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ROCHESTER WATER WORKS.

Probably no city in the world is better supplied with water for domestic, manufacturing, and fire purposes than the beautiful city of Rochester, N. Y. It is provided with two entirely separate and distinct plants, one supplying water from the Genesee River under the Holly system for fire purposes and fountains, for manufacturing, and for the distribution of power, the other taking pure sweet water from Hemlock Lake about thirty miles south of Rochester. This lake is situated in a mountainous region, and is supplied by a small clear stream and by springs within its borders. The water is remarkably pure and cool, and the supply is ample from this lake alone; but the city has the right to use the waters of Canadice Lake, which is near, and can be made to discharge into Hemlock Lake at a slight expense. The level of Hemlock Lake is 388 feet above the canal aqueduct in the city. The water is conveyed from the lake to a storage reservoir at Rush, about ten miles south of Rochester, in wrought iron and cast iron pipes. A large proportion—nearly ten miles—of wrought pipes is thirty-six inches in diameter. It is made in eighty foot lengths, joined at the ends by deep cast iron hubs and lead joints.

The storage reservoir is 117 feet above the Mount Hope distributing reservoir, shown in the engraving, and the two reservoirs are connected with a conduit of 24 inch cast iron pipe, following the undulations of the ground along its line. The length of this conduit is 46,064 feet, or about 8¾ miles. There are three strainers between the water of the lake and the distributing pipes; one at the lake, one at the storage reservoir, and one at the distributing reservoir. These strainers are made of galvanized iron wire netting, quarter inch mesh, and are arranged so that they may be readily replaced.

For the purpose of thoroughly aerating the water before being delivered to the citizens during the warm weather, there is a fountain in the middle of the distributing reservoir, with twenty-one openings, through which the whole of the city's water supply issues in jets, thereby exposing almost every drop to the action of the atmosphere, while during the winter the water is allowed to enter the reservoir from a submerged well situated at a point near the opposite bank, from where it enters into the city mains, in order to maintain a gentle flow or current throughout the entire length of the basin; stagnation of the water is thus rendered impossible at any time of the year.

To accomplish this conveniently, the conduit is divided in the gate house by means of a Y casting into two lines, each 24 inches diameter, one of these leading to the fountain and the other to the submerged well, both lines of pipe being laid under the banks and the clay bottom of the reservoir. A third 24 inch cast iron pipe conveys the water from the reservoir into the two 20 inch distributing mains, these pipes being likewise connected with a Y casting. The two distributing mains and the conduit are also connected in the gate house by means of valves and castings, so that the distributing reservoir may be cut out in case of fire or accident, and water supplied directly from the storage reservoir.

The fountain itself is plainly visible in clear weather for a distance of many miles. In its construction the 24-inch pipe was turned vertically upward by means of a curved casting and surrounded with substantial masonry. Near the top this pipe is enlarged to a diameter of three feet, and closed by means of a dome-shaped head provided with 21 orifices. The central and largest orifice is 6⅛ inches in diameter, and arranged concentrically around this are the remaining 20 orifices, alternating from 2 inches to 1¼ inches in diameter. These openings can all be reduced by means of suitable caps, or any of them can be closed entirely so that the form of the fountain may be changed or varied at will.

Observations as to the height of the jets have been made, and it is found that when the smaller orifices are closed and the central jet reduced to a diameter of 3 inches the water jet rises to a height of 110 feet above the surface of water in the reservoir, or to within 7·44 feet of the elevation of its source in Rush Reservoir, 8¾ miles distant; but when the central opening is increased to 6⅛ inches, the jet descends to a height of about 70 feet.

The jets as arranged during the month of May of the present year were as follows: one of 3 inches diameter; four of 1¼ inches diameter; four of ¾ inch diameter; twelve of ½ inch diameter.

Rochester, until the completion of these water works in 1876, was supplied almost altogether from individual wells, the water of which was in most instances, as analysis has shown, fearfully polluted. In a sanitary point of view the supply of an abundance of pure water in place of the well water formerly used is of great importance.

