twenty or thirty years have kept pace with the mother burgh in development, and now contain a population amongst them of about 170,000. As these burghs are essentially parts of Glasgow, having been formed by the overflow of its population, they ought to be added to the city in any estimate of its size and importance. The population of Glasgow, taking this basis, is therefore close upon three quarters of a million (750,000). The increase of the population during the present century has been greater perhaps than that of any other city or town of the Old World. In 1801 it was only 77,385; in 1821 it was 147,043; in 1841, 255,650; in 1861, 395,503; and in 1871, 477,732. In 1877 the dwelling-houses numbered 105,062, and the rental exceeded £3,250,000.

Plan of Glasgow (central portion).

Unlike the "grey metropolis of the north," Glasgow shows rather poorly in the history of Scotland. Its own real history—the history of its commerce and industries—can hardly be dated farther back than the beginning of the last century, when the union of England and Scotland roused into extraordinary activity the trading spirit of its inhabitants. And yet Glasgow is an old city. Its foundations were laid when the half-mythical Kentigern sat down by the banks of the Molendinar, to teach the rough Celts of Strathclyde the truths of Christianity. It was about the middle of the 6th century that this apostle of truth made his appearance in the west of Scotland, and built his little wooden church on the spot upon which some centuries later his successors reared the noble cathedral which still stands in perfect beauty. One can only guess that the inhabitants of this portion of Strathclyde gathered round the abode and church of St Mungo, and that as the site was pleasant, and the Molendinar and the Clyde supplied ample store of trout and salmon, the village under the fostering care of the monks grew slowly till it became a place of importance. Of that growth, however, nothing is really known till we reach the 12th century. In the year 1115 an investigation was ordered by David, then prince of Cumbria, of the lands and churches belonging to the bishopric of Glasgow, and from the deed which still exists it is evident that at that time a cathedral had been endowed. A few years later David succeeded to the Scottish throne on the death of his brother, Alexander I., and among the many endowments he made for religious purposes, we find that he gave to the see of Glasgow the lands of Partick, besides restoring many possessions of which it had been despoiled. Jocelyn was bishop of Glasgow for a long period, and is memorable for the efforts he made to rebuild the cathedral which had been destroyed by fire. He collected funds with so much success that in 1197 the new structure was sufficiently advanced to be dedicated. The next bishops of note were Bodington and Wisheart. The former carried on the building work of Jocelyn; the latter was a patriotic Scot who resisted the conquering army of Edward I., and was among the first to join in the revolt of Wallace, and to receive Robert Bruce when he was proscribed by Edward and lay under the ban of the church for the murder of the Red Comyn. Wisheart was a prisoner from the year 1306 to the battle of Bannockburn, and he lived to see Bruce firmly established upon the Scottish throne. Bishop Rae deserves mention for having built a stone bridge over the Clyde (1345). Bishop Turnbull was the greatest benefactor the city had till then found; for he was the founder of Glasgow university (1450). He also received a charter from James II. in 1420, erecting the town and the lands of the bishops into a regality. In 1491 the see was made metropolitan through the influence of James IV., who had been a canon of the cathedral in early life. The last Roman Catholic archbishop of Glasgow was James Bethune, consecrated in 1552. At the Reformation in 1560 the archbishop fled to France, carrying with him all the relics, documents, and valuables belonging to the see. The cathedral, upon which so much care had been bestowed by the successors of Bishop Jocelyn, very nearly suffered the devastation which was inflicted upon so many abbeys and churches by the more bigoted of the Reformers. It was saved by the craftsmen of Glasgow turning out in their strength and chasing away the destroyers of the "rookeries," who had already begun to lay sacrilegious hands upon the venerable building. After the Reformation, and till the Revolution of 1688, which re-established Presbyterianism as the religious form of worship in Scotland, the see of Glasgow was occupied by a number of archbishops, the tenure of whose office in many cases was precarious. The most notable fact after the Reformation in the history of the Glasgow Church was the Assembly of 1638 which was held in the city, when Episcopacy was energetically abjured, the Solemn League and Covenant accepted, and its signature made binding upon all who claimed the ordinances of the Presbyterian Church. The fact that the craftsmen were zealous for the preservation of their fine old cathedral indicates probably that the Reformation doctrines were not received so enthusiastically in Glasgow as in many other places in Scotland; but they took deep root latterly, and in the struggles for religious and civil liberty in the 17th century the inhabitants were among the foremost to assist and endure in the good cause.

