THE CENTENNIAL TOWER ONE THOUSAND FEET HIGH.

Near the modern village of Hilleh, in Asiatic Turkey, and on the river Euphrates, at about 300 miles above the junction of that famous stream with the Tigris, stands a huge irregular mound, rising abruptly from the desert plain. Masses of vitrified brick are heaped about its base, and its interior, so far as excavations have progressed, prove the whole vast pile to be of similar material. Cuneiform characters, imprinted upon the sun-dried clay, have told to the archæologist the long forgotten history of this ancient ruin, carrying the mind back to the glories of Babylon the Great, back to the reign of Nebuchadnezzar, and, yet still further into the mists of antiquity, to the days when "the whole earth was of one language and of one speech." Equaled in age only by tradition itself, the first monument erected by human hands yet remains, and though its lofty pinnacle is overthrown and prostrate, it fulfils the purpose of its builders: "To make us a name."

It is but natural for the mind to wander back to this earliest attempt of our race to make for itself a written history, and to commemorate a great event by the erection of a colossal structure, in connection with the subject of the present lines. As did the descendants of Noah, so propose we to do. The oldest of ancient nations formed brick and made mortar, and built for themselves a tower to record their existence; we, youngest of modern peoples, build us a tower to celebrate the close of the first century of our national life. And to its prototype, Babel, a pile of sun-dried clay which authorities assert, at the hour of the confusion of tongues, had not attained an altitude of over one hundred and fifty-six feet, the graceful shaft of metal, rearing its summit a thousand feet above the ground, forms a fitting contrast, typical of the knowledge and skill which intervening ages have taught mankind.

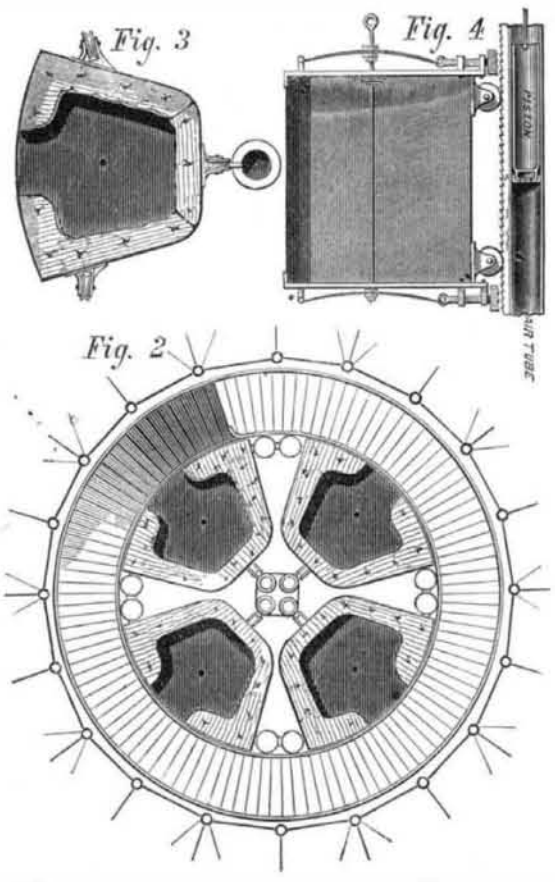
"But how high, comparatively speaking, will this thousand foot structure appear?" doubtless is a question already in the mind of the curious reader. Beside the mighty works of Nature, we answer, infinitely small; beside the works of man, colossal. Compared with the vast peaks of the Himalayas, twenty-five thousand feet above the sea, ten hundred feet is but a pigmy elevation; beside the loftiest spires which exist upon the earth, it is as are the giant trees of California to the tallest maples and elms, which join their leafy arches over our streets and doorways.

The reader can draw the contrast for himself, by a glance at the admirable effort of both artist and engraver, to which our initial page is devoted. Here are grouped the highest structures in the world; and in the center and springing far above them all, is the airy network of the great tower. Many of the edifices depicted will be recognized at a glance. First in point of altitude is the graceful spire of Cologne's far famed cathedral, rising to a hight of 501 feet above the marble pavement of the sanctuary below. Next is the Great Pyramid of Cheops, beneath the crest of which lie 480 feet of stone before the vast foundation is reached. And then another fane, spared by the fate of war, though not unscathed, Strasbourg's minster, towers 468 feet from earth to pinnacle. Michael Angelo's grandest work, the dome of St. Peter's, the gilded cross surmounting which, from its hight of 457 feet, seems to watch over the Roman campagna, is closely followed by another pyramid, that of Cephren, brother and successor to Cheops, the summit of which is 454 feet from the desert sands which continually drift about its foot.

