

Corporation Proceedings.

Reported for the Council.

IN COMMON COUNCIL,
Tuesday Evening, June 4th, 1850.

PAYMENT—The Mayor and Ald. Bush, Hill, Hubbard, Park, Perry, Roberts, Fawcett, Tiffany and Walsh.

PETITIONS, REMONSTRANCES AND ACCOUNTS PRESENTED.

PETITIONS—Of sundry citizens to have Cottage street graded—Streets. Of Polly Everett—Finance. Of sundry citizens for the continuation of the sewer in Elk street from its present termination to the city line—Streets. Of H Warner and others for a side walk on the east side of Pearl street between Court and Mohawk—Local Assessments. Of J Doremus—Streets. Of Rudolph Miller for permission to erect a wooden building—Fire and Water. Of J M Gannon and others to have the filling of Louisiana and Fulton streets completed—Streets. Of M B Sherwood and others for a side walk on the west side of Franklin street between Chippewa and Huron—Local Assessments. Of J N Osborn and Ira Osborn for tavern license—Licenses. Of John Read for declaration of sale—Finance. Of Bernard O'Reilly to have Louis street graded and paved—Streets. Of sundry citizens to have well repaired corner of Oak and Batavia streets—Local Assessments. Of sundry citizens to have side walk on Terrace graded between Pratt's Warehouse and the Watch House—Local Assessments.

REMONSTRANCES—Of Peter Young and others against the paving between Chicago and Kinney streets, unless it is ordered paved to Michigan street—Streets.

ACCOUNTS—Of M Rathbun—Streets. Of Lorin Pierce—Lamps. Of J J Smith & Co.—Lamps. Of John Tice—Lamps. Of sundry persons for pumping reservoirs—allowed. Of P Straits—Claims. Of John Kilderhouse—Allowed. Of sundry persons for cleaning streets—Allowed. Of H K Vile—Allowed.

REPORTS OF COMMITTEES.

Report on the Water Works.

The Committee to whom was referred the subject of a subscription by the city to the capital stock of the Buffalo Water Works Company beg leave to report:

That they entered upon the discharge of their duty with a full conviction that public sentiment demanded from the corporate authorities earnest and well directed efforts to introduce an abundant supply of water into the city, at the earliest practicable day, and with a strong desire to aid, if it could be done consistently with the public interest, the company which proposes to erect the works for that purpose.

The first enquiry which presented itself, was the organization of the Water Works Company. To obtain information on that point, and to examine the plan of the works contemplated by the company, your committee had a meeting with a committee of the directors of the incorporation. It was ascertained that the capital stock of the company had been increased to four hundred thousand dollars; of which amount two hundred and thirty-four thousand, eight hundred and fifty dollars had been subscribed, and of this subscription one hundred and eighty-three thousand dollars had been signed by Messrs. Battin, Dungan & Co., of Philadelphia, with the understanding, that the works were to be erected by them, according to the plan they had submitted to the company. Although absolute upon its face, it was conceded that the subscription of those gentlemen was conditional, depending upon their being employed to execute the works.

The plan proposed, was to take the water from the Niagara river, by means of two twenty inch pipes, leading across the canal, and the harbor of Black Rock; this is rendered necessary by the charter of the company, which prohibits the water from being taken either from the Harbor or the Buffalo creek. On the main shore, a receiving cistern, and engine house were to be constructed, and two high pressure engines, capable of pumping a million and a half of gallons each, in every twenty-four hours. From the receiving cistern the water was to be forced to the reservoir, to be placed on some site, at or near Prospect Hill. This reservoir was to be six hundred feet long and two hundred and sixty wide, and eighteen feet in depth, the walls fifty-four feet in thickness at the base, and eighteen feet at the summit, the interior, at the bottom and sides to be lined with brick or stone, laid in cement, and it was calculated that such a reservoir would hold seven millions of gallons. The embankments were to be of earth. From this reservoir thirteen miles of pipe of the diameter of sixteen, twelve, six, and four inches were to be distributed through the city, to be interlaced at the corners of the streets. All these works Messrs. Battin, Dungan & Co., offered to construct for the sum of \$375,000. This, in brief, was the plan proposed by the company. No specifications were submitted to your committee nor any precise details of the work furnished.

