

level reservoir for their domestic supply only, and which therefore makes no provision for fires.

Looking to the fact that the whole of the Dundurn ridge and a considerable portion of the city above Main street, have never had sufficient pressure for fire purposes, and that increased consumption and increased draught will make it more and more desirable to have the means of increasing the fire pressure as well as of maintaining the domestic pressure on the remainder or commercial portions of the city, we think it desirable that there should be a reservoir within the city sufficiently high for fire purposes over the Dundurn ridge. This would enable it to supply the greater number of the houses now attached to the high service in consequence of the falling away of the water from the high levels, thus reducing the number to be supplied by the high level pump to a minimum, as well as reducing the lift of the pump. It would moreover be an addition to the storage which ought to accompany increased size of pumps and mains and place this storage where it would be available in case of accidents to the mains. A city distributing reservoir, if only two-thirds the size of the Barton one, placed in a central position and at an elevation not less than 210 feet above lake level would be an invaluable addition to your works as the only certain method of preventing that loss of pressure, which is now felt, which will be diminished but not removed by the additional main, and which will certainly be repeated in the future when the consumption again taxes the increased delivery.

The consulting engineers, in their report of 1856, say "a second reservoir will be desirable to increase the storage, and to render the distribution more effective, but this is not indispensable and may be deferred with propriety, until the water is let in and experience demonstrates its usefulness." They also added, "excepting as the growth of the city will require further outlay for distribution, the works may be regarded as sufficient for your wants until your population exceeds 35,000.

In determining the extent to which the capacity of the mains must be increased without a city distributing reservoir, two chief conditions are to be fulfilled—the restoration of the pressure in the city to the greatest extent practicable, and provision for increased consumption. This provision must apply not to the average annual consumption, but to the maximum of the hottest summer day.

The gauging of the pressure, which we have made every half hour at hydrants during the night and day in different parts of the city, reveals the ebb and flow of the hydraulic pulse, and shows what must be familiar to most consumers, that from midnight until 5 o'clock of the morning there is still sufficient capacity in the main: but during the day when consumption is greatest, the water is drawn away from the high levels to the middle and lower ones, which latter obtain the whole supply though with a reduced pressure.