

Passaic Water in Jersey City.

The most important event in the recent history of Jersey City, and one which has been anxiously watched, and earnestly hoped for, for some years, is the introduction to that city of pure and wholesome water from our Passaic River. It commenced running thitherward two or three days ago, and as soon as the pipes are sufficiently washed of the rust and dirt which has necessarily accumulated in them, the Passaic water will be used by almost every family and establishment. The want has been long and sadly felt, and though the advancement of the place has been great, still its progress has been very much retarded on this account. The completion of these works however, has removed the objection, and the citizens reasonably look for a rapidity in its growth and business importance, unparalleled in their previous history. Factories will doubtless rise of formidable proportion upon their present lagoons, and the vacant lots will be speedily covered with costly residences.

We were very much interested yesterday, by a visit to the works, which are conveniently located on the eastern bank of our river, just above the Belleville Bridge—where an elegant and substantial brick building has been erected. The water from the river flows into a well room under this building, from which the engine pumps it up through a rising main 86 inches in diameter, and 2273 feet long, into a receiving reservoir upon a neighboring hill, which will hold over twelve millions of gallons; thence it flows through the pipes which extend over the meadows to a distributing reservoir which covers over 12 acres, on Bergen Hill, capable of holding over fifty millions of gallons; this will keep a sufficient supply to make up for deficiencies in case of temporary accident at the Passaic works. This last reservoir is 125 feet above tide water, and over 100 feet above the highest point in the city.—The water, however, may be brought from the Passaic reservoir directly into the city, which is the case at present, thus running a distance of seven and seven eighth miles, which is the estimated distance from the Passaic to Jersey City. To cross the Hackensack river, the main pipe forms an inverted syphon at the draw, descending 28 feet below the surface of the water to avoid interference with vessels &c.

The engine at the Passaic works, upon which they depend for supplying the reservoirs, is somewhat novel in this country, though long used for pumping the water out of the mines of Cornwall, in England, where it has been so far improved by long use, that it is found to produce greater results, with less steam, and consequently less fuel required to make it, than any other; it is known as the Cornish engine. The one at Belleville was made at the West Point Foundry, and is rated at three hundred horse power. It is a beam engine, having a cylinder of 80 inches diameter and eleven feet stroke. The plunger of the pump is 34 $\frac{3}{4}$ inches. It was working yesterday at nearly four strokes per minute, throwing at each stroke 548 gallons of water into the receiving reservoir. It is expected, however, to make five strokes per minute, which will force into the reservoir 162,900 gallons per hour; thus allowing a consumption of 1,629,000 gallons every ten hours.

Experiments have shown that with this kind of engine 3 pounds of coal were consumed for each horse power per hour, while the best of Watts & Boulton's engines consumed 6 $\frac{3}{4}$ pounds for the same work.

The Engineer who carried out the preliminary surveys, &c., was Mr. Wm. S. Whitwell, formerly Chief Engineer of the Eastern division of the Boston Water Works, who estimated the cost to reach \$658,359. The actual cost, not including the payment of interest on the loans, has been \$619,833 32.

The Commissioners estimate that the city debt for water loan will not much exceed, if at all, \$650,000, the interest on which has been paid up to the 1st of July last. The cost is somewhat less to each inhabitant than the works which supply New York, and a little more than those of Boston. Over 21 miles of pipe have been laid for the present demand.

Several analyses have been made of the water, the one by Prof. Horsford, showing that much less lime and magnesia than the Croton water, and about the same as the Schuylkill. The following shows the contents of 100,000 parts of the waters named:

	Passaic	Schuylkill	Croton	Gallatin	Madison	Wash.
Solid residue.	13.7500	9.4170	18.7100	5.3400	18.4800	11.8700
Inorganic.....	7.8500	7.2928	11.3265	2.9000	14.5200	8.2400
Organic.....	4.9000	2.1233	7.3735	2.4400	3.9600	2.6300

The rates at which the water will be furnished, are fixed at \$10 per annum for two-story houses of 25 feet front, and \$2 added for each additional story; houses 30 feet front and 2 stories high will pay \$12, and \$2 for each additional story. Each family, more than one occupying a building, will pay 25 per cent. additional. Vacant lots, fronting on streets, will pay 10 cents water rent for every 100 square feet of their surface.

The above rates must be paid whether the water is introduced into the premises and used or not, provided a distributing pipe is laid in the street on which the building or lot fronts. Factories, which consume from 200 to 10,000 gallons per day, will be charged from 5 to 2 cents per 100 gallons, according to the quantity used.

The work has been done by the city. An act was passed in 1851, appointing Commissioners to report upon the subject of supplying water to Jersey City and Hoboken on the 18th of March, 1851. Their explorations contained in a report, dated 8th Dec. 1851, resulted in an act of the Legislature passed March 25th 1852, authorizing the work to be done, and appointing John D. Ward, Dudley S. Gregory, Moses B. Bramhall, Thomas A. Alexander and the President of the Board of Aldermen for the time being, Commissioners to borrow money on the credit of Jersey City,—Hoboken having withdrawn from the undertaking. The Commissioners were restrained from commencing operations until one-half the loan necessary, was obtained, and then no contracts were entered into until the fall of 1852.