Glasgow owed its erection into a burgh to its ecclesiastic lords. One of these obtained a royal charter from William the Lion in the last quarter of the 12th century (between the years 1175 and 1178), which made the town a burgh, and gave it a market with freedom and customs. Another charter, it is supposed, was granted in 1190, and according to a deed dated 1268 the town was governed by a provost and bailies, and had courts of justice for settling disputes among the inhabitants. There are no records, however, till almost quite recent times. A few incidents of national history with which Glasgow was connected may be noted, to fill up the blank from the period when it was an ecclesiastical town to the date at which it started its great career as the capital of Scottish industry and commerce. Wallace fought one of his successful battles for Scottish liberty in the High Street of Glasgow in the year 1300. In 1350 the plague raged in the city, and returned thirty years afterwards, though not in so severe a form. About 1542 the bishop's castle, which was garrisoned by the earl of Lennox, was besieged by the earl of Angus, then regent, and after its surrender on terms which were dishonoured, a skirmish took place between the parties at the Butts to the east of the town. The regent's troops were successful, and to punish the inhabitants for their devotion to the Lennox family the town was pillaged. The unfortunate Queen Mary visited her husband Darnley when he lay ill at his father's house Limmerfield, near Glasgow—a visit which afterwards was made of fatal significance to her when her case was heard before Queen Elizabeth in council. The inhabitants of Glasgow had no liking for the fair queen, for many of them fought against her at the battle of Langside, where she lost her crown and kingdom. Glasgow seems to have been fairly prosperous after the accession of James VI. and the union of the crowns of England and Scotland. It was recovering from the loss which it sustained by the Reformation through the dispersion of the wealth of its ecclesiastical lords. A little trade was springing up with foreign parts, chiefly with the Low Countries. But the city suffered somewhat severely in the reign of Charles I. Its inhabitants had become fiercely anti-prelatical, and were obnoxious to the ruling powers. When Montrose in his victorious course marched into the city after the battle of Kilsyth he levied a heavy contribution, although the city was suffering at the time from one of the periodical visits of the plague. In 1648 the provost and his bailies were deposed for contumacy to Charles I., and were imprisoned for a few days, while four regiments of foot and horse were quartered on the magistrates, council, and session. Plague and famine prevailed during the following year; in 1652 there was a great fire which destroyed about a third of the town and £100,000 worth of property. After the restoration of Charles II., and during the persecutions of his and his brother's reign, Glasgow suffered severely. It was a centre of disaffection against the Government, the headquarters of the Whigs of the west of Scotland. Glasgow prison was filled to overflowing with the rebels, as they were called, and it is a proof of the sympathy with which they were regarded by the citizens that on the occasion of another great fire in 1678 the doors of the prison were thrown open, and the prisoners set at liberty. The Government retaliated by sending an army of wild Highlanders to the city, who savagely oppressed the inhabitants and roused up the spirit of resistance which vented itself at Loudon Hill and Bothwell Bridge. With the Revolution peace and prosperity came to Glasgow, only to be partially interrupted by the risings in 1715 and 1745. A regiment of 500 men was raised in Glasgow to support William and Mary and Presbyterian rights and privileges; and in return the city was declared free by a charter, the citizens having the right of electing their own municipal rulers.

Glasgow was not aware of the vast benefits that were conferred upon her by the union of England and Scotland in 1707. The measure was stoutly resisted by the inhabitants, and its proclamation nearly led to a riot; but the merchants very soon saw that by the water highway which flowed through the town they could have access to the profitable trade that had been opened up in North America. Glasgow's situation for the western foreign traffic was the best in Scotland, and inferior to none of the great towns of England. The Treaty of Union put every Scottish port, so far as trade was concerned, on an equal footing with the English ports; and there was no reason why Glasgow should not share in the wealth which in ever-increasing amount was yearly coming across the Atlantic. As has been already stated, after the troublous times of the Reformation the trade prosperity of Glasgow was considerable. In the middle of the 16th century there were ten towns in Scotland above it in population and importance, but by the close of the 17th century it had risen to the second rank, with a population of about 10,000 or 11,000. This