The committee not feeling themselves competent to form an opinion as to the sufficiency of this plan, or its probable cost, united with the company in employing an Engineer of conceded ability and learning in his profession to visit Buffalo and make the necessary examinations. They selected W. J. McAlpine, Esq., a gentleman who is at present engaged by the city of Albany, in superintending the erection of Water Works in that city, and who for five years had in charge the naval dock built by the United States government at Brooklyn. He occupies the very first rank in his profession and is one in whose judgment and estimates your committee think full reliance can be placed.

Mr. McAlpine came to Buffalo, went upon the ground, examined different sites in the vicinity, for the Reservoir, and the plan submitted by the Company, and after his return to Albany drew up a report, which is herewith transmitted. From that report, it will be seen that several objections were taken to the plan of the Company. The Reservoir is not deemed of sufficient capacity—and the engines of high pressure are not regarded as suitable. Mr. McAlpine made the following estimate of the probable cost of the works:—

Estimate of the cost of introducing water into the City of Buffalo, to accompany the Report of May 20th, 1850.

1. The excavation for the supply pipes under the harbor of Black Rock, the breakwater, cofferdam, pumping, concrete, pipes, receiving well and relaying the sea-wall works, including extra hazard in the construction,.....	\$ 44,412 00
2. Engine, boiler and pump house,.....	4,350 00
3. Two noncondensing engines, double-acting pumps, boilers, section and delivering pipes, air chamber valves and cast-iron bed plates,.....	20,000 00
4. Raising main from pumps to reservoir, air chamber, valves, &c.,.....	21,000 00
5. Reservoir—600 by 260 feet—on the base of the embankments, including masonry, pavements, curbing and fencing, influx chamber and waste weirs,.....	26,602 00
6. Distribution 13 miles,.....	156,814 00
	\$373,438 00
Add ten per cent for contingencies,.....	27,343 80
Superintendence and profit—15 per cent.....	45,117 27
	\$345,899 07

To which should be added the cost of a condensing engine, and a standing main at the reservoir,.....

The cost of a distribution through 25 miles of streets, including stop-cocks, is..... \$201,601 00
Of twenty miles is..... \$234,404 00

Since the Report of Mr. McAlpine was made, the Company have passed a resolution giving the contract for the work to Messrs. Battin, Dungan and Company for the whole work, at three hundred and sixty thousand dollars; provided that they will substitute low-pressure engines for high, and erect a standing main at the reservoir, agreeably to the suggestions of the Report. In all other respects the plan referred to is to remain unchanged.

For supplying the city with water for public purposes, such as the extinguishment of fires, for fountains, and for the use of the public buildings and markets, the Company propose to charge the sum of eight thousand dollars per year, and also to furnish the water to private individuals at a cost of from two to ten dollars per year for each house supplied.

It will be seen that the estimates of Mr. McAlpine are based upon the plan of the company, and that where that plan has been departed from, as in substituting low for high pressure engines, and the erection of a standing main, the additional cost has been estimated separately.

The great objection, which the Committee entertain to the proposed plan, is the small amount of pipe that is to be laid down. Starting from the site of the Reservoir, coming down Niagara street to Georgia, passing along Georgia to Delaware, up Delaware to Tupper, along Tupper to Michigan, and down Michigan to the Creek, along the Creek to Erie street, and thence on this side of the Canal to Georgia street—there is comprised within those bounds an area, in which are twenty-five miles of streets. This section of the city is densely settled, while, at present, it would be unnecessary to lay the pipes in all of the cross-streets within that area. There are other streets beyond the bounds of Michigan street on the east, along which the pipes should be carried—as for instance, Georgia, Batavia, South Division, Swan and Seneca streets—these streets are compactly built upon, far beyond the line of Michigan street, and the distance in them would very nearly be equal to the distance saved by omitting to lay down pipes in all the cross streets in the area referred to.

The Committee think twenty miles of pipe the least that would satisfy the public expectation and want, and to lay down the additional seven miles would exceed the capital stock of the Company.

When the city issues its bonds, all the real estate in it would be pledged for the payment of the principal and interest, and the committee do not deem it just to impose that obligation upon the citizens without securing a corresponding benefit. The benefits derived from the subscription by the city to the capital stock would be confined to a limited district, and the tax-payers in other sections would have good cause of complaint, if their property were subjected to a liability without deriving any of the advantages, which such liability is designed to secure. For the reason, therefore, that the distribution of the pipes would be confined to particular localities, and when completed, would be insufficient to furnish all the densely populated portions of the city with an abundant supply of water, while the liability incurred would attach to the entire city; your Committee report that in their opinion, it is inexpedient for the city to subscribe any sum to the Capital Stock of the Water Works Company.

