

WATER COMMISSIONERS' REPORT.

To the Mayor, Aldermen, and Common Council of the City of New Haven, in Court of Common Council convened:—

The Board of Water Commissioners, of the City of New Haven, in the exercise of powers conferred upon them, by the late Act of the General Assembly, entitled, "*an act to alter the charter of the City of New Haven, to provide the means for the extinguishment of fires therein, and for supplying its inhabitants with pure water,*" which Act was adopted and approved as an amendment to the charter by the Freemen of the City of New Haven, in the manner required by law, July 25, 1853: having ascertained and adopted a plan for supplying the city with water; and having made a contract for water powers, lands, privileges and materials required for said supply: in accordance with the provisions of the act aforesaid, respectfully report to your honorable body, their proceedings, their plan, their estimates, and the contract made by them in behalf of the city, with such reasons, explanations and facts, as the case seems to require.

Three plans were submitted by the Water Committee:—

1. *Mill River by Water Power.*
2. *The Quinnipiac by Water Power, and open Canal, by the north slope of East Rock and Whitneyville.*
3. *The Quinnipiac by Water Power and open Canal by way of Cedar Hill.*

These plans were estimated by the Committee to cost severally: Mill River, \$190,000; Quinnipiac, by Whitneyville, \$213,000; Quinnipiac, by Cedar Hill, \$202,000; in each

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case bringing the water to Elm street, and leaving about \$100,000 for distribution, and making the whole cost from \$300,000 to \$325,000 at the outset, and looking forward (page 14) for gradual additional expense for more extended distribution as the wants and resources of the city should increase.

The Board of Water Commissioners, with these plans before them, immediately after their appointment, began a re-investigation of the whole subject. They employed Engineers to re-survey the routes before recommended; to ascertain again the fall at each place proposed for water power, and the exact distances from New Haven, on the different routes; to run levels for conduit line when practicable, and for pipe line elsewhere; to survey various localities for Reservoirs; to ascertain the flowage line at the places intended for Retaining Reservoirs, and the consequent land damages; and generally to take all measurements necessary for making safe estimates on the different routes and modes proposed for supplying the city.

The two routes by the Quinnipiac proposed by the Committee, appeared objectionable on account of the long extent of open canal. The Commissioners caused several other routes to be surveyed, with a view of shortening the open canal, and substituting conduit or pipe in its place, and finally selected for consideration a plan which brings the Quinnipiac by open canal about $3\frac{1}{2}$ miles to North Haven, thence by water power to a Receiving Reservoir on the hills west, thence by conduit to a Distributing Reservoir, near the Hubbard Place north of East Rock, thence by pipe to New Haven by the Hartford Turnpike.

The Commissioners also directed a re-survey to be made of Pine River, and some of them in person explored this stream to the sources of its upper branches, with a view of more accurately determining its water shed and annual flow, and also of exploring and measuring suitable places for Retaining Reservoirs which might be necessary should this stream be selected. Several of these places were surveyed,

and others examined which appeared favorable. A new line was run from Tyler's dam, or rather Mr. Ritner's line begun, was continued the whole distance to New Haven, to ascertain how much of conduit line and how much of pipe line would be necessary to bring this stream by a natural head from Tyler's dam as mentioned in the Report of the Water Committee, (page 22.)

The Commissioners also directed a survey to be made of Furmill River, a river unknown to the Committee, which empties into the Housatonic on the west side, about $3\frac{1}{2}$ miles below Derby. The Engineers spent considerable time to find some short and direct cut to bring this stream to the Housatonic, and thence to New Haven, in a line north of Orange village; but found it impracticable from the height of the intervening hills. The only route ascertained was down the valley of the stream nearly to the Housatonic, about $3\frac{1}{2}$ miles, thence crossing the Housatonic, thence by a more southerly route to New Haven, in all 13 miles and 900 feet, to the corner of the Public Square. This survey was also conducted so as to ascertain, as far as the time would admit the amount of conduit, and the amount of pipe line practicable.

The Commissioners also directed all these streams to be gauged again; also Furmill River to be gauged, its waters to be analyzed, and to be tested by their effects upon lead pipe, as had been done by the waters of the other streams.