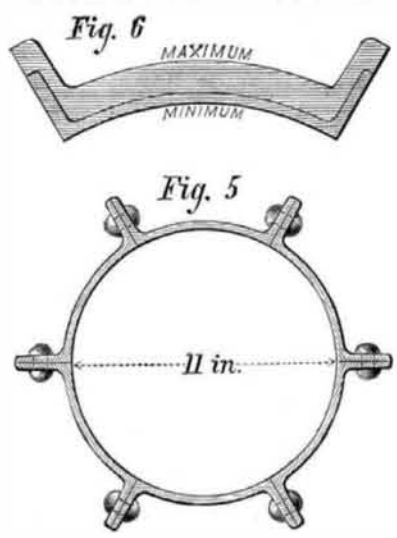
Rivaling the glorious vault of the Italian architect, Sir Christopher Wren's masterpiece, St. Paul's, rears its symbol, 365 feet above the crowded streets of the great city at its base, overtopping, by comparison, the dome of our own Capitol at Washington, to which our artist invites the contrast, by fully 78 feet. Representative structures from three of our principal cities complete the picture. Trinity church steeple, in New York city, 286 feet from foundation to apex, then Bunker Hill Monument, its granite column towering 221 feet above the scene of the conflict which it commemorates, and, lastly, St. Mark's church, in Philadelphia, an edifice of no small architectural beauty, the spire of which springs to an altitude of 150 feet above the curb.

So much for relative hight. And now a word as to who is to build the great fabric, and how they propose to carry out their task. The designers are Messrs. Clarke, Reeves & Co., civil engineers and proprietors of the Phœnixville Bridge Works, of Phœnixville, Pa., a firm represented by its productions throughout the whole country, and regarding whose ability to carry through an enterprise of this kind no corroborative assertions on our part are at all necessary. The material is American wrought iron, made in the form of Phœnix columns, shown in section in Figs. 5 and 6, united by diagonal tie bars and horizontal struts. The section is circular, and is 150 feet in diameter at the base, diminishing to 30 feet at the top. A central tube, 30 feet in diameter, shown in section in Fig. 2, extends through the entire length, and carries the four elevators, shown in plan and section in Figs. 3 and 4. The latter are to ascend in three and descend in five minutes, so as to be capable of transporting about 500 persons per hour. There are also spiral staircases winding around the central tube.

The bracing above noted, as will be observed from our large engraving, runs in every direction, so that the tower will be as rigid as if made of stone, and yet will expose very little surface to the wind. The proportioning is such that the maximum pressure resulting from the weight of the structure, with persons upon it, and a side wind force of 50 lbs. per square foot, will not strain the lowest row of columns over 5,000 lbs. per square inch. The four galleries are roofed over and protected with wire netting, in order to prevent accidents. The estimated cost of the fabric is one million dollars, and the necessary time for construction, the designers tell us, need not exceed one year. The site has not been as yet definitely located, but it will probably be in Fairmount Park, Philadelphia, in proximity to the buildings of the Centennial Exposition. By calcium and electric lights from the tower, it is suggested that the latter, with their adjoining grounds, might be brilliantly illuminated at night. The summit of the spire would also form a magnificent observatory, while the view of the surrounding country would be unparalleled.



It is hardly necessary for us to point out the very appropriate character of the design in connection with the object of its erection. That the hundredth anniversary of our national existence should not pass without some more permanent memorial than that of an exposition, which, within a few months from its close, will have disappeared, seems to us eminently proper. It is clear that, within the coming two years, no monument of so imposing a nature, or of so unique and original conception, can be constructed of any other material than iron, nor, indeed, can we hope to erect a fabric more completely national in every feature. Not only



then shall we commemorate our birthday by the loftiest structure ever built by man, but by an edifice designed by American engineers, reared by American mechanics, and constructed of material purely the produce of American soil.

Making Wax Flowers.

Our lady readers will find the imitating of natural flowers in wax a very agreeable amusement for long winter afternoons and evenings. The work is not difficult, and with a little practice ornaments of great taste and beauty can be made. The materials can be obtained for a small sum from any dealer in artist's materials. Some knowledge of the general form of flowers is of course necessary to begin with, nor should a little artistic skill be entirely lacking. Forms of various leaves, of tin, to be used as patterns, may easily be obtained, but the best imitations of nature we have ever seen were made directly from the natural flower. A handful of blossoms may be purchased from any florist, and carefully dissected; then by tracing the shape of leaves,, etc. on paper, quite a collection of patterns may be gained. *The British Trade Journal* says that the best white wax is required for the art—pure, and free from granulation. The consistency may need to be modified, according to the state of the weather, and the part of the flower to be imitated; it may be made firmer and more translucent by the addition of a little spermaceti, while Venice turpentine will give it ductility. In preparing the wax for use, it is melted with Canada balsam, or some kind of fine turpentine, and poured into flat tin molds; these give it the form of quadrangular blocks or slabs about an inch thick. These blocks are cut into thin sheets or films, in one or other of several different ways—by fixing them flat, with screw and a stop, and slicing off layers with a kind of spoke shave; or holding a block in the hand, and passing it along a carpenter's plane, having the face uppermost; or causing the block to rise gradually over the edge of the mold, and cutting off successive slices with a smooth edged knife.

