

In the large towns in Scotland, who live in what are termed self-contained houses for the simple reason, that they cannot afford to build, or even rent a complete stone mansion. Yet they can frequently purchase a *flat*; that is, a house up two, three, or four stories; whereas, for the sum they thus expend for a confined lodging, they could secure a sufficient brick house from top to bottom, calculated to last during the whole period of their own lives, and those of their immediate descendants. But the prejudices of society would seem to forbid that any such course should be pursued.

MONUMENTAL COLUMNS.

The erection of triumphal or monumental columns was a favorite idea of the Romans. Augustus erected a column of white marble near the temple of Saturn, in the forum at Rome, as a centre whence the account of the miles began in the calculation of distances from the city. This celebrated column, which is still in existence, is however not of great altitude. Among the principal triumphal columns of antiquity now remaining, is what is called the column of Pompey, constructed of red granite, and situated on a rock some miles without the walls of Alexandria in Egypt. The total height of this column is variously mentioned as being ninety-two feet and one hundred and fourteen feet. The spectator can never be tired with admiring the beauty of its Corinthian capital, the length of its shaft, nor the extraordinary simplicity of the pedestal. To whom this famous pillar was erected is now unknown. It acquired the name of Pompey's pillar so late as the fifteenth century. The following cut will convey a correct idea of its outlines.



The Trajan column, which falls next to be mentioned, is one of the most celebrated monuments of antiquity. Its height, including the pedestal and statue, is one hundred and thirty-two feet. This monumental column was erected in the centre of the forum Trajani, and dedicated to the Emperor Trajan for his decisive victory over the Dacians, as is testified by the inscription on the pedestal. It is of the Doric order, and its shaft is constructed of thirty-four pieces of Greek marble, joined with cramps of bronze. For elegance of proportion, beauty of style, and for simplicity and dexterity of sculpture, it is the finest in the world. The figures on the pedestal are masterpieces of Roman art. It was formerly surmounted by a statue of Trajan, which has been succeeded by a statue of St. Peter.

There are other columnar erections in Rome. The column of the Emperor Phocas is near the temple of Concord. It is of Greek marble, fluted, and of the Corinthian order, four feet diameter, and fifty-four feet high, including the pedestal. The Antonine column was erected by the Roman senate to the glory of Marcus Aurelius, for his victories over the Marcomanni, in the reign of Commodus. Aurelius afterwards dedicated it to his father-in-law, Antoninus Pius. According to a rigid antiquarian, made by M. de Cambray, this column is one hundred and sixteen French feet in height, and eleven in diameter. It is built entirely of marble, and encircled with bas-reliefs, which form twenty spirals around its shaft. It has been well illustrated by engravings and descriptions by Pietro Santi Bartoli. It is in every respect inferior to that of Trajan as a work of art, particularly in the style and execution of the sculptures. There is also in Rome another column bearing the same name, situated on the Monte Citorio. Its shaft is of a single piece of Egyptian granite, forty-five feet in height, and five feet eight inches in diameter. Its pedestal is ornamented with bas-reliefs, representing the apotheosis of Antonine and Faustina, and other events relating to the history of Rome.

The column which ornaments the British metropolis, better known as the Monument, was designed by Sir Christopher Wren, and erected by order of parliament, in memory of the burning of the city of London, anno 1666, in the very place where the fire began. This pillar was begun in 1671, and finished in 1677. It is of the Doric order, fluted, 202 feet high from the ground, and fifteen feet in diameter, of solid Portland stone, with a staircase in the middle, of black marble, containing three hundred and eighty-five steps.

The lowest part of the pedestal is twenty-eight feet square, and its altitude forty feet; the front being enriched with curious bas-reliefs. It has a balcony within thirty-two feet of the top, on which is placed a blazing urn of gilt brass.

The column in Phoenix Park, Dublin, differs from any other work of this description. It was erected in 1745. It stands in the centre of an area where four great avenues meet, and from which direct entrances to the vice-regal lodge, and that of the chief secretary. The trees which shade the avenues form vistas, through which the perspective view of the column and its electric object. The pillar is of Portland stone, and is of the Corinthian order, fluted, and highly ornamented—the base and pedestal five feet in height, the shaft and capital twenty, and the patera which surmounts the column five feet, so that the whole presents an object thirty feet high.