The Commissioners also obtained the aid and advice of J. B. Jervis, Esq., the Chief Engineer of the Croton works, whose reputation and experience is not surpassed by that of any Engineer in the country. Mr. Jervis, with some members of the Board, visited and examined in person, every proposed source of supply, and gave his opinion in writing of the various plans and estimates as far as then surveyed and made.

The result of these investigations was, that there was no difficulty in supplying New Haven with good water in abund-

ance, at a very moderate, or a somewhat larger expenditure, according to the plan that should be adopted.

There were four plans before the Board for consideration, either of which would supply the city to 50,000 or more inhabitants.

1. Mill River by water power, with an occasional aid of steam power.
2. Quinnipiac by water power.
3. Pine River by natural head.
4. Furmill River by natural head.

Mill River Plan.

The plan by Mill River is substantially the same as recommended in the Report of the Committee, viz :—

To use near the armory at Witneyville, as a power to raise water by pumping, in one combined water power, the four water powers hitherto created by the dams at the Gun Factory, the Clock Factory, Paper Mill, and Waite's Mill, and such fall above to the bottom of Churchill's tail race, as may be properly and legally used without damage to said Churchill's rights.

A dam is to be built at the Clock Factory, of sufficient height to cause the river to flow back so as to rise above the dams and falls aforesaid. This creates a Retaining Reservoir above the dam, of an area between 100 and 150 acres, a large portion of which will be from 10 to 20 feet deep.

A canal is to be made from the Clock Factory to the Gun Factory, or near it, to conduct the water from the Retaining Reservoir, to the wheel house and pumps of the City. The length of this canal will be about 2500 feet, or less than half a mile; its capacity will be sufficient to convey the whole of the stream, except in freshets.

The total fall in the wheel pit of the City works, as surveyed by Mr. Ritner, is 31 feet, as surveyed by Mr. Burrage 33.635; practically it will be somewhat less than either.

The water to be pumped from the canal (thus saving a lift of some 30 feet) to a water chamber or stand pipe on the adjacent rock, and thence conveyed by pipes to the Distributing Reservoir; or to be pumped directly to the Reservoir through an ascending main, as shall be decided with advice of Engineers.

As surveyed, the Distributing Reservoir will be on the ridge S. W. and distant from the City Pumps about 3100 feet. Its dimensions are not fully determined, but will be ample. A distributing main will descend from it to Whitney Avenue and along that to the City, a distance of 8,433 feet to the corner of Church and Elm Streets.

Estimate of Costs.

Water power combining the four water powers, land for Reservoir, site, flowage, road, right of way and tide gates, rock, gravel, &c.,	\$50,000
New bridge and changing road, &c.,	6,133
Dam and guard gates,	7,476
Wheel house, wheels, pumps, &c.,	18,800
Canal 2,500 feet,	6,500
20 inch rising main 3100 feet, \$5,	15,500
Reservoir,	32,500
20 inch distributing main 8,433 feet, \$5,	42,165
Sundries,	6,000
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	\$185,074
Add 20 per cent. for contingencies by advice of Mr. Jarvis,	37,015
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	\$222,089
Add for distribution in the City,	100,000
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Total,	\$322,089

Length of works including canal, 14,033 feet, or about 2 $\frac{2}{3}$ miles.

Plan by the Quinnipiac.

This plan has been already partly described as the one substituted for the long open Canals, submitted in the Report of the Committee, viz :

To build a dam at the Quinnipiac Faactory, and conduit the river by open canal on the east side, to a point near the railroad bridge, in North Haven: to place the City wheel-house and pumps there, to pump the water to a stand pipe on a hill 1,437 feet west, thence to be conveyed by iron pipe to a valley on the west ridge, to be used, with necessary works upon it, as a retaining reservoir; thence by brick conduit, to a distributing reservoir, southwest of the Hubbard place, near the north slope of East Rock, thence by iron pipe along the Hartford Turnpike to the City.

This combines the water power now used at the Quinnipiac Faactory, a fall of 5 or 6 feet, and the natural fall not hitherto used of the river to tide at North Haven. The whole fall, according to Mr. Ritner's survey, is $19\frac{1}{2}$ feet; by Mr. Burrage's survey, $18\frac{1}{10}$ feet.

