THE TOWER OF THE NEW CITY HALL, PHILADELPHIA, PA.—THE LOFTIEST STATUE IN THE WORLD.

The tower of the new City Hall in Philadelphia has reached a height of 502 feet, and work has been for some time going on in placing the crowning statue of William Penn in position on the top of the dome. The figure stands upon the loftiest pedestal in the world. The statue of Penn is 37 feet high and weighs 60,000 pounds. The work of constructing it and of placing it in the lofty position has been one of considerable difficulty; and several interesting problems in mechanics have been involved.

The tower is itself an object of considerable interest. It is the third highest structure in the world, with a total height of 547 feet 3½ inches. The base to a height of 18 feet is built of granite; above this, to a height of 337 feet, the tower is built of brick, with a thin facing of white marble. The part above the marble is constructed wholly of metal, painted white to match the color of the marble below. The skeleton or frame work of this part is of wrought iron, faced with plates of aluminum bronze. The whole forms a very graceful structure, notwithstanding its great height.

Penn's statue, surmounting this elaborate pedestal, was designed by Alexander Calder, of Philadelphia. Mr. Calder has done his work well. The statue embodies the popular conception of Penn's character. In face and pose the figure is strong, though there is about it all a Quakerly air of gentleness and simplicity. He wears the Quaker garb of the seventeenth century with long straight coat and loose knee breeches.

A full sized figure was first modeled in plaster by Mr. Calder at the City Hall. This was then separated into fourteen horizontal sections and removed to the Tacony Iron Works, at Tacony, Pa., where the figure was to be cast. The castings were made direct from the fourteen sections, thus preventing any variation from the original design. The statue was cast in aluminum bronze, the walls of the statue averaging five-eighths of an inch in thickness. This work was accomplished without mishap, and no parts needed to be recast. The sections are provided with inside flanges three inches wide and these are pierced with one inch bolt holes. The bolts are also made of aluminum bronze to guard against the galvanic action which would occur between bronze and a more electro-positive metal.

After the castings had received the finishing touches at the foundry the sections were assembled in the courtyard of the City Hall and set up temporarily. The statue stood in this position for more than a year and has been examined by many thousands of curious spectators. The principal dimensions are as follows:

Height, 37 feet; hat rim, 23 feet in circumference; nose, 13 inches long; hair, 4 feet long; shoulders, 28 feet in circumference; waist, 9 feet diameter; legs, from ankle to knee, 10 feet; feet, 5 feet 4 inches long.

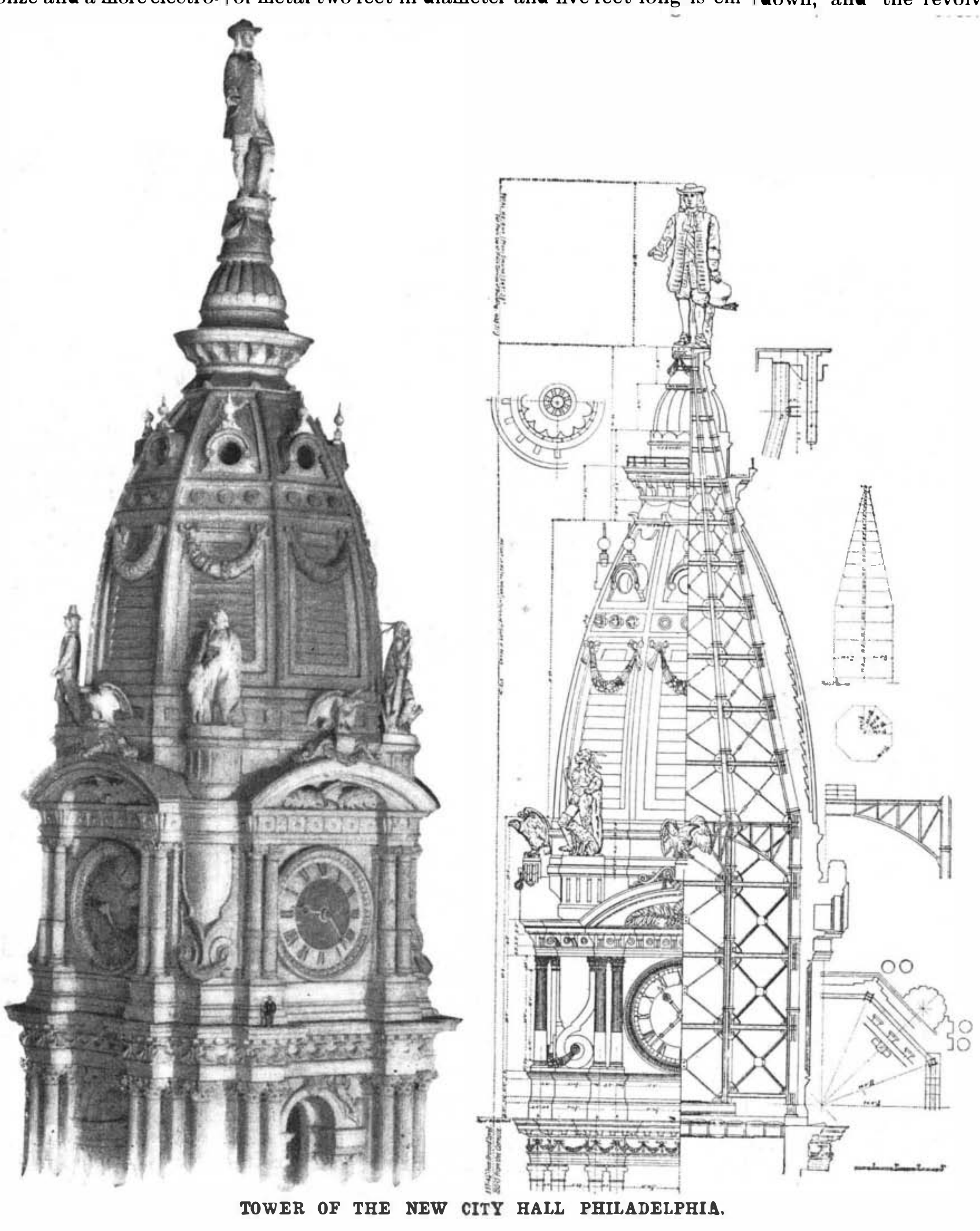
The tower is provided with a powerful steam derrick for hoisting the building materials into position. The statue has been separated into ten horizontal sections to make ready for hoisting. These sections are first raised to a temporary staging built about the tower at a height of three hundred and fifty feet. From there the sections will be lifted and placed in position by the use of a block and tackle attached to the upper part of a scaffolding built about the dome. All the holes in the inside flanges having been bored, it only remains to bolt the sections securely together. This is done, of course, by working inside of the statue. The base of the tree part of the statue is left open to provide a passageway to the interior of the figure.