The Committee regret that they are compelled to come to this decision. The importance of completing the Water Works at an early day, cannot be over-estimated. There are considerations, however, which merit their attention.—When completed the works should be adequate to all the present wants of the city, and capable of expansion to keep pace with its future growth. They should be constructed with reference to a large increase of the population, and in a manner so durable, that but a small amount should be required for repairs.

In coming to this decision, the Committee do not regard it, as necessarily preventing the company from completing the subscription to their capital stock, and proceeding with the erection of their works. There is every reason to believe that such works would pay a profitable income, and if that be the case, capitalists will not hesitate to invest their money. If, in this respect, the expectations of the Committee be disappointed and the company do not proceed with the work, the Council will have the power to apply to the Legislature at the next session, for an act authorizing the city to borrow money and construct the works. Such authority, when its exercise is sanctioned by a vote of the citizens, the Legislature will not hesitate to grant.—The credit of the city is good; no difficulty will be experienced in raising the money. And if the work brought no remunerating interest in the shape of the compensation paid by the citizens for the use of the water, the amount that would be annually saved in the diminished rates of insurance, would more than pay the interest on the debt.

In that event, the works could be built under the direction of a competent engineer—birds invited from all quarters, and a competition elicited, that would not fail to insure permanent structures, at a reasonable cost. The whole management would be under the direction of the city authorities; all dangers of a collision of interests between a company and the city would be avoided—the interests of the city would alone have to be consulted, and the prices for water would be governed, not so much with reference to profit, as to the more material point of furnishing to all, whether rich or poor, an abundant supply of wholesome water at low rates.

The Committee concluded by offering the following resolution:—
Resolved, That it is inexpedient for the city to subscribe any sum to the capital stock of the Buffalo Water Works Company—**Adopted.**

Statement of Mr. McAlpine.

ALBANY, May 20th, 1850.
To Hon. H. K. SMITH, Mayor of the city of Buffalo, and H. W. ROGERS, Esq., President of Buffalo Water Works Company.

Gentlemen.—On the 21st instant I accompanied the President and several of the Directors of the Buffalo Water Works Company to the several sites which have been suggested for obtaining a supply of water for your city, and also the several locations which have been proposed for the receiving reservoir.

On the following day the Mayor pointed out the streets of the city through which it was proposed to lay down the distribution pipes immediately.

Mr. Cartwright, of the firm of Battin, Dungan & Co. furnished me with plans which they had prepared for a Pumping Engine and House, and of a receiving reservoir, and a sketch of the manner proposed by them for conducting the supply pipes across the Harbor of Black Rock and the Erie Canal, and also a copy of their specifications and proposals for constructing the works.

Your wishes as expressed to me verbally, were:—That I should examine the plans which have been prepared by Messrs. Battin, Dungan & Co., and report my opinion of their efficacy to furnish a requisite supply for a population of 120,000, and to prepare an estimate of the fair value of constructing the works on the plans proposed, and to suggest such other plans or modifications as were of the most approved construction for such purposes, were the most permanent and least liable to derangement and the most economical in use, and would give the best distribution for the accommodation of the citizens and for the extinguishment of fires.

At the request of the Mayor, I have hurried the preparation of these estimates, etc., so as to enable him to lay them before the Council to-morrow. The time has been too short for the examination of so important a subject, and especially for the preparation of estimates of the quantities and value of work so diverse in its character. The data which I had previously prepared with reference to a similar undertaking has enabled me to furnish the enclosed estimates with more confidence in their accuracy than I could otherwise have done.

The plan of Messrs. Battin & Co. has been prepared with care and embraces all the essential features of the project. As it has already been laid before you in their proposal it will not be herein repeated, except so far as is necessary to explain modifications which are discussed or proposed.

SOURCE OF SUPPLY.

It is understood that the charter of the Company does not allow the use of the waters of the Buffalo Creek or the Black Rock Harbor.

Having no knowledge of the topography of the country beyond the limits of the city and not having been desired to examine the means of obtaining an inland supply (which has been represented as not accessible within a reasonable distance,) my attention has been confined to the waters of the Bay and of Niagara River.