The canal would be about 18,000 feet, or $3\frac{1}{2}$ miles long, through an easy sandy tract, with the exception of one cut about 15 feet deep and about 1000 feet long, and some valleys to be filled, with little damage to buildings, or other difficulties of rock, &c., which exist on the west side. Its capacity would be equal to the average flow of the stream.

Estimated Cost.

Cost of Quinnipiac Faactory, water power, several buildings, and 9 acres of land,	\$15,000
Water Power in fall of the river to North Haven,	15,000
Dam at Quinnipiac Faactory,	4,020
Guard Gates and gearing,	796
Waste Weir,	600

Amount carried forward, \$35,416

Amount brought forward, \$35,416	
Canal from Quinnipiac Faactory to North Haven	
Railroad Bridge,	24,500
Wheel House, Wheels, Pumps, &c.,	18,800
Rising 20 inch main and stand pipe,	1,437
and thence to retaining reservoir,	3,313
	4,750
4,750 feet at \$5,	23,750
Retaining Reservoir,	15,000
Conduit to Distributing Reservoir, 13,500 feet at	
\$2.50,	33,750
Distributing Reservoir,	32,500
Distributing main 20 inch iron pipe to the City, (corner of Church and Elm Streets,) 15,330 feet,	
at \$5,	76,650
	\$260,366
Add 20 per cent. for contingencies, right of way, engineering, &c.,	52,073
	\$312,439
Add for distribution,	100,000
	\$412,439
Whole length of works, 54,080 feet, or about $10\frac{1}{4}$ miles.	

Pine River Plan.

This plan was partially described in the report of the Committee, page 22.

Pine River, miscalled Muddy Brook, rises among the hills of Meriden, Wallingford and Northford; is a fine rapid stream, fed by brooks and springs, and has three principal upper branches and numerous lower ones, which drain a country of extensive water shed. It empties into the Quinnipiac near Sacket's Pond, two miles south of North Haven. During the year it discharges a large volume of water, but in seasons of drought is reduced to a moderate brook. Mr. Twining saw it

in the driest time of 1852, and says that his survey was rapid, and that the results of his guages "were made irregular by the unequal discharges from the dams," and "all that could be determined in a general way proved to be a flow of 2,600,000 gallons per day." Mr. Twining has ever expressed doubts of its capacity to supply New Haven in a dry time. One member of the Board of Commissioners, who has lived upon the stream and been familiar with it for many years of his life, has expressed similar doubts. But other members of the Board and some other gentlemen, with the Engineers, have explored it, and guaged it, at various points, and various seasons of the year. They have found its ordinary flow, except in droughts, 5, 10, 15, 20, and even 30 millions of gallons a day, and never in the driest time less than four millions. They did not guage it in the drought of 1852. By Mr. Burrage's guage, August 15, 1853, its flow was 9,291,444 gallons a day. They have no doubt that this stream, with retaining reservoirs to store up its average flow, might be made to supply a larger City than New Haven.

The plan is, to build a dam at Tyler's Mill, a very convenient position between two hills of rock, where the stream might be made to flow back into a Retaining Reservoir of some 30 acres, with very moderate expense. The natural head at the present surface of the stream, is 150 feet above tide-water; this would be increased by the height of the dam about 20 feet.

Several very favorable positions above were examined for retaining reservoirs, and one, about three miles above, surveyed, where one of 50 acres might be made to great advantage, and at moderate expense.

It is intended to conduct the water from the reservoir above Tyler's dam by a brick conduit, keeping up the level as far as the nature of the country will permit, and then convey the water by iron pipe across the valley of the Quinnipiac, at Sacket's Point, and then rise to the ridge West to meet the conduit line, before described for the Quinnipiac plan.

Estimate of Costs.

Water rights on the stream and mills below, to be compensated, - - - - -	\$80,000
Reservoir of 50 acres, three miles above Tyler's, Dam, guard-gates, weir, &c., at Tyler's, including flowage, - - - - -	10,000
Conduit, 20,000 feet, at \$2.50, - - - - -	50,000
20 in. iron pipe across Quinnipiac valley, 19,300 feet, at \$5, - - - - -	96,500
Conduit to distributing reservoir north of East Rock, 11,100 feet, at \$2.50, - - - - -	27,750
Distributing reservoir, - - - - -	32,500
20 inch iron pipe to the city, 15,330, at \$5, - - -	76,650
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	\$333,400
Add 20 per cent. for contingencies, right of way, engineering, &c. - - - - -	66,680
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	\$400,080
Add for distribution, - - - - -	100,000
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Total, - - - - -	\$500,080

The profiles of the engineers show an irregularity of surface, which would require considerable extra expense for grading for conduit, which perhaps is provided for by the item on contingencies.

