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F. M. Kimm

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not catalogued

CITY OF BOSTON.

WATER COMMISSIONERS'

SEMI-ANNUAL REPORT,

DECEMBER 2, 1847.

In the Board of Aldermen, Dec. 13, 1847.

Laid on the table and ordered to be printed.

Attest, S. F. McCLEARY, *City Clerk.*

sisting of a dwelling house which had been for many years occupied for the residence of the Sergeant at Arms; one from Benjamin Adams embracing several tenements; one from the City of Boston, consisting of the Bowdoin School House; and four dwelling houses, from Benjamin R. Curtis, Charles P. Curtis, C. T. Russell and H. W. Kinsman.

Not only the estate purchased of Mr. Hancock, but the principal part of the other lands embraced within the site, formerly composed a part of the estate of the late Governor Hancock, and included what was then the most elevated portion of Beacon Hill, and by far the highest ground in the City. This hill received its name from a Beacon which was erected upon its summit, at an early period of the history of the town.

This Beacon was blown down in the year 1789, and in its place was erected a Doric column, 60 feet in height, with an inscription on its pedestal, in commemoration of the prominent events of the war of the Revolution. The site of this monument was within the limits of the ground now about to be occupied by the Reservoir, but the base of the monument was at an elevation of more than 70 feet above the foundations of the structure now laid. The hill was too elevated, and its slope too steep to be occupied by dwelling houses, and it was in consequence dug away, the earth being used for the making of streets on lands reclaimed from the sea. The monument was thus in danger of being undermined, and it was some years ago taken down. Had one half the summit of the hill which is now removed, been suffered to remain undisturbed, the labor of constructing the Reservoir would have been far less than it now is, as it has become necessary to supply

the place of the earth removed, by a foundation of massive masonry.

The site for a reservoir on Telegraph Hill, in South Boston, has been determined on, in concert with the City Council, and measures have been taken for obtaining the land required; but these measures have not all been brought to maturity. The work of this reservoir is not begun, and the plan of it is not yet matured. The mode of supplying this reservoir has been determined, by deciding that one of the mains, for conveying the water to the City, shall be of thirty-six inches diameter, from the point of leaving the Brookline reservoir, to a point at the corner of Tremont and Dover streets, where a branch pipe of twenty inches in diameter will diverge from it, and pass directly by the route of the South Bridge to South Boston. It is proposed to lay this pipe under, or by the side of the bridge, under a covering of earth, and with the best protection which can be devised against the action upon it of the salt water. In its passage across the channel, it will be laid so low as not to obstruct the flow of the tide, or the passage of vessels.

The receiving reservoir, into which the water is to be discharged by the aqueduct of brick masonry, before its reception into the iron pipes which will convey it to the city, is to be constructed at Brookline, on land of a convenient elevation, which has been purchased of John E. Thayer, Joshua C. Clark, the heirs of David Hyslop, and Charles Heath.

The land purchased for this purpose, including the surrounding embankment, with the necessary margin for its protection, amounts to about 38 acres. The area of the water surface will be about 22⅓ acres. The plan of the reservoir has been determined,

the works are located, a contract for the work has been made, and the work is begun. Preparatory to the formation of the embankment, by which the reservoir will be enclôsed on the sides not already enclosed by a natural bank, the earth not impervious to water, has been removed, to give place for an embankment of puddled earth. Considerable progress has been made in this work, and in the excavation for shaping the reservoir, and for reducing it to a regular depth.

A contract has been made for the erection of a Gate House, with gate chambers, for the regulation of the discharge of the water into the pipes. As it is proposed that the aqueduct and reservoir shall be so constructed that the water may be drawn off from the latter, without interrupting the supply of water to the pipes, their construction will be such as to admit of the introduction of the water to the city, in anticipation of the completion of the reservoir, in case it should not be finished by the date of the completion of the aqueduct. So also in case of the completion of the aqueduct previous to the completion of the City reservoir, the water may be introduced, though it must be less perfectly distributed, without the aid of the reservoir, during the period which may be required for their completion.

The excavation preparatory to the laying of the masonry of the Conduit, from Cochituate Lake to the Brookline Reservoir, a distance of 14½ miles, is mostly completed, with the exception of the two tunnels through ledges of rock—one in Newton, 2463 feet in length, and the other in Brookline, 1130 feet in length. The rock to be excavated for the formation of these tunnels has proved much harder than was anticipated from its apparent character, as

judged of from external examination. The work has also been impeded by large quantities of water, encountered in the excavation. These obstacles, however, have been so far surmounted, that 2310 feet of the tunnels are already excavated, and 1283 feet only remain to be accomplished; and there is reason to believe that the whole will be completed before the end of the ensuing summer. In the prosecution of this part of the work, it became necessary to provide steam power for pumping the water from the shafts, and for this purpose seven steam engines of different sizes and degrees of power, have been procured, and kept in constant operation.