increase is to be ascribed to the monopoly which the inhabitants had secured in the middle of the 17th century of the sale of raw and refined sugars for the most of Scotland. Besides this they had the right of distilling spirits from molasses free of duty; they conducted a considerable trade in cured herrings and salmon, were manufacturers of soap, and sent to the English ports hides and linen, bringing back in exchange tobacco and manufactured goods, which they distributed north of the Tweed. Bristol was then the great emporium of tobacco, and Glasgow's commercial connexions with it naturally turned the attention of its traders to that lucrative branch of commerce. When it became possible for Glasgow merchants to enter into competition with the merchants of Bristol, companies were formed to carry on the trade with the North American colonies, and a large trade was soon established. Ships were chartered, and as wealth poured in were built, and sailed regularly for Virginia, Maryland, and Carolina, taking out goods in barter for cargoes of tobacco. In 1760 Glasgow had completely rivalled Bristol in the tobacco trade, and in 1772 its importations were more than half of the entire quantity brought into the United Kingdom. The Virginian trade being exceedingly lucrative, Glasgow flourished under it. The town rapidly extended westward, handsome mansion-houses for the "tobacco lords" were erected, and the austerity of manners which had come down from the covenanting days was somewhat relaxed. The money made by tobacco found its way into other branches of commerce and stimulated new industries. The tobacco trade however received a crushing blow at the outbreak of the American War,—a blow from which it never wholly recovered, for after the war was over, and the thirteen colonies had become the United States of North America, Glasgow was engaged in other commercial enterprises. The distress in the city was keen during the first years of the war, and Glasgow capitalists turned their attention to the West Indies and the cultivation of the sugar cane. The manufacture of cotton goods was introduced also about this time, and proved a new source of wealth and prosperity. Calico printing, which was soon to develop into a great industry employing thousands of persons, was started at Pollokshaws in 1742; the inkle loom was set up in 1732; glass-making was established in a feeble way in 1730; and the brewing of beer and ale on a large scale was attempted with success. In 1764 James Watt perfected his first model of a steam engine in a small workshop, which had been granted to him by the senatus of the university, within the college walls. From the Treaty of Union down to the end of the 18th century, the progress of the city had been remarkable. In 1708 the population was estimated to be upwards of 12,000; at the end of the century it was close upon 80,000.

*The Harbour.*—The energies of the traders of Glasgow were naturally somewhat confined by having a port so far away as Port-Glasgow, and there is little wonder that, when their commerce began to extend, they should have cast about for plans to deepen the water-way and enable them to bring their merchandise to their own warehouses in the city. The task which lay before them was one involving numerous difficulties. "A hundred years ago," says Mr Deas, the engineer of the Clyde trust, in his interesting sketch of *The Rise and Progress of the Harbour of Glasgow*, "the river was almost in a state of nature, and was fordable on foot at Dumbuck Ford, more than 12 miles below Glasgow." As early as 1566 the authorities of the towns of Glasgow, Renfrew, and Dumbarton endeavoured to remove a sandbank, a little above the latter town, and though operations were intermittingly carried on for some years, they do not appear to have been very successful. Prior to 1658 the shipping port of Glasgow was Irvine in Ayrshire, but the passage of lighters from that place was tedious and the land carriage expensive. It was determined in 1658 by the magistrates of Glasgow to purchase ground at Dumbarton, and construct a spacious harbour there. The magistrates of that royal burgh, however, objected, on the plea that "the great influx of mariners and others would raise the price of provisions to the inhabitants." The Glasgow authorities, however, were determined to have a harbour nearer than Irvine, and in 1662 they purchased 13 acres of ground on the south side of the river (now Port-Glasgow), where they built harbours and constructed the first graving dock in Scotland. In 1688 a quay was built at the Broomielaw, although nothing had yet been done for the deepening of the river. It was only after the city had experienced the vast importance of foreign traffic that the magistrates, most of whom were "tobacco lords," seriously turned their attention to the question. In 1740 the town council authorized the expenditure of £100 in making a deepening experiment below the Broomielaw quay, and fifteen years later they employed Smeaton the well-known engineer to report on the subject. He found the two shallowest places at the Pointhouse Ford, now the western boundary of the harbour, and at Kirst, now within the harbour. The depth at low water at the former was 15 inches and at the latter 18 inches, while at high water it was 3 feet 3 inches and 3 feet 8 inches respectively. Smeaton proposed a lock and dam, four miles below Glasgow Bridge, so as to secure 4 feet 6 inches of water at the Broomielaw quay. Fortunately his report was not adopted. In 1768 the first beginnings were made on the report of Mr John Golborne, who suggested the contraction of the river by the construction of rubble jetties and the removal of the shoals by dredging. James Watt reported in 1769 to the magistrates on the declivity of the bed of the Clyde from Broomielaw quay to that obdurate obstacle Dumbuck Ford. In 1773 Mr Golborne contracted with the town council to make this ford 6 feet deep at low water and 300 feet wide, and carried out his contract successfully in 1775. Rennie reported on the river in 1799, and recommended "the shortening of some of the jetties, the construction of new ones, and the building of low rubble walls from point to point of the jetties so as to render the channel uniform, and prevent the accumulation of shoals." His suggestions were carried out, and upwards of 200 jetties were constructed between Glasgow and Bowling, the result being a considerable improvement in the navigation, and reclamation of land to the proprietors on both banks from the alveus of the river, the greater portion of which has since had to be purchased at high prices for other improvements. Telford reported in 1806, and Rennie again in 1807, and the deepening process went on without pause. In 1836 the engineer of the Clyde Trust reported to the trustees that there was then from 7 to 8 feet of water at the Broomielaw quay at low water, that the lift of a neap tide, which was only sensible in 1755, was 4 feet, and of a spring tide 7 or 8 feet, making a depth of 12 feet at high water of a neap and of 15 feet of a spring tide. The river had become capable of taking craft of 400 tons to Glasgow. In 1840 parliament sanctioned an Act for carrying out plans for the further improvement of the navigation of the entire river under the jurisdiction of the trustees. Upon the lines then laid down the improvements have ever since proceeded, with only very slight modifications, but the result may probably be best expressed in the following figures. In 1839 vessels of 17 feet draught of water were safely navigated to and from the harbour, in 1854 of 19 feet draught, in 1861 of 20 feet draught, in 1862 of 21 feet draught, and in 1870 of 22 feet draught. Only a few years ago vessels of 15 feet draught were two and often three tides in the river in their passage up and down, but now vessels of 22 feet draught leaving Glasgow two or three hours before high water get to sea in one tide. The rapidity of the deepening process has been due almost entirely to the powerful steam dredgers employed by the trustees, to the use of the diving bell for blasting purposes, and latterly to the introduction of steam drilling and dynamite. The quantity of dredged matter taken from the river every year is somewhere about a million and a quarter of tons, which is carried off by barges and deposited in Loch Long, an arm of the Firth running up into the Western Highlands. During the last thirty-one years upwards of 20 million tons have been dredged from the river, and since the year 1770 the cost for dredging and depositing alone has been between £500,000 and £600,000. The total expenditure upon the river since the year above named has been upwards of seven millions sterling; and the revenue, which a hundred years ago was £1733, is now about £210,000. The first dock constructed at the Glasgow harbour was opened so late as 1867. Though Acts of Parliament had been obtained more than twenty years before, the sides of the river were utilized for quayage extension; but within the last ten or twelve years the pressure for space became very great, and the new dock, which is tidal, and covers 5¼ acres of water space, was found to be quite inadequate. A new Act was obtained in 1870 to construct docks at Stobcross, and these, which are now nearing completion, will have an area of 30 acres, and will accommodate one million tons of shipping. The estimated cost, including the purchase of land, is £1,163,000.