The Napoleon column has justly been considered as the greatest ornament of the Parisian capital. It stands in the Place Vendôme, and was erected to commemorate the successful result of Bonaparte's arms in the German campaign of 1805. Its total elevation is one hundred and thirty-five feet, and the diameter of its shaft is twelve feet. It is in imitation of the pillar of Trajan at Rome, and is built of stone, covered with bas-reliefs (representing the various victories of the French army), composed of twelve hundred pieces of sculpture taken from Russian and Austrian artists. The bronze employed in this monument was about three hundred and sixty thousand pounds weight. The column is of the Doric order. The bas-reliefs of the pedestal represent the uniforms and weapons of the conquered legions. Above the pedestal are festoons of oak, supported at the four angles by eagles, each weighing five hundred pounds. The bas-reliefs of the shaft pursue a spiral direction from the base to the capital, and display in chronological order the principal scenes of the campaign, from the departure of the troops from Boulogne to the battle of Austerlitz. The figures are three feet high; their number is said to be two thousand, and the length of the spiral band eight hundred and forty feet. Above the capital is a gallery, which is approached by a spiral staircase within, of one hundred and seventy-six steps. The capital of the column is surmounted by an acroterium, upon which stands the statue of Napoleon, measuring eleven feet in height, and weighing five thousand and twelve pounds. The total expense of this sumptuous monument was 1,500,000 livres.

There are also several smaller columns, but of beautiful proportions, in various parts of England, in imitation of the above, but mostly of the Grecian or pure Doric order, as the Angles column, erected in commemoration of the battle of Waterloo, and the noble earl of that name, in the island of Anglessea; the column at Shrewsbury, erected in commemoration of the same event, and of another noble general, Lord Hill; the Nelson column, at Yarmouth; and in Dublin, the Wellington column, at Trim, in the county of Meath, Ireland; the monument commemorative of Lord Melville, at Edinburgh; and a similar one at St. James's Park, of the Duke of York, &c. A very common error is committed in the erection of monumental columns, in loading the summit with a clumsy and heavy masonry, on which the statue is placed, and technically called an acroterium. The Melville monument at Edinburgh presents the most notable instance of this kind of defect. If there must be an acroterium, it rather should be so constructed as to be in its proportions, or too little seen by the spectator.

To the above list we may add the Washington monument, at Baltimore, on which a colossal statue of Washington has been placed. The pillar is of the Grecian Doric order, and of very massive proportions. It stands on a grand base or socle, and is surmounted by a circular pedestal, on which the statue rests. This base or socle of the monument is 50 feet square, and 25 feet high; the column is 30 feet in diameter, and with its entablature, 130 feet high; the capital is 30 feet square. The statue is 15 feet high, and the whole height of the monument, from the pavement, including the statue, will be 176 feet. As it stands on a hill 100 feet high, this structure rises 276 feet above tide. It is constructed of granite, and is slightly fluted, and is a very conspicuous object to every one approaching the city, whether by land or water. The statue greatly increases its effect, and gives grandeur and beauty to the whole structure. The attitude given to the statue represents the great man to whom the monument is dedicated in the act of resigning his commission, and the authority with which he had been invested by his country, again into the hands of the people, having accomplished the great object of his appointment—the freedom and independence of the union. The statue is the work of Mr. Canova.

BRIDGES.

The art of bridge-building is traced to the Romans. In the highest days of the Grecian, when their fine style of architecture was complete, when their porticoes were crowded with paintings, and their streets with statues, the people of Athens waded or ferried over the Cephissus for want of a bridge. The Greeks do not seem to have valued the construction of the arch sufficiently to excel in it. In the middle ages the people of the ancient world carried the power of rearing the stupendous arch and the magnificent dome to such an extent as the Romans. After the construction of their great sewers, the aqueducts, and the cu-

pols over the Pantheon of St. Agrippa, a bridge over the Tiber was of easy execution; and the invention of the architecture of stone bridges, as practised in its best and most effectual manner, must be conceded to this great and indefatigable people. The most celebrated bridges of ancient Rome were not distinguished by the extraordinary size of their arches, nor the peculiar lightness of their piers, but, like the rest of the magnificent works of this city, as far as construction is concerned, they are worthy of study from their excellence and durability. The span or chord of their arches seldom exceeded seventy or eighty feet, and the versed sine or height was not more than one-eighth of the span. The piers were usually semicircular, or constituted a segment nearly of this form.