Total length of works, 65,730 feet, or about 12½ miles.

Furmill River Plan.

Furmill River has a head of 200 feet above tide at Dawson's Mill, 3 miles west of the Housatonic, about 11 miles from New Haven, in an air line, and 13 miles 900 feet by the pipe and conduit line surveyed. The quantity of water running in this river is much larger than in Pine River, nearly as large as in Mill River when high, though less when low, as it

is a very rapid stream and more rapidly discharges its waters. It was not gauged in the dry season of 1852 with the other rivers, and its minimum flow has not been ascertained. At a rough gauging early the present season, it was estimated to discharge 22 millions a day; at another, late in the summer, 9 millions; at another gauge, Nov. 11th, carefully taken by Mr. Twining, and a member of the Board, just before the great rain, its flow was 67 millions a day; the next morning, Nov. 12th, Mill River was gauged by the same parties, with equal care, and its flow was pronounced by Mr. Twining to be 77 millions. Mill River was then discharging nearly 7 times its minimum, $11\frac{2}{3}$ millions, as ascertained in 1852. Allowing the minimum of the Furmill to be in the same proportion, it would be 9 millions a day. This is, no doubt, too much. Furmill River has been as low as that this season, and by the testimony of persons living near it, it has been often much lower seasons before. Indeed, the testimony of some would lead to the supposition that, in a dry time, its flow is not more than 3 or 4 millions, if so much. The probability is that its minimum is much smaller than one would suppose from its appearance in a wet season like the last summer, and may be from 4 to six millions a day. However this may be, there can be no doubt that its natural flow by aid of retaining reservoirs, would furnish more water than either of the other rivers, and probably supply the city in all time without any accessory.

The plan is to build a dam at Dawson's, about 20 feet high, thereby increasing the head, and forming a retaining reservoir of 30 or 40 acres—to convey the water by iron pipe, and conduit where practicable, to the Housatonic; to cross that river at some convenient point where the channel is narrow and deep, by a flexible pipe, laid and covered upon the bottom of the river, as recommended by Mr. Jervis; to rise by iron pipe to a height suitable, and convey by conduit as far as possible, elsewhere by iron pipe to a distributing reservoir on the ridge west of New Haven.

A place for a reservoir was found on examination to have many of the requisite advantages just above Allentown, north of the Milford Turnpike, but little more than two miles from New Haven. Another favorable place was surveyed south of the Derby Turnpike, nearly three miles from the city.

Estimate of Costs.

Water rights, - - - - -	\$30,000
Dam, guard-gates, reservoir, &c., at Dawson's, -	10,000
Retaining auxiliary reservoir, - - - - -	10,000
Flexible pipe across the Housatonic, - - - - -	10,000
Embankment for pipes on the flats of the Housatonic, - - - - -	10,000
Conduit in line surveyed, 21,000 ft. at \$2.50, - -	53,000
20 inch iron pipe in do., 47,000 ft. at \$5, - -	243,500
Distributing reservoir, - - - - -	32,500
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	\$399,000
Add 20 per cent. for contingencies, right of way, engineering, &c., - - - - -	79,800
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	\$478,800
Add for distribution in the city, - - - - -	100,000
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Total, - - - - -	\$578,800

Length of works in line surveyed, 69,900 feet, or about $13\frac{1}{2}$ miles.

There is a probability that the conduit line might be lengthened, and the pipe line shortened a mile or more. But it would be unsafe to infer that the expense would be diminished. The country west of the Housatonic is very rough, hilly, rocky, and difficult of access. This is true of a part of the country this side. It is not probable that pipe can be laid, or conduit built there, at the prices estimated for the easier country about New Haven. It is unsafe to suppose that this stream can be introduced and distributed even in a twenty inch pipe for less than \$600,000.