The traffic on the Clyde received an extraordinary impetus by the application of steam to navigation, and from the date of the "Comet," which was built on the Clyde in 1811–12 for Mr Henry Bell, Glasgow has been the true home of steam navigation. The steam shipbuilding trade has become one of the largest industries of the city, and with its growth the commerce of Glasgow has kept pace.



The river has been the fruitful source of the city's greatness. As the accessibility of the water-way became greater year by year, so the commerce and the industries of the city developed, and the material wealth increased. Glasgow, too, is fortunate in being the centre of an enormous coal and iron field, in the working of which she has greatly benefited. Her industries, now very numerous, are referred to in detail below. They embrace almost every species of manufacture to be found in Great Britain; and this variety is probably the reason for the all but uninterrupted prosperity of the city, for it is rare that every department of manufacture and commerce is dull at the same time. Her resources are so numerous that she is not much affected by stagnation in one or two branches. But Glasgow has undoubtedly come through one or two crises of a serious character in the course of her industrial career. In 1857 the failure of the Western Bank struck a hard blow at her trade and commerce, though it was wonderful how soon she recovered from the heavy loss and the derangement of commercial affairs which were caused by the failure. The American Civil War paralysed the cotton manufactures of Glasgow, as it did those of Lancashire; but otherwise it did little harm, and the stimulus that was given to shipbuilding by the carrying trade of the world practically falling into British hands more than compensated for other losses. The close of the American War was followed by a period of commercial and industrial activity in the city, which, however, sustained a severe check within the last two years, during which time trade has been languishing everywhere. While enterprising citizens were looking forward with some slight hope for signs of a revival, the collapse of the City of Glasgow Bank on the 2d October 1878 fell upon them like a thunderbolt. In a few days after the stoppage it was known that matters were far worse than the most sinister prophet of evil could have imagined, much less foretold. The whole of the capital and reserve of the bank, amounting to close upon a million and a half sterling, was squandered, and nearly five and a quarter millions besides. The total loss cannot be set down at much less than eight millions sterling, and the most of this enormous sum had gone to support great Indian and colonial firms, which had been hopelessly bankrupt for years. The inquiry into the affairs of the bank revealed such recklessness and misconduct on the part of some of those who were responsible for its management that the manager and the directors were tried on a charge of fabricating and uttering false balance sheets. They were all convicted, and sentenced to varied terms of imprisonment. Since this gigantic failure Glasgow has been passing through the greatest crisis of its existence.