The coloring of the wax is an important matter, seeing that in some instances the tint must penetrate the whole substance; whereas in others it is better when laid on the surface, as a kind of paint. The choice of colors is nearly the same as for other kinds of artificial flowers, but not in all instances. The white colors are produced by white lead, silver white, and one or two other kinds; for red, vermilion, minium, lake, and carmine; for rose color, carmine, following an application of dead white (to avert yellowish tints); for blue, ultramarine, cobalt, indigo, and Prussian blue; for yellow, chrome yellow, massicot, Naples yellow, orpiment, yellow ocher, and gamboge; for green, verdigris, Schweinfurth green, arsenic green (the less of this the better), and various mixtures of blue and yellow. For violet, salmon, flesh, copper, lilac, and numerous intermediate tints, various mixtures of some or other of the colors already named. Most of these coloring substances are employed in the form of powder, worked upon a muller and stone with essential oil of citron or lavender, and mixed with wax in a melted state; the mixture is strained through muslin, and then cast in the flat molds already mentioned; or else a muslin bag filled with color is steeped for a time in the melted wax. The material dealers sell these slabs of wax ready dyed, to save the flower-maker from a kind of work which is chemical rather than manipulative. Some flowers require that the wax shall be used in a purely white bleached state, color being afterwards applied to the surface of selected spots.

The wax is, of course, the chief material employed in wax-flower making; but it is by no means the only one. Wire bound round with green silk, tinting brushes and pencils, shapes or stencil patterns, molds and stampers, flock or ground up woolen rag, and many other implements and materials, are needed.

The patterns of leaves and petals are made from paper or of thin sheet tin, copied from the natural objects; and the wax sheets are cut out in conformity with them. Only the smaller and lighter leaves are, however, made in this way; those of firmer texture and fixity of shape are made in plaster molds. The patterns are laid on a flat, smooth service of damp sand; a ring is built up round them, and liquid plaster is poured into the cell thus formed. Generally two such molds are necessary, one for the upper and one for the lower surface of the leaf. Sometimes wooden molds are employed, into which (when moistened to prevent adhesion) the wax is poured in a melted but not very hot state. Occasionally the entire mold is dipped into molten wax, to produce petals and leaves of peculiar size and shape. The stems are made by working wax dexterously around wires, with or without an intervening layer of silken thread. By the use of flock, down, varnishes, etc., the leaves are made to present a glossy surface on one side and a velvety surface on the other. A singular mode of preparing films of usual thinness is by the aid of a small wooden cylinder, like a cotton reel, or rather a ribbon reel; this is dipped and rotated in melted wax until it takes up a thin layer, which layer, when cold, is cut and uncoiled; the difference of smoothness which the two surfaces presents fit them to represent the upper and lower surfaces of a leaf or petal. The combination of all these materials into a built-up flower is a kind of work not differing much from that exercised in regard to textile flowers.

The Proposed Tunnel under the British Channel.

The feasibility of this project, and the advantages and disadvantages of various localities proposed for it, are still being discussed. Mr. Joseph Prestwich, an eminent engineer and geologist, has recently investigated the conditions of the strata between the continent of Europe and the coast of England. These researches extend from Ostend, Belgium, to St. Valery, in Normandy, France, and from Hastings to Harwich on the English side; and by them it was ascertained that a deposit of the London clay extends from the mouth of the Thames to Dunkirk, on the northeast point of France. This deposit is from 200 to 400 feet thick; and the impermeability and homogeneity of the clay, as shown in the works of the subway under the Thames in London, point out the line between the mouth of the Thames and Dunkirk as one of the most practical routes for the tunnel. But the distance (80 miles) is an important consideration, against which, again, must be set off the very great depth at which a tunnel between Dover and the neighborhood of Calais would have to be made. But the probability of striking coal in the last named work would be an additional inducement to take the shorter route; added to which must be considered the fact that the traffic between England and the continent lays chiefly between London and Paris, in the direct line of which the Dover tunnel would lie.

A Remarkable Boiler Explosion.

The boiler of a locomotive belonging to the Baltimore and Ohio Railroad exploded recently at Newark, Ohio, while moving slowly with a passenger train. The smoke stack was thrown some distance, and the cab splintered into minute fragments; the shell of the boiler entirely disappeared, the flues being twisted in all directions. The destruction was considerable, having taken place in a crowded freight yard. The engineer was instantly killed, being terribly mangled; the fireman escaped, almost miraculously, with a slight wound on his head. The local reports give no clue to the cause of the explosion.