Besides, if this plan were adopted, it would be with a view to supply not only present but future generations. For this object the whole work should be on a larger scale than the one estimated. A twenty inch pipe would have to be doubled, by the time the city should reach fifty thousand inhabitants, thereby doubling a large item in the expense. To introduce this stream with a view to provide for all time to come, would seem to require that the conduit line should be extended without regard to expense, by cutting down hills and filling up valleys, and that a thirty inch pipe should be used, where pipe should be necessary, thus making a work capacious and complete enough for the object. The question might be, whether it would not be better to expend a million than half a million. The same remarks apply, in part, to the Pine River plan.

Quantity.

The quantity of water which either of these plans will supply, may be stated as follows:—

Mill River, by water-power alone, will supply from fifty thousand to seventy-five thousand inhabitants, except in times of drought. But its minimum flow in extreme drought, as gauged by Mr. Twining in 1852, will supply, according to Mr. Jervis, thirty-four thousand inhabitants; according to Mr. Twining, "not quite fifty thousand," (page 51, Report;) according to the Committee, (page 18.) about thirty-three thousand. The difference in these estimates, arises partly from the number of gallons a day, allowed to each person. The Committee allowed sixty gallons a day to each person—the quantity expended in New York, which is, no doubt, excessive. The present population of New Haven—twenty-five thousand—would, at sixty gallons a day, require one million five hundred thousand gallons a day; and a population of thirty-three thousand three hundred and thirty-three, would require two millions; and a population of fifty thousand, would require three millions.

If a steam engine be placed at the City Works on Mill River, as an occasional auxiliary power in times of drought,

then Mill River may safely be relied upon to supply fifty thousand, seventy-five thousand, or more inhabitants, according to the amount of steam-power used. Such an engine would, according to Mr. Jervis, cost from \$20,000 to \$25,000, and could be worked upon the pumps, for about \$400 per month. The cost of the engine, when wanted, should be added to the Mill River estimate; but the cost of running it, perhaps, not, because the far greater length of the works of the other plans would, probably, lead to additional annual expenses of repairs, greater than this cost of running an engine a few weeks, or even a few months, each year.

By an addition of greater steam-power, Mill River may supply any population, up to one hundred and seventy-five thousand. There has been no time the last summer, when it would not supply more than seventy-five thousand, by water-power alone.

The Quinnipiac, by water-power alone, will supply from seventy-five thousand to one hundred thousand inhabitants, except in times of drought. Its minimum flow in extreme drought, as gauged by Mr. Twining in 1852, will furnish, according to Mr. Jervis, fifty-four thousand inhabitants; according to Mr. Twining, about seventy-five thousand; according to the Committee, about fifty thousand.

In the different gauges of Mill River and the Quinnipiac, the flow of the latter has been found almost three times greater than that of the former. For instance, the minimum of Mill River, gauged by Mr. Twining in 1852, was $11\frac{2}{3}$ millions, while the minimum of the Quinnipiac was $32\frac{1}{3}$ millions. The gauge of Mill River by Mr. Burrage, August 15, 1853, was fifty-two millions one hundred forty-four thousand four hundred and seventeen gallons a day; and the gauge of the Quinnipiac, was one hundred forty-five millions seven hundred ninety-one thousand four hundred and forty-four gallons a day. But it must not be inferred that the Quinnipiac will, therefore, supply three times the quantity of water. The fall at Mill River is thirty-three feet; at the Quinnipiac, eighteen feet. This difference of fall materially affects the power of

the two streams to supply the city with water. It will be found by calculation, that the power of Mill River to raise water to a given height, say one hundred and twenty-five feet above tide, is to the power of the Quinnipiac as two to three. That is, if Mill River will supply two millions of gallons a day, the Quinnipiac will supply three millions, and so on in proportion.

It will be seen also, that when the population of the city shall exceed fifty thousand inhabitants, it will be necessary to add steam-power, or another stream as an auxiliary to the Quinnipiac, to supply the city in times of drought.

Pine River will supply, probably, as much as the Quinnipiac, with the Retaining Reservoirs estimated. It will be seen from the foregoing remarks, that the amount of its supply will depend much upon the extent of its Retaining Reservoirs. It may safely be set down with proper Reservoirs as, at least, equaling the Quinnipiac.