*Administration.*—The affairs of Glasgow are managed by a corporation consisting of 48 representatives of the 16 wards into which the city is municipally divided, and by one representative from the Trades' and one from the Merchants' House. The lord provost is the head of the corporation, and is assisted in his executive functions by 10 bailies. The bailies hear and decide cases in the police courts, aided by assessors, who are local legal practitioners of good standing. There is also a stipendiary magistrate who sits every day in the central police court, and undertakes the heavier portion of the cases. The dean of guild court has a certain jurisdiction over the construction of new and the alteration of old buildings. The corporation of Glasgow, since it became popularly elected, has shown great and enlightened interest in the welfare of the city. It has during the last quarter of a century acquired three public parks for the recreation of the citizens, and laid them out in an ornamental manner. Within the same period, too, it has undertaken and carried out immense works for a supply of water unequalled in the kingdom, has bought up the old gas-works and supplies artificial light within and beyond the municipal boundaries, and is at present engaged in bringing to a successful close a series of city improvements on a very large scale.

*City Improvements.*—As the last-mentioned work is the most important upon which the corporation has been engaged since the introduction of Loch Katrine water, and formed the model upon which Mr Cross, the home secretary, framed his Artisans Dwellings Act, a slight sketch of the plan upon which it was founded may be given here.

The city had grown so fast in population during the present century that it had become greatly overcrowded, especially in the central portions. From the leading thoroughfares of High Street, Saltmarket, Trongate, Gallowgate, and Argyll Street long narrow closes and wynds penetrated into the densely-built spaces behind. The population in these regions varied from 400 to 1000 per acre, and the dirt, darkness, and foul air in which the poor creatures lived, made their homes breeding-places of fevers and disease of every kind. In some of the worst spots the death-rate was 70 per 1000 per annum. The closes and wynds, besides being dens of disease, were the haunts of the criminal class of the population, who were able to dispose of their plunder and escape the police with comparative ease in these deep alleys, many of them connected with each other by ways only known to the experienced criminal. Some benevolent citizens made a small effort at improvement about twenty years ago, by buying up one of the most notorious of these closes; but it was not till the City Union Railway was projected that the attention of the municipality was fairly called to the question, or that any step was taken by it. The Union Railway passed through some portions of the old town which were densely overcrowded, and it was suggested by the late Mr Blackie, who was then chief-magistrate, that the corporation might work in harmony with the railway company, and clear out old and densely-crowded properties, which the railway only touched at certain spots. Mr Carrick, the city architect, drew out improvement plans, and in 1866 an Act was passed by parliament enabling the corporation to acquire old overcrowded localities, to borrow money, and to levy rates. The improvements contemplated involved the destruction of 10,000 houses, all of them really unfit for habitation, but which were filled by upwards of 50,000 souls. The corporation was bound by the Act to find accommodation for the dispossessed when the numbers exceeded 500. In point of fact, the corporation never required to build houses, as private enterprise more than kept pace with the operations of the improvement scheme. By the Act the corporation was empowered to borrow £1,250,000, and to levy a rate of 6d. per pound on the rental for five years, and 3d. per pound for ten years, by which time it was calculated the whole work would be completed. No sooner was the Act passed than the trustees—all of them members of the town council—proceeded to purchase the properties scheduled, a delicate and difficult task, which, however, was most economically carried out, first by Sir James Watson, and afterwards by Mr James Morrison, the conveners. The work of demolition also went on; the densely-built districts were cleared out, open spaces and squares secured, streets driven through huge blocks of building, others widened, till now there is hardly a remnant left of the old notorious abodes of fever and crime. There is still a good deal to do, and it may be necessary to get an extension of the time fixed in the Act, as it expires in 1881; but up to the present time upwards of 30,000 people have been turned out of their unhealthy homes, and have been provided with better ones elsewhere. So far the improvements have been very cheaply executed. The great amount of demolition effected by the trustees and the railway companies greatly raised the value of building ground in the central portions of the town; and the corporation has been able to sell the properties which it had acquired at considerable profit, after utilizing large portions of them for streets and open spaces. The cost to the citizens will be the rates which have been and are to be levied; but perhaps to this should be added an uncertain amount represented by the rise of house rents. Up to May 1878 the sum raised by rates was £305,867; and, adding to that other three years' rates, the total amount which the improvements will cost will be about £375,000, £40,000 of which was spent in buying a park for the use of the people in the north-eastern district of the city.

