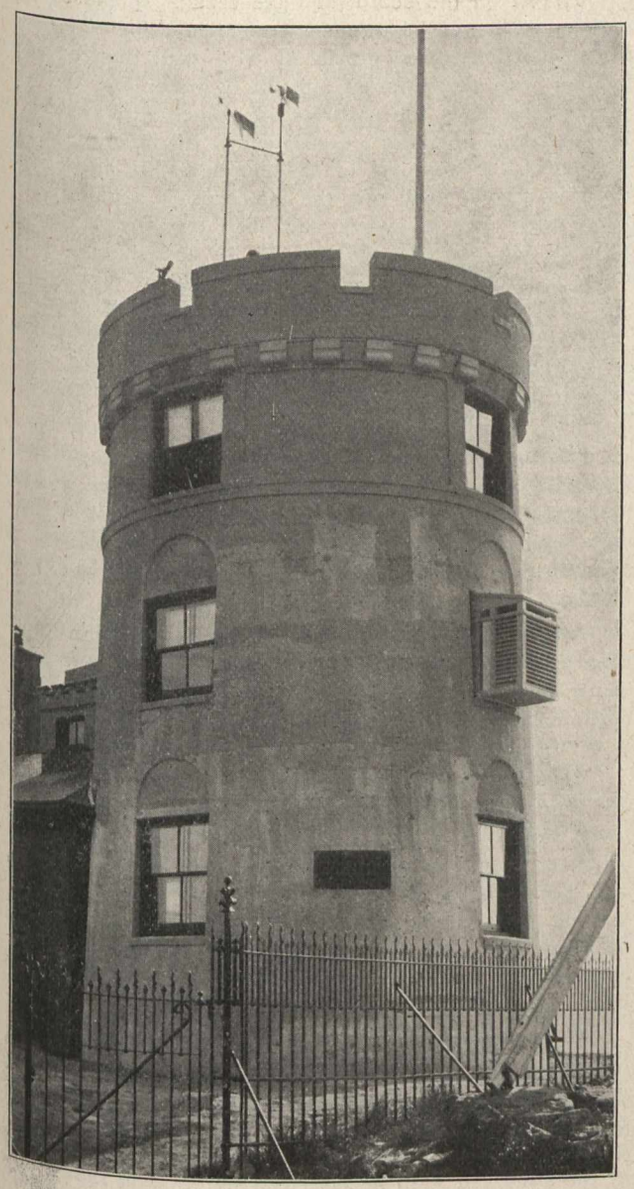
A REINFORCED CONCRETE METEOROLOGICAL OBSERVATORY.

There has just been completed on the top of Blue Hill, a few miles from Boston, a reinforced concrete observatory which presents some interesting features aside from its stability. One of the essential elements required in its design was absolute resistance to the entrance of water



Reinforced Concrete Water Tower.

under the conditions of heavy beating rains at very high velocities.

As designed by George T. Tilden, architect, of Boston, the observatory is of circular section, 17 feet 6 inches inside diameter, 20 feet 6 inches on the outside, and 33 feet high. The walls are of double thickness of 4 inches each, separated by a 10-inch air space, which provides an absolute means of preventing the passage of water. The contract was awarded to the Aberthaw Construction Co., of Boston, already well experienced in this class of work.

Reinforced concrete was selected on account of its many advantages, important among these being its unyielding stability, freedom from vibration in high winds, and its watertight qualities, so necessary in a location where wind velocities range up to 80 and even 100 miles per hour. Expectations have been so fully realized that the action of the self-recording instruments has been entirely free from the unknown errors which were caused by the rocking of the old observatory, and there have been no signs whatever of leakage.

The observatory is built on a ledge, the walls being bonded thereto; the floor is slightly raised to provide an air space beneath. A separate 4-inch granolithic finish was put on top of the first floor to provide a smooth tread, as well as to prevent any possible access of moisture. The general concrete mixture was 1:2:4.

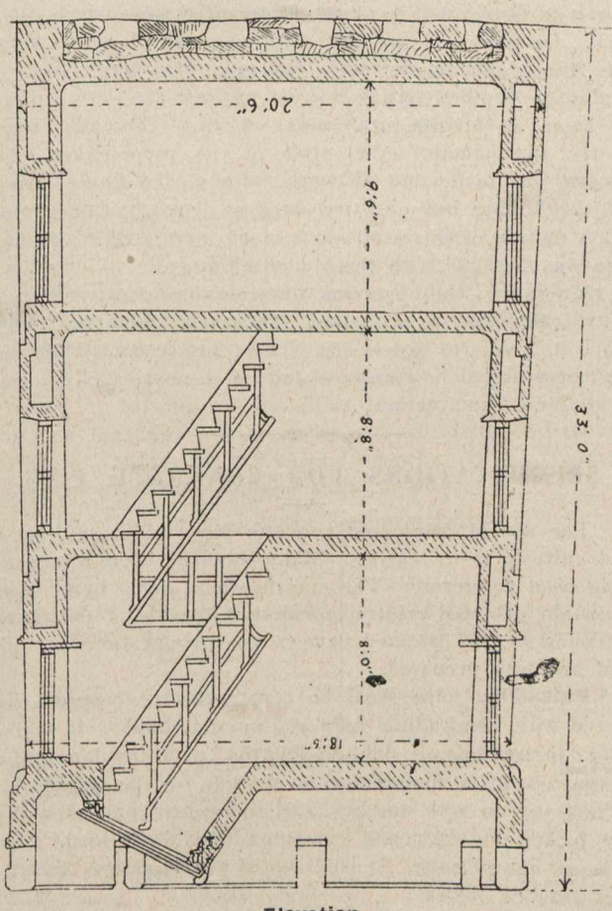
Steel reinforcement consists of ¼-inch square twisted bars, spaced nine inches on centres, running in directions at right angles to each other, embedded in the concrete near the surface, and extending into the wall.

The second and third floors and the roof are 6 inches thick, reinforced with ½-inch, square, twisted rods at right angles to each other and projecting into the wall. Those for the second floor vary in spacing from 12 inches on centres at the circumference to 5 inches apart at the centre. Steel reinforcement for the third floor and roof is practically identical with that of the second floor, but with an added number of bars at each side and at the middle end of the stair openings and roof scuttle. The reinforcing bars are placed close to the bottom of the floors, while those for preventing cracks close to the wall are placed near the top, being bent up at the wall and hooked over the nearest inside horizontal wall bar. All floors, including the roof, are granolithic finish; the latter is pitched towards the two water ways which connect with the drain pipes.

The inner and outer 4-inch walls are reinforced to the height of the second floor by ¼ and ⅜-inch twisted bars. Above this ¼-inch bars are used entirely except where the ⅜-inch bars are placed for strengthening the flag-pole socket. Concrete webs at 3-foot intervals connect the inner and outer walls, reinforced and connected to them by Z-bent ¼-inch bars.

The stairs are of wood, with wrought iron railings. The scuttle is provided with a window for observation in wet weather. The windows are in all cases double-sashed and tight fitting. For taking outdoor temperature in winter and for other purposes a wooden set shelter is fastened to the sill of the second storey window facing the north.

Heating is provided for by a fireplace and grate on the first and second floors. One flue for both is built into the



Elevation.

wall on the south-east side. Close to this are two other flues, to be used for ventilating purposes. All flues terminate flush with the top of the parapet. Louvre dampers are used for regulating the opening of the ventilating flues.

Upon completion of the observatory many self-recording instruments taken from the old tower were immediately