Both of these sources are below the level of the city, and must be elevated by mechanical power.

If the works should be located so as to obtain the supply from the bay south-west of the city, they would be exposed to great danger from the effect of storms, from the Lake and a large expenditure would have to be incurred in protecting the works, and also in extending the pump mains a great distance to the receiving reservoir which must be located on the high grounds along the north line of the city.

Several locations were examined for obtaining the supply from the Niagara River at near the north west limits of the city, all of which involve the necessity of crossing the harbor of Black Rock and the Erie Canal.

The most favorable of these appeared to be at just below the government fortifications in the town of Black Rock.

The advantages of this point are, that the harbor and canal are narrower, the works would be better protected from the effect of storms, and the water would be obtained less charged with sand from the Lake in gales than at any place higher up, and that the length of the supply pipe and pump main would be shorter than at any place further down the River.

This was one of the locations proposed by Messrs. Battin & Co., and upon which their estimates were predicated.

The most serious difficulty in the undertaking at this location arises from the necessity of carrying the supply pipes across the harbor and Canal. But one feasible method suggests itself, viz:—To pass the pipes below the bed of the channel which is from ten to twelve feet deep in the harbor, and about eight feet deep in the canal and is represented to be a rock bottom.

Messrs. Battin & Co. propose to place the mouth of the supply pipes five feet below the level of the water in the river and nearly eight feet below the level of the water in the harbor, to protect the entrance by walls of stone outside of the sea-wall of the harbor; to carry the pipes through the sea-wall at this level, and then drop them down sufficiently below the bottom of the harbor to cover and protect them from the anchors of vessels.

The work through the sea-wall would require to be done by a diving bell, care being taken to prevent a very large escape of the water from the harbor to the river which is at this place nearly three feet lower.

The trenching for laying down and securing the pipes under the harbor and canal, would require the aid of coffer dams, constructed in sections to avoid interrupting the navigation.

Two methods of avoiding the expense of these coffer dams have been suggested, one would be to use a diving bell, and another to construct jointed pipes, but neither of these plans have been sufficiently matured to warrant me, in basing an estimate upon them.

The plan contemplates that the pipes be well bedded in concrete masonry, in no place less than one foot thick.

The receiving well and pump house would be erected between the rear of the towing-path of the canal and the base of the hill.

Two supply pipes each of twenty inches diameter have been proposed, and these will be sufficient for any future time if they are connected with the suction pipes of the pumps. There is no objection to this except that when the lake water is driven down the river in severe storms with much sand suspended in it, it will cut away the valves, &c., of the pumps more than if it was first allowed to subside, and it also requires a little additional power in the engine to overcome the friction of the water passing through the pipes.

Messrs. Battin & Co. have proposed to erect a double non-condensing engine, each with cylinders of twenty inches in diameter and six feet stroke, and each engine to drive a double-acting force pump of eighteen inches diameter and six feet stroke.

These engines with the speed and strain proposed are capable of delivering three and one-half millions of gallons of water daily in the Reservoir proposed to be located at Prospect Hill.

I consider the plan of these engines as entirely objectionable for the uses under consideration.

In the most approved pumping-engines, advantage is taken of the economy of using large cylinders, and working the steam expansively and also condensing it.

I have not had time to prepare a plan of an engine arranged to render available these advantages, but if it should be desired will furnish the outlines of such a plan whenever you wish.

The pumping main to the Prospect Hill Reservoir will be about three thousand feet long, and the water will require to be elevated eighty-five feet from the level of the river to the level of the surface of the water in the proposed reservoir.

RECEIVING RESERVOIR.

Three places were examined for the location of the receiving reservoir.

The first is as before stated at Prospect Hill.

The second near Delaware street, where it intersects the north line of the city, where the ground is twenty-six feet higher than at Prospect Hill, and where a pump main of eight thousand three hundred feet length would be required.

The third is near where Michigan street intersects the north line of the city, where the ground is about thirty-six feet higher than Prospect Hill, and where a pump main of eleven thousand seven hundred feet length would be required.

That part of the city in the neighborhood of the "Phelps House" is understood to be about the highest of the compact part, and is represented to be about twenty-two feet below the level of the ground at Prospect Hill, or about thirty-seven feet below the level of the surface of the water in the proposed reservoir when it is full.