*Public Health.*—The result of these improvements has been a marked decrease in the mortality. In 1866 Glasgow was one of the least healthy towns in Great Britain; in 1877 it was nearly as healthy as London. In 1866 the annual death rate was 29·6 per thousand, and continued slightly rising or falling till 1875, when there was a fall to 28·7. This was the year in which the work of the improvement trustees began to tell. In 1876 the death rate was 25·2 per thousand, in 1877 it was 24·9, and in

1878 it was 25·0. The improvement scheme has done good otherwise in directing attention to sanitary questions of all kinds. There is now in Glasgow a public department of health, at the head of which there is a most efficient medical officer, and provision has been made for the isolation of contagious diseases immediately on their breaking out. Great attention is paid to cleansing the city, and fever epidemics, which not long ago were seldom absent, are now very rare, and hardly ever assume large proportions. Crime has also diminished as one of the results of the city improvements, and its detection is much surer.

There can be no doubt that the demolition of so large a number of small dwelling-houses in such a short period was no small grievance to those who inhabited them; not that there ever was any lack of accommodation, but because families had in many cases to remove to places at inconvenient distances from their work, and into houses which, though much better in a sanitary sense, were somewhat dearer. The distance difficulty, however, was greatly mitigated by the construction of tramways throughout the town, and by the authorities providing for the running of morning and evening workmen's cars at exceedingly low fares; and it is scarcely doubtful that the change from unhealthy and overcrowded houses into others roomier and built with some regard to sanitary principles has been a blessing to the lower class of the population. When the works are completed, Glasgow in its older regions will be a city transformed.

*Water Supply.*—Previous to 1859 Glasgow was supplied by water from the river Clyde and from ponds erected some miles south of the city, to which the water was conveyed by gravitation. The supply was insufficient, and the Clyde water bad. In 1848 the idea of bringing water from Loch Katrine was first spoken of. The citizens at that time began to see that something far more extensive than had ever been attempted was required to supply the rapidly growing wants of the city. Between 1848 and 1855 many schemes were proposed by the water companies and by private individuals, none of which came to anything. In 1852 the corporation took the matter up, and, after a long and arduous struggle, the Act for tapping Loch Katrine was carried in 1855. The corporation it is believed would have been defeated again but for the attention which Lord Palmerston paid to a subject in which Glasgow was so deeply interested, and for the influence which he brought to bear in favour of the works. The engineer selected to bring the water from a distance of 34 miles was Mr J. F. Bateman, and four years after the passing of the Act the waters of the Highland loch, at the touch of Her Majesty the Queen, flowed into the city.

The sources of the supply are Loch Katrine with a surface of 3000 acres, Loch Vennacher with an area of 900 acres, Loch Drunkie 150 acres,—altogether about 4000 acres of water surface, and containing within the limits to which they may be raised or lowered about 1,600,000,000 cubic feet of water. The drainage area is 45,800 acres, and the rainfall is from 80 to 90 inches per annum. The source is ample for the supply of a population double that which is at present supplied, but the works are not more than sufficient to provide 50,000,000 of gallons of water per day, and it will be necessary before many years are past to construct other works, probably to double that quantity. Loch Katrine is 360 feet above the tide at Glasgow, which, allowing for the loss of fall, secures a pressure of 70 or 80 feet above the highest summit in the city. The water is conveyed by mined tunnels, built tunnels, aqueducts, and iron pipes. There are altogether 70 tunnels, one of which is 2650 yards and another 2325 yards in length, and 8 feet in diameter. One of these works is 600 feet below the surface. The aqueducts over rivers and ravines of an important character are 27 in number; some of these are of iron and some of masonry. Twenty-six miles from Loch Katrine and 7 or 8 from Glasgow a large reservoir was constructed, 70 acres in extent and capable of holding 500,000,000 gallons of water; and from this reservoir the water, having undergone a filtering process, is conveyed in pipes to Glasgow. The engineering cost of the works was £700,000, or ten per cent. above the estimate; but as the contract was only for 20,000,000 gallons per day, and the actual product was 30,000,000 gallons, the cost cannot be said to have been excessive. There have been great additions made to the works since they were opened in 1859, the total capital expenditure at the end of 1877 being a little over £2,000,000. The quantity of water brought into the city from Loch Katrine is now 30,000,000 gallons per day, but the area of distribution is much larger than Glasgow. In a very short time the corporation will be able to bring in 50,000,000 gallons a day, which is the limit of the capacity of their present works. The cost of the water to the inhabitants is 8d. per pound on the rental, and 1d. per pound is charged for public purposes. The quality of the water is excellent, and there can be no doubt that it has been an active agent in improving the health of the city. Besides the Loch Katrine works there is a supply of water from the Gorbals gravitation works amounting to rather more than four millions of gallons per day. The consumption of water over the area of distribution is thus 34,000,000 gallons in the 24 hours, or 45 gallons for every man, woman, and child,—a very large supply even when deduction is made for the water used in large public works, and for purposes other than domestic.