The statue will be fastened to the top of the tower by a number of three inch bolts passing through the base of the figure and the plate forming the cap of the dome. The soles of the shoes are pierced with four bolt holes, and the base of the tree with about twenty-five holes, thus providing for some thirty bolts in all. The statue is a hollow shell supported by its own weight and will be without interior support or bracing of any kind.

THE PENN STATUE FOR CITY HALL TOWER, PHILADELPHIA.

As a counterpoise for the statue a cylindrical mass of metal two feet in diameter and five feet long is embedded in the center of the tower. Firmly attached to this is a shaft eight inches in diameter and thirty-three feet long, the upper end of which is flanged and keyed into the circular plate which forms the cap of the tower and the base of the figure. This base is a plate of aluminum bronze weighing thirty-five hundred pounds.

In carrying on this work only twelve men were employed, since the space at the extreme top of the tower is very limited. The workmen wear rubber-soled tennis shoes to guard against slipping, and the work is put off when it rains or when it blows so hard as to endanger their footing. All possible speed, however, has been used in getting the statue in place.



TOWER OF THE NEW CITY HALL PHILADELPHIA.

A New Railway Responsibility.

A remarkable instance of the value of expert scientific testimony in court occurred recently in St. Louis. The case, which is the first of its kind on record, was brought about as follows: A boy eleven years of age, who was standing beside a railroad track, as a train rushed by at high speed, was hurled to the ground and rolled under the cars by the force of the current of air caused by the motion of the train. A suit for damages was brought against the railroad on the ground that the boy was not on the track when the train passed, and, therefore, was not responsible for the accident. The defense claimed that a moving train creates no vacuum beneath the cars, and consequently no suction sufficiently powerful to move a body weighing, as in this case, some sixty-three pounds. Prof. Francis E. Nipher, a member of the Faculty of Washington University, was then put upon the stand to explain the scientific principle involved. He stated that, although the train did not create any suction at the sides or beneath the train, it nevertheless dragged a great current of air along with it. The movement of this body of air increases as the speed of the train is accelerated. The air nearest the train, of course, moves fastest, and the further one stands from the track the less one will find the air disturbed by it. Now if a person be standing near a rapidly moving train, the side of his body nearer the train is in a current of air which is moving faster than the air on the other side of him. This has a tendency to turn him around. It does not require a very great pressure of this kind to throw him down, and the revolving motion his body has acquired serves to roll him toward the track when he strikes the ground. The body is, therefore, turned in a direction which is certain to make it roll toward the rails, and the boy was undoubtedly drawn under the cars in this way. The expert scientific testimony carried the day, and the railroad was obliged to pay the damages, $5,000.

Testing Torpedo Tubes.

A series of experiments were recently commenced at the Brooklyn Navy Yard to test the alignment and accuracy of the torpedo tubes of the second class battle ship Maine. It was especially desired to verify the scale on the rotary track used for aiming the torpedoes, and to find if this scale agreed with the one in the torpedo-aiming and conning room. For this purpose a dummy torpedo of the Whitehead type was used in the ship's starboard midship tube. The charge of powder used in the test was only large enough to set the torpedo in motion. When all was ready, the torpedo was aimed at the stern of the receiving ship Vermont, near by. On setting off the charge a slight shock was felt on board the Maine and a moment later the torpedo came to the surface some fifty feet away. It was found to be exactly on the line aimed, thus proving that the tube was in perfect condition and that the two scales corresponded accurately. The remaining tubes will be tested in the near future.