MUNICIPAL DEPARTMENT

THE WATER SUPPLY OF MANCHESTER.

The distance to which Manchester, England, has gone for its water supply, as a new source, is about 100 miles, to the well known Lake Thirlmere. The rainfall of this region is said to be about 180 inches annually, and the lake has been raised by a dam so as to have an area of some 800 acres, the dam being at one end, near the intake, while the aqueduct starts near the other. The dam is a massive concrete structure rising about sixty feet above the bottom of the lake, and in some places extending nearly as deep in the rock bottom, so as to prevent the passage of any water below it through fissures; on the upstream side the dam has an inclination of 1½ inches in every foot of vertical height, and the downstream face is curved to a radius of 100 feet. The water for the city is taken from the lake through a tunnel in the rock, and the flow is controlled by elaborate apparatus. The aqueduct leading from the reservoir is nearly ninety-six miles long, fourteen miles of this being in tunnel, thirty-seven miles masonry work built in trenches, and forty-five miles cast iron pipes. The tunnel and masonry portions have capacity of 60,000,000 gallons daily, and the pipe line, which can be readily duplicated, a present capacity of 12,000,000 gallons. The 48-inch pipes are nine feet and the 40-inch pipes twelve feet long and vary from 1 to 1¾ inches in thickness.

BOSTON'S NEW WATER SUPPLY.

The Metropolitan water commission is about to build the largest storage reservoir in the world, its capacity being no less than 65,000,000,000 gallons, or, according to Fire and Water, "enough to supply the city of Boston for 3½ years and four times as much as the capacity of all the existing waterworks reservoirs of that city. Its capacity is twice as much as that of the new Croton reservoir of New York, thrice that of the six reservoirs of Birmingham, England, 30 times that of the Cochituate and 25 times that of Hobbs brook of the Cambridge system. It will hold more water than the inner harbor of Boston."

This dam is to be built at Clinton, Mass., and the vast volume of water covering over 4,000 acres, will be entrapped and retained by a dam 1,750 feet long (or 20 feet shorter than the Croton dam), 127 feet high above the ground and 158 feet high above its rock foundation. This dam is, however, not as high as a number of others which retain much less water. The Croton dam has a height of 157 feet above ground and 245 above rock. To guard against the pressure of the millions of tons of water that will be exerted on the dam, the engineers have made their plans with the greatest care, drawing upon every attainable source of information. The dam will cross a narrow gorge about three-fifths of a mile above the Lancaster mills, at which point a solid rock support for every part of the dam exists. It will be built wholly of masonry, having the same form of cross section as that of the new Croton dam. Engineering News.

SELF-PROPELLING FIRE ENGINES.

Steam fire engines are usually drawn to the scene of their usefulness by horses driven at a gallop, but there is no reason why they should not propel themselves, now that the restriction on auto-motors are removed. This becomes the more necessary as engines increase in size and power. It is true that the time occupied in dragging the engine to its work by horses has hitherto been utilized in getting up steam, but with the rapid steam boilers now available, this time on the way is not necessary. Owing to the great height of buildings in Boston, U. S., engines of extra power are required to throw sufficient water high enough. These usually weigh about 4½ tons, and require at least three powerful horses to draw them. It is now found that engines of greater power are desirable, but these would be almost unmanageable if horses were used in narrow and busy thoroughfares. It has now been decided by the Boston Fire Department to have a large self-propelling fire engine, which will throw some 1,850 gallons of water per minute to a height of 350 feet, with a 1½ inch nozzle. Very little machinery in addition to the ordinary mechanism of a fire engine is required to operate the self-propelling gear, and this is so arranged that it can be easily disconnected. An extra water tank is carried at the rear of these engines until connection can be made with a hydrant. These engines can travel on a level road at the rate of twelve miles an hour, buildings are not raised to such a height in England as in America, and for that reason less ponderous fire engines are serviceable, but we should all be glad to be rid of the noisy panic which is caused by the rapidly driven horses through our streets. All new fire engines ordered for use in large towns ought to be self-propellers.

Mr. James Beattie has been appointed clerk of the county of Wellington.

EXPANSION OF BRICK PAVEMENTS.

The hot weather of last summer has shown that the expansion of brick in pavements must be taken into account. At Terre Haute, Ind., on South Sixth Street, the bricks expanded until a point was reached that something had to yield, and on a heavy omnibus rattling down the street, the paving pulled free from the foundation and rose up behind the wheels to a considerable height, presenting an extraordinary appearance.

Mr. Geo. H. Simpson, C. E., the city engineer, in reply to our enquiry, says that "to this might be added that two places about three-quarters of a mile south of Walnut on Sixth have humped themselves opposite private returns across the sidewalks, the gutter being raised about eight inches, or two inches higher than the curbs, and at one place the brick of the street at the gutter has slipped by the brick in the return (which laid at right angles to those in the street) an inch and a quarter, the return having raised less to that extent. It is not true, as reported, that a course of brick was taken out and filled with tar, but I think that if brick is to be laid in cold weather, or there is any doubt of the foundation settling away from the pavement by the vibration of the travel on the surface, or from other causes, a filler should be used that would permit the pavement to close the joints in hot weather, or follow the foundation when it settles."

At Roseville, Newark, a similar experience was had. This pavement was laid in 1895, on concrete with the joints of the brick filled with cement grout. The pavement, when finished, was in a contracted condition and so remained until the spring, when unusually warm weather steadily expanded the bricks. The expansion cross-wise the street was resisted by the curbstones and their concrete setting, with no perceptible disadvantage to the pavement. But the expansion lengthwise the street forced the brick down a slight grade for a long distance, to a point where the pavement for a short distance was level. The brick pavement was there forced upward in the form of an arch, with a hollow under it, extending with a few breaks across the street. The ridge or crown of the arch was at right angles to the direction of the street. The brick at a few points gave way. We learn through the city engineer that the expansion of the bricks could be traced by the break along the curbs for a distance of a little more than 330 feet.—Brick.

The death occurred at Simcoe, Ont., on the 26th inst., of Mr. N. C. Ford, town clerk, at the age of 86 years. He was one of the oldest residents of the town, having lived there 53 years.