*Lighting.*—In the parliamentary session of 1868–9 the corporation applied for and obtained powers to purchase the works of the two gas-light companies which had until that period supplied Glasgow and its suburbs with gas. The capital of these companies consisted of £415,000, on £300,000 of which the shareholders were entitled to profits not exceeding 10 per cent. per annum, the remaining £115,000 paying dividends at the rate of 7½ per cent. per annum. The corporation agreed to give for the works to the shareholders annuities of 9 per cent. on the stock which paid 10 per cent., and of 6¾ per cent. on the stock which paid 7½ per cent. These annuities were guaranteed by a sixpenny rate upon the whole rental within the municipality. Besides these rates the corporation took over mortgages amounting to £119,265. It is needless to state that, no rate has ever been levied upon rental for the maintenance of the gas-works, the manufacture having proved remunerative at a moderate charge per thousand cubic feet. The gas-works, as taken over by the corporation, were capable of producing 6,500,000 cubic feet; but since then they have been greatly extended at a cost of half a million sterling, and are now capable of making 12 million cubic feet of gas. The consumption varies between 2 million cubic feet in twenty-four hours in summer and 11 million cubic feet during the same time in winter. The area of supply includes nearly all the surrounding suburbs, in addition to the city. The cost of gas to the consumer is 4s. per thousand cubic feet, and no rent is charged for the use of meters.

*Tramways.*—The next project with which the corporation has had to do in recent years has been laying down lines of tramways along the principal throughfares of the city. This work was undertaken for the purpose of preventing the control of the streets and the street traffic from passing out of the hands of the corporation; the cost was about £200,000 for 13½ miles of tramway; but this sum, with interest at 4½ per cent. per annum, is to be repaid in the course of twenty-three years by the lessees, who also keep up the roadway between the tramway lines, and pay a rent of £150 per mile per annum. The fares are one penny per mile, and the number of passengers carried is very great. Pecuniarily the tramways have been successful.

*Income and Expenditure.*—The income and expenditure of Glasgow are larger than those of many a flourishing state. The trusts, which till quite recently were semi-independent, but are now simply committees of the town council, are the police board, the water commissioners, the gas commissioners, the city improvement trustees, parks and galleries trust, market trust, &c. The revenues which they collect and distribute amount altogether to close upon one million sterling per annum. The common good of the city, that is to say, property belonging to the corporation, is estimated as being worth about £300,000, the interest of which is expended in maintaining what are called the



city churches, and generally on municipal purposes for which the citizens are not taxed. The number of parliamentary voters in 1877–8 was 60,582, and the list of school-board electors, which includes all ratepayers, when the roll was last made up, numbered 112,897. Glasgow returns three representatives to the House of Commons since 1868, each elector having, however, only two votes. Previous to this, and from the passing of the great reform measure of 1832, the city had only two representatives. Glasgow has a police force of about 1000 men, which is maintained at an expense of £78,000 per annum, half of which is paid by the Government. The sheriff-depute of Lanarkshire holds his court in Glasgow, and is assisted by five sheriffs-substitutes resident in the city. The amount of legal work which is gone through in the disposal of civil and criminal cases is very great, being equal to about one-third of the whole disposed of in Scotland, including the supreme courts in Edinburgh.

*Bridges and Railway Stations.*—There are three fine bridges over the river within the municipal boundaries, and two iron suspension bridges. One railway bridge was erected a few years ago by the City Union Railway Company, and another by the Caledonian Railway Company is now nearly completed. All the bridges are free. Glasgow is the centre of a vast railway system, the Caledonian and Glasgow & South-Western Railways having their termini in the city; these work with the great English lines, the Midland and the London & North-Western Companies. The St Enoch's Square station, which provides for the traffic over the Glasgow & South-Western, City Union, and Midland Companies, is one of the most spacious in the United Kingdom. The same companies are erecting an equally commodious goods station in High Street; the Caledonian Company, finding themselves greatly hampered for room at the old terminus in Buchanan Street, are building a colossal structure in Gordon Street; and the North British Company, which have their headquarters in Edinburgh, are greatly extending their present limited accommodation in Dundas Street.