The Holly direct-pressure system has about eight miles of distribution pipe in the business and manufacturing part

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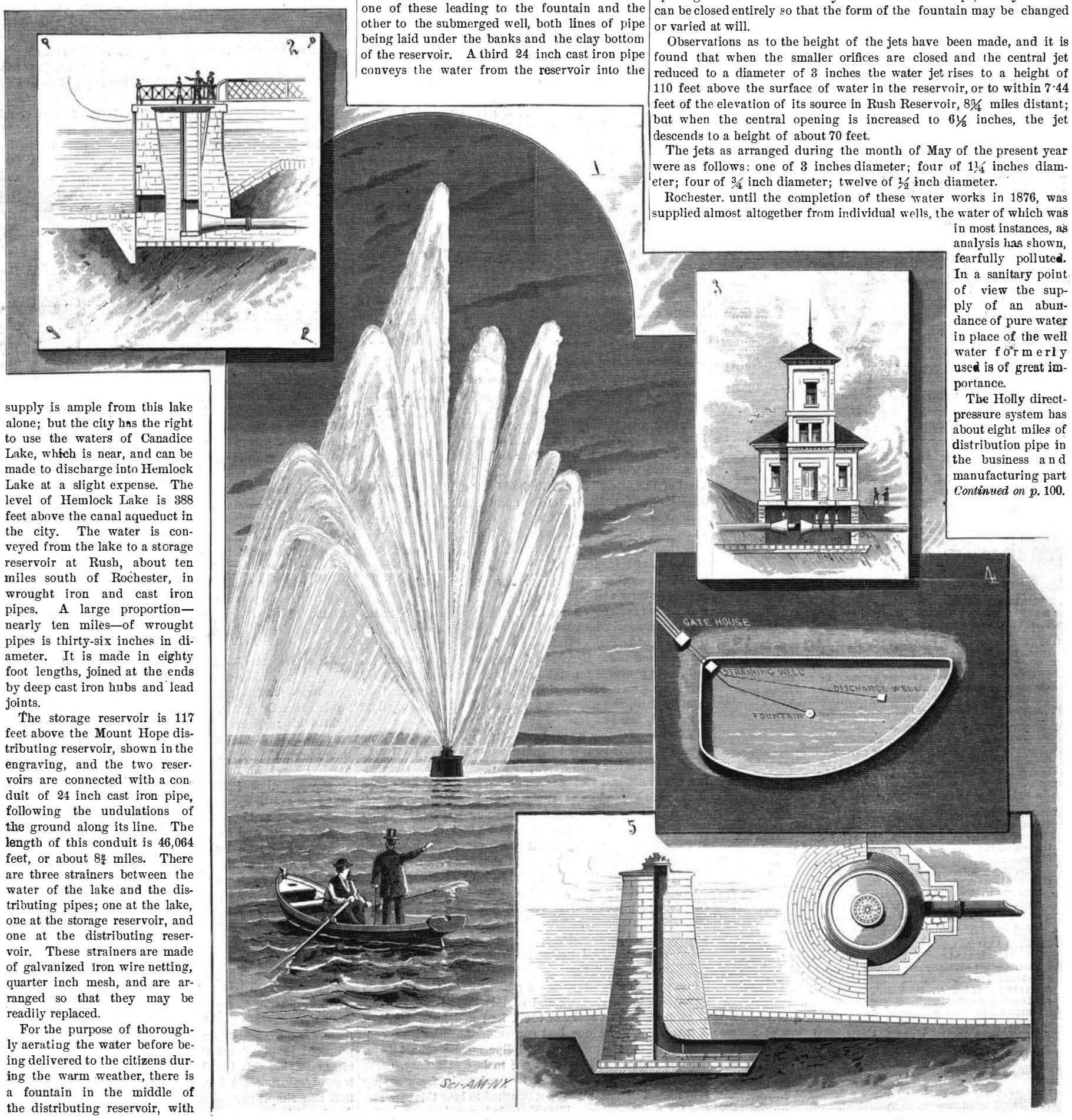

1. Fountain in Distributing Reservoir.—2. Straining Well.—3 Gate House.—4 Plan of Distributing Reservoir.—5. Vertical Section and Plan of Fountain Pipe.

ROCHESTER WATER WORKS.—THE FOUNTAIN IN MOUNT HOPE RESERVOIR.