Three sets of men are employed, at each face of the several drifts between the shafts, relieving one another at intervals of eight hours, and thus continuing the work through the day and night.

The laying of the oval conduit of brick masonry was begun early in the season, on certain sections of the work, the whole having been contracted for by several parties. This branch of the work has been diligently prosecuted, in opposition, on certain portions of the line, to some serious obstacles. On the 1st, 2d, 3d, and 10th sections, and on some portions of other sections, large quantities of water, and in certain places quicksands, were found near the bottom of the cut, which caused much delay and demanded additional labor in preparing the foundation, and laying the reversed arch of the conduit. For the removal of the water from the 1st and 2d sections, and from the coffer dam at the Gate House, three steam engines of from 15 to 20 horse power each, with pumps of large size, have been provided.

Another engine of 20 horse power, with pumps of 20 inches diameter, is in preparation for use in the

spring, on another portion of the 1st section, which it is deemed necessary to subdivide, to ensure the completion of the work in season. A little more than seven miles in length, making nearly half of the masonry of the conduit, are now laid; and with the provision already made for every part of the excavation, including the tunnelling and removal of water, it is believed that the whole may be laid before the end of the next season.

In addition to the bricks already laid, more than 8,000,000 are already purchased and delivered along the line. Further quantities of more than 2,000,000 are contracted for by parties who have furnished regular supplies the present season; and judging from the experience of the past season, there is no reason to apprehend difficulty in the purchase of the residue, which will be required for the completion of the work, without hazard of delay. Not more than 2,000,000 remain to be purchased.

Four large culverts for conveying the waters of brooks or ravines which cross the line of the Aqueduct, besides several of smaller dimensions, have been built of substantial masonry laid in hydraulic cement.

The dam at the outlet of Cochituate Lake is nearly finished.

The foundations of the piers and abutments of the arched bridge across the Charles river, are laid and raised above water. The piles for the foundation of the Gate House, at the head of the Aqueduct, are driven, and part of the materials for the structure are prepared.

A large embankment of puddled earth, across a valley near the Charles river in Needham, forty feet in height, is completed, and ready to receive the brick masonry of the conduit.

The lands bordering on Cochituate Lake necessary for securing it against uses which might contaminate its water, and from the intrusion of animals, have been for the most part purchased.

The border thus purchased is of very different widths, varying according to the character of the border, and the terms of the contract which the Commissioners have been able to make. The length of margin over which these purchases extend, is more than twelve miles.

A considerable portion of the lands through which the line of Aqueduct passes, from Cochituate Lake to the Reservoir in Brookline, has been purchased, but other considerable portions remain to be contracted for. These negotiations have been attended with much difficulty, in consequence of the high valuation which many of the proprietors have placed upon their lands. The near vicinity of a great part of the line of the Aqueduct to the Boston and Worcester Rail Road, together with the great advance in the prices of lands in towns near the City, and especially in the neighborhood of railroads, has given rise to demands in many instances which seem to the Commissioners to be extravagant, and such as, notwithstanding their desire to do ample justice to the proprietors, they have been unable to accede to. For this reason, and from the difficulty in many cases of forming a satisfactory estimate of the actual value of lands including the damage to adjoining lands, especially when, as in many cases, the proprietors have assigned to them a prospective increase of value, from an anticipated demand for building sites, the progress of negotiation has often been tedious and dilatory, and many questions remain unsettled. All the adjustments which have been yet made, with

two exceptions, have been made by mutual agreement. One case has been settled by the award of Commissioners, appointed on the application of the owner of the premises, by the Court of Common Pleas, and one has been settled by arbitration.

On the purchases payment has been made in full. The work which has been done is paid for in full, with the exception of a small amount held in reserve on unfinished contracts, in compliance with the terms of the contracts. The amount of money which has been expended by the Commissioners, and paid by Drafts on the City Treasury, up to the 18th day of June last, as stated in the report of that date, was - - - - - - - $570,610 71

There has been expended and paid in the same manner from that date to the 30th of November inclusive, the further sum of - - - - - 872,341 14

Making a total expenditure of - $1,442,951 85

All which is respectfully submitted by the Commissioners.

NATHAN HALE,
JAS. F. BALDWIN,
THOS. B. CURTIS.

Boston, Dec. 2, 1847.