Furmill River will, no doubt, supply more than either, by its natural flow, and by Retaining Reservoirs, would, probably, furnish any quantity ever required by the city, whatever may be its increase.

Quality.

As to the *quality* of water as tested by analysis, Mill River was No. 1, by the first analysis, and No. 2, by the second; in all tests upon lead pipe, it has been No. 1.

Quinnipiac was No. 2, by the first analysis, and No. 1, by the second. In test upon lead, it has been No. 2 or 3.

Pine River, by analysis, was No. 3 or 4, and by test upon lead pipe, No. 4.

Furmill River, by the first analysis, was one of the best, but by the second analysis had an excess of organic matter; it might be owing to the season. The water was taken in November of last year. In the test upon lead, it was No. 2 or 3.

The amount of this examination of quality is that the waters are uncommonly good—but Mill River and the Quinnipiac by all the tests, are best. Furmill River would have been considered one of the best, but for the last analysis. Pine River

has more foreign matter, and affects lead pipe more than either; but not so much as West River.

Summary.

The summary of these investigations is that the City can be supplied with water for fifty thousand or more inhabitants; commencing with a distribution costing \$100,000, which Mr. Jervis thinks "enough for the present," for about the sums following:

1. By Mill River,	\$320,000
Or, adding a steam engine,	350,000
(Length of works, $2\frac{3}{4}$ miles.)	
2. By the Quinnipiac,	412,000
(Length $10\frac{1}{4}$ miles.)	
3. By Pine River,	500,000
(Length, $12\frac{1}{2}$ miles.)	
4. By Furmill River,	578,000
Say,	600,000
(Length $13\frac{1}{2}$ miles.)	

There is no doubt that either will supply at least to the extent above mentioned. This is well settled by the investigations and the opinions of the most competent engineers.

The interest to be met annually by the City, will be about \$20,000, or \$24,000, or \$30,000, or \$36,000—according as the first, second, third, or fourth plan shall be adopted. *The water income to meet the interest will be the same* for many years to come, whichever plan be adopted.

The estimates on the Mill River plan are the most safe. It is so near the city, so compact, so accessible—and the extent of its works only two or three miles—so limited, compared with that of the other plans extending to 10, 12, and 13 miles, that contingencies, accidents, and unforeseen difficulties must be proportionably less, not only in constructing the works, but in maintaining and repairing them in all future time.

If either of the plans were selected, (except perhaps Furmill River.) when the City shall increase to fifty thousand or more inhabitants, the probability is that some additional means of

supply would be required. This is a new thing; other cities have pursued this course. They have introduced one source of supply, for present wants; as the cities increase another source, and another, as increasing population may demand. London, Paris and Rome have a great many different sources of supply; Philadelphia has two, Baltimore several—and even New York and Boston, with the immense expense of their works, if their rapid increase continues, will be obliged to add other sources of supply.

This mode of constructing works adapted to the means and wants of the present or next generation, and gradually extending them as the means and the wants of a city increase, seems to be the most prudent and economical method.

Suppose we now adopt the Furmill River plan, and expend \$200,000 or \$300,000 more than is necessary for twenty-five or thirty years to come, perhaps more than will be necessary, for it is not certain that New Haven will ever outgrow the cheapest of these sources. The sum of \$250,000 at compound interest will amount in less than twelve years to \$500,000, and in less than twenty-five years to \$1,000,000, and in less than thirty-five years to \$2,000,000, and so on.

If the City of New Haven now expends only \$325,000 or \$350,000, instead of \$600,000, she will thus save a million of dollars at the end of twenty-five years, or two millions at the end of thirty-six years, which will be more than enough to introduce any of the sources of supply in addition to the one adopted.

For these reasons, the Board of Water Commissioners have thought it wise to select the plan which is the least expensive, the most safe from present and future contingencies, which comes within the appropriation for the fair establishment of the works, and promises an ample supply, (for a quarter of a century,) of water that by all the tests has been found the best or one of the two best in quality of all the waters that have been examined.