Among the most celebrated bridges in modern times, or those built subsequently to the destruction of the Roman empire, are those of the Moors in Spain, who imitated and rivalled the best constructions of the Romans. In Great Britain, the art of building bridges appears to have been diligently studied from early times. The most ancient bridge in England is the pontic of 120 feet span, built by Henry II. at Stone, said to have been built in 850. The ascent is so steep that noise but foot passengers can go over it, a common peculiarity of old bridges.

The greatest improvement effected in modern times upon bridge-building consists in constructing them with a level surface, or roadway above, that they are easy of access. The most splendid work of art of this kind is Waterloo Bridge, across the Thames. Its length is 1250 feet. It consists of nine elliptical arches, each of 120 feet span, and 22 feet high. The minister Bridge was commenced in 1740, and completed in 1750. It is 1220 feet long, and 44 feet between the parapets, has 13 large and 2 small arches, all semicircular. The middle arch is 76 feet in span. The newly-erected London Bridge is of a more elegant structure, and, excepting Waterloo Bridge, is perhaps the finest bridge in the world. At Paris there are some remarkably good stone bridges across the Seine, and an excellent suspension bridge. One of the most curious provincial bridges in Great Britain is the Taff, in Glamorganshire. It is of one arch, and its space is rather more than 140 feet. The architect of this bridge was a poor uneducated man, and the persevering courage with which he pursued his object till the completion of the edifice, is worthy of record. His first attempts failed in consequence of the enormous pressure of the haunches or sides of the bridge, which forced up the key-stone; and to obviate this, he pierced the stonework with cylindrical apertures, which remedied the defect. Prior to the erection of this bridge, that of the Rialto had the largest span of any in existence.

Metal bridges are the invention of British artists. The true elements of their construction are as yet but imperfectly understood. The Southwark Bridge over the Thames is at present the finest iron bridge in the world. It consists of three arches. The chord of the middle arch is 342 feet long, and its height 24 feet. There are several other fine bridges of this kind in England, in particular one at Sunderland, in the county of Durham.

The art of making suspension bridges is not new, but it is only in recent times that it has been brought to perfection. In this kind of erection the flooring or main body of the bridge is supported on a single iron chain or rods, hanging in a curve from an inverted arch, from one point of support to another. The points of support are the tops of strong pillars or small towers, erected for the purpose. Over these pillars the chain passes, and is attached at each extremity of the bridge to rocks, or massive frames of iron firmly secured under ground. The great advantage of suspension bridges consists in their stability of equilibrium; in consequence of which, a smaller amount of materials is necessary for their construction than for that of any other bridge. If a suspension bridge be shaken, or thrown out of equilibrium, it returns by its weight to its proper place, whereas the reverse happens in bridges which are built above the level of their supports.

The most remarkable suspension bridge in existence is that constructed by Mr. Telford over the Menai Strait, between the Isle of Anglesea and Caernarvonshire in North Wales. It was finished in 1825. The roadway was 100 feet above the surface of the water at high tide. The opening between the points of suspension is 500 feet. The platform is about 30 feet in breadth. The whole is suspended from four lines of strong cables, by perpendicular iron rods, five feet apart. The cables pass over rollers on the tops of pillars, and are fixed to iron frames under the whole, which are kept down by masonry. The weight of the bridge between the points of suspension is 480 tons. There is but one circumstance which appears at all to affect the stability of its equilibrium, and that is, the heavy and measured tread of a long line of military. The whole weight of a number of men, whose feet drop at the same instant of time, would affect any suspension bridge. The striking grandeur of this wonderful work of art cannot be described. The bridge must be visited in order fully to appreciate its beauty, its stability, and its other merits.

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