*Public Buildings.*—There are not many of these of importance in Glasgow. The one which naturally attracts the greatest attention of strangers is the cathedral, which is now in a complete state of repair, and a few years ago, through the munificence of Glasgow citizens and of noblemen and gentlemen of the vicinity, its windows were filled with richly stained glass from one of the great stained glass establishments of Munich. The cathedral is acknowledged to be a fine specimen of Early English Gothic. It is situated in a good position in the north-east quarter of the city, and is about 104 feet above the Clyde level. Its form is that of a Latin cross with short transepts. The length from east to west is 319 feet, its breadth 63 feet, the height of the choir 93 feet, and of the nave 85 feet. At the intersection it has a tapering octagonal spire, the height of which is 225 feet. It contains 147 pillars and 159 windows. The crypt under the choir is exceedingly fine and complete. The Royal Exchange in the centre of the city contains a newsroom 122 feet in length by 60 feet broad. Its portico is formed of 12 fluted Corinthian columns, supporting a rich frieze and pediment; the north and south sides of the building are ornamented by a colonnade of Corinthian pillars. The Royal Infirmary is in the Roman style of architecture from a design by Adams. It has been greatly extended since its erection in 1792. The City Hall is a plain building capable of holding upwards of 3000 people. The new Public Halls, opened in 1877, are the most recent addition to the architecture of the city. The building cost upwards of £80,000, and since its opening has been mainly used for musical entertainments, music being one of the arts which has been cultivated with the greatest success in Glasgow of late years. The principal hall in this fine building, which is of the classic style of architecture, is capable of holding between 4000 and 5000 persons. By far the grandest building in Glasgow, however, is the new university structure on Gilmorehill, which is described below. During the last thirty years a vast improvement has been made in Glasgow in church architecture. Dissenters who were satisfied in the earlier part of the century with plain meeting-houses now vie with each other, and with the Church of Scotland, in the elegance and adornment of their places of worship. There is probably no town in the United Kingdom which has spent more upon ecclesiastical buildings in recent times than Glasgow, or which in this respect has made greater improvements in taste. The Roman Catholics and Episcopalians, nearly one-fourth of the population of the city, have also erected some very fine ecclesiastical edifices. The street architecture of Glasgow has greatly improved, many of the large business firms having rebuilt their warehouses upon a splendid scale. The new post-office buildings in George Square also deserve mention. The work of the post-office of Glasgow has increased with the increase of the city, and is now practically larger than that of any other town save London. It was found necessary a few years ago to extend the accommodation, and now the greater part of one side of George Square is devoted to postal and telegraph purposes. The new buildings are plain but massive, and seem to have been planned on the principle of the least ornament with the most room. The corporation have obtained an Act for the erection of municipal buildings on the east side of George Square. Not without reason has Glasgow been called one of the best built cities of the empire, its substantial masonry owing much to the excellent quality of the material, a sandstone quarried in abundance all round the city.

*Statues.*—The public statues in Glasgow are not numerous, though several of them are very fine. Most of them are in George Square. The equestrian statue of the great duke of Wellington stands opposite the main entrance to the royal exchange, and that of William III. is close to the junction of Trongate with the Saltmarket, High Street, and Gallowgate, the ancient cross of the city. In George Square there are equestrian statues of the Queen and the late Prince Consort, a seated figure of James Watt, statues of Sir John Moore, Lord Clyde, Sir Robert Peel, Sir Walter Scott, James Oswald of Auchincruive, Thomas Graham the celebrated chemist, Robert Burns, Thomas Campbell, and David Livingstone. The statue of Burns, executed by Mr George E. Ewing, a Glasgow sculptor, was subscribed for in shillings by the working classes of Scotland.

*University and Schools.*—Of the educational institutions of Glasgow precedence must be given to the university. As already stated this great seminary of learning was founded by Bishop Turnbull, who obtained a papal bull for the purpose, dated 7th January 1450. By this bull a corporate body was formed, consisting of a chancellor, rector, and dean, with doctors, masters, regents, and students, in the several faculties into which it was divided. One of these was known as the pedagogium, or college of arts. This school of learning was first situated in Rottenrow (1459). James, Lord Hamilton, bequeathed to the principal regent of that college some buildings and several acres of land, on part of which in the High Street the college was afterwards erected. The college of arts was restored and endowed by James VI. During the period which intervened between 1577 and 1688 the university underwent many changes; but in the year 1693, each of the Scottish colleges having received a grant of £300 per annum out of the bishops' rents, the Glasgow institution again revived; and having