The Board have not been insensible of the advantages of procuring water from a natural head. Some of them from the

beginning, have had a preference for that mode, and have anxiously examined the only two sources which seemed to afford any prospect of such a supply. There are difficulties, all of which cannot be stated here. But the great distance, the large rivers to be crossed, the nature of the intervening country, excite doubts and fears that the construction of appropriate works would require expenditures beyond the estimates, and beyond the present means and necessities of the City. The length of the works would be more than half the length of the Boston works, and nearly one-third the length of the Croton works. At some future day, if New Haven should become a great City, with great resources, it will not be inappropriate, and will be comparatively easy, to introduce any stream by a natural head, within practical distance, in addition to her present supply.

But when we have water enough for a long time to come, brought by nature almost to our very doors, it seems unwise to go so far, at so much greater expense, and at so much greater risk.

The Board of Water Commissioners have therefore unanimously adopted the Mill River plan, and have made a contract with Mr. Eli Whitney, the proprietor of the water powers and other property and privileges embraced in this plan as before described. A copy of the contract is herewith submitted, according to the provisions of the act.

By this contract Mr. Whitney agrees to convey to the City the entire control of the water power combined of the four water powers above described, (warranting his title thereto,) to be used by the City without obstruction or restraint, as far as the City judges it necessary for its supply of water: reserving to himself the surplus water—the City in all cases deciding whether there be any surplus or not.

Mr. Whitney also agrees to convey land for a site of the City works; also land for reservoirs of the most ample dimensions; also a right of way to the same and to any other part of the City works over his land; also, all land owned by him necessary for flowage, or for diverting the turnpike road: also

the right of taking rock, stone, gravel and earth necessary to the construction of the works, from his lands, under certain restrictions; also the right granted to him by the Legislature to place tide gates on Mill River; also to remove certain buildings, &c.

In consideration of these conveyances of these Water powers, lands, materials, rights and privileges, and all other privileges necessary to the fair and full enjoyment of the same, the Board of Water Commissioners agree in behalf of the City of New Haven, to pay the said Whitney the sum of fifty thousand dollars, viz:—On the execution of this contract and the conveyance of the Water Powers to the City, to issue and deliver to him twenty-five City Bonds, a part of the Water Fund of the City of New Haven, each bond to be for the sum of one thousand dollars, and to be received in payment by him at a premium of ten per cent., or at a valuation of twenty-seven thousand and five hundred dollars for the twenty-five Bonds; and on the 1st of July, after the other conveyances shall be complete, to pay to him the balance, twenty-two thousand and five hundred dollars in cash.

They also agree to construct and maintain the works as before described, and to deliver the surplus water, if any there be, to the said Whitney.

The contract is drawn with great care by counselors skilled in the law, and contains many provisions, limitations and conditions, the more clearly to define and guard the rights of the parties, which can be fully understood only by reference to the instrument itself, which we now deliver to the custody of your honorable body, as by law required.

A. N. SKINNER,
HENRY HOTCHKISS,
EZRA C. READ,
L. G. CANNON,
ASAHEL PIERPONT,
M. G. ELLIOTT,
JAMES PUNDERFORD.

January 18th, 1854.

STATEMENT OF THE BOARD OF WATER COMMISSIONERS.

To the Freemen of the City of New Haven :

Having been appointed members of the Board of Water Commissioners of the City of New Haven, according to the provisions of an act of the Legislature of this State, which act has been adopted by the City as an amendment to its charter, and having entered upon the duties assigned us, we find ourselves embarrassed in the performance of those duties, by the unexpected failure of the City to issue bonds according to the provisions of the aforesaid adopted amendments of the charter; and we call on the City for instruction and advice.

The City has already instructed us in the most solemn manner, by a vote taken by Ballot, under the direction of the Legislature, with every possible care and safeguard to make it a fair and legal vote,—to employ engineers, to make contracts, to take and hold lands, water, water privileges, or other estate, for the City; and to adopt and execute a plan to supply the City with water at a cost not exceeding \$325,000, and under the restrictions and conditions of the aforesaid act.

In obedience to these instructions, given by the largest vote ever taken in the City of New Haven, and by a majority of almost two to one, we entered upon our duties immediately after our appointment.