If a reservoir should be located at Delaware street it would give a nominal head of sixty-three feet when the reservoir was full, and of fifty-three feet when it was one third full.

The argument in favor of this location is that it would afford a greater head of water, which would be available for the extinguishment of fires without the aid of fire engines.

The extra cost of conveying the water to this reservoir would be about \$33,000.

It is believed that when fires occur in the elevated parts of the city, but little advantage would be derived from the small increased head which would be obtained by locating the reservoir at Delaware street, because when the hose was elevated to the upper stories and roofs of the buildings, the water would be so near the level of the reservoir, and the pipes so long and the draught of water in other directions so heavy, that it would flow out too sluggishly to be of much service. The use of fire engines therefore could not be dispensed with except when conflagrations occur in the lower parts of the city.

During a fire and especially a conflagration of long continuance the draught of water is very great; the use, and particularly the waste at the fire engines and by the occupants of every house in the neighborhood drawing water to wet his building consumes more than is usually estimated.

It is therefore believed that it is more important to provide a very large supply, by constructing a large reservoir, than to get a little increased head.

For the same sum which it is estimated to cost to extend the pipes to the reservoir built at Delaware street, an addition to the Prospect Hill reservoir could be made which would add to its capacity fifteen millions of gallons.

The extra cost of conveying the water to a reservoir built at Michigan street would be \$32,000.

Under these circumstances I would recommend that the receiving reservoir be located at or near Prospect Hill, and also that the pump main be extended by a vertical column of cast iron set in brick, placed near the reservoir and elevated fifty feet above the surface of the ground or thirty five feet higher than the surface of the water in the proposed reservoir.

The distribution pipes leading out from this standing main would have the same head upon them as the water was kept in the main, and as long as the pumping engine was in operation and the draught of water in the city did not exceed the quantity which the engine supplied, the water would be delivered at the highest compact part of the city under nearly seventy feet head.

It is proper to observe that in the case of an extensive conflagration, and whenever the draught of water should exceed the capacity of the pumps and engines, the advantage of the increased head from the standing main would be lost.

I have based my estimates of the cost of the Reservoir on embankments of much larger dimensions than those designed by Messrs. Battin & Co. The Reservoir at Prospect Hill was proposed to cover at the base of the Prospects a block of ground six hundred feet long and two hundred and sixty feet wide.

This would be quite too small, and I should recommend that one be built to cover not less than six hundred feet square at the base. With water fifteen feet deep, a reservoir of such dimensions as I have arranged would contain twenty millions of gallons, and would cost about sixty thousand dollars.

These Reservoirs are all designed to be made of earth with pvdling over the bottom and vertically in the banks, and the floor and sides lined with brick or stone pavement, and separated in two divisions by walls of masonry enclosing a puddle wall.

DISTRIBUTION.

The proposal of Messrs. Battin & Co. is based upon laying down thirteen miles of pipe, the dimensions of which are stated in their proposals.

The Mayor pointed out to me a district of the city which he considered as embracing an area through which the distribution should immediately be made, or at least, that the pipes should be extended through streets beyond these limits equivalent to those streets when they might at present be omitted, embraced in the area referred to.

The length of pipe thus specified is twenty-five and one-third miles, and the extra cost of laying down this additional twelve miles including the stop cocks and hydrants, is one hundred and thirty-four thousand dollars.

Subsequently the Mayor modified his opinion and stated that twenty miles of pipe would be required. The extra cost of this seven miles of pipe would be about seventy-eight thousand dollars.

Included within the area of the district pointed out by the Mayor, is that portion of the city between the Canal and Buffalo Creek which is almost wholly occupied by warehouses, where but a small service of water would ever be called for except when required for the extinguishment of fires.

The revenue to the Company in this district would therefore be very small compared with the expense of the distribution.

In this district, however, water for the extinguishment of fires is easily accessible and the extension of the pipes, it is believed, might be postponed without serious detriment to the interests of the company and of the citizens.

As this subject is one that requires local knowledge which I do not possess, I have stated below the estimate of the cost for distributing the water through thirteen, twenty and twenty-five miles of streets.

The hour for sending off these estimates has almost arrived, and I have therefore only time to enclose the estimates of the cost of the work; as referred to in the preceding pages.

I am, very respectfully,
Your obedient servant,
WM. J. McALPINE,
Civil Engineer.