After devoting nearly six months to a careful and laborious investigation, aided by the full report of the former Water Committee, and by the advice of the most experienced and distinguished Engineer in the country,—by the labors of other practical Engineers, and men of science and experience, connected with other water works; and after much deliberation

and discussion among ourselves, we finally came to a decision as to the source of supply; adopted a plan; made a contract for water powers and other estate, with very great care, and with repeated revisions, to guard the rights and interests of the City. We reported our proceedings as by law directed to the Court of Common Council, which directed its publication for the information of the citizens.

We had no doubt that in all our transactions we were acting according to law, and according to the instructions of the City. We understood, as we believe every voter understood, that by the two deliberate votes by Ballot—the first Ballot deciding to introduce water, and to apply to the Legislature for the requisite powers; the second Ballot accepting and adopting the powers granted, by a great and increased majority; that the water question was fairly and finally settled.

We had not a doubt, and we believe not a voter had a doubt, but the City had decided—

1st. To introduce water, provided its cost do not exceed \$325,000.

2d. To issue bonds to that amount, to provide the means for the construction of the works.

3d. To appoint a Board of Commissioners with “full powers to construct and manage the works.”

Obeing these decisions and instructions of the City, and relying on its good faith to fulfill our contracts made in its behalf and by its directions, and confiding in its honor to sustain us, its agents, in the performance of the duties which it had so definitely and so solemnly commanded us to perform, we have acted with great deliberation, with great anxiety to arrive at correct decisions, and with perfect uprightness of intention; and have adopted what we believe to be the most safe, the most prudent and the most economical plan to promote the present and future welfare of the City. We have not a doubt but we have decided right. We have not a doubt that the plan adopted will supply the whole City, to 50,000 or more inhabitants, with *pure* water, at less expense and less risk than any other plan.

We had not a doubt that when we should call upon the City to fulfill its obligations to issue bonds as the law provided “from time to time, as the Board might direct,” to meet its engagements: we had not a doubt that the City and every voter, whether in favor or not in favor of the project at first, would consider the City bound by its former proceedings, and that an agent would be appointed without opposition.

By an accidental omission, it was not clearly stated in the act who should execute and issue the bonds. When, therefore, bonds were needed to fulfill our contracts, a City Meeting was called to designate the necessary agent.

To the astonishment of the Board and to the astonishment of a great portion of the citizens, about 100 voters were found in this small City meeting, ready to postpone the appointment of such agent, with the avowed purpose by a portion of them, to embarrass or defeat all the former proceedings of the City.

We express no opinion on the points in dispute as to the legal action of that meeting. But we cannot but feel what every unbiassed citizen must feel, the great impropriety and injustice of an attempt in this sudden and unexpected manner, to defeat all those former deliberate proceedings, embracing nearly two years of investigation, and legal action on the part of the City—and thus to set aside the decisions by ballot, of more than 2000 voters, with more than 500 majority, by a hasty and excited vote of less than 200 voters, and with a claimed but disputed majority of from 2 to 6. We think every honorable citizen will acknowledge the propriety and justice of some more fair, more full expression of public opinion than this.

We do not wish to comment on the proceedings of the adjourned meeting, further than to say that its principal action was on *subjects not embraced in the warning of the meeting*, and therefore not valid in law. No one will claim that, under a warning to appoint an agent, it is in order to vote to amend the City charter, or to instruct the Water Commissioners to stay proceedings!

To the resolution passed, requesting the Common Council to apply to the Legislature for an amendment to restrict the contracts and expenditures of the Board to \$325,000, no one objects. We understand that we *are* thus restricted. But as others think differently, we hope this resolution will be adopted at a *legal* meeting.

As an *expression of the public will*, the action of this meeting must be considered *equally invalid and unsatisfactory*. The number of votes was only one half the number which on two former occasions expressed the public will by BALLOT. At this meeting there was no ballot, and no means of preventing illegal voting. The meeting acted under excitement and misapprehension of important facts, and as to its own powers. Many voters, deterred by the delay, confusion, and exposure, did not vote at all; many voted on the side opposite their intentions, by mistake; and many arriving after the affirmative votes were counted, and wishing to vote in the affirmative, were not allowed to vote. The declared majority, under these doubtful circumstances, was small—being only 47 on the test vote, viz: 535 to 488. Such a vote cannot be considered as a fair expression of the public will. No one who witnessed the scenes of that day could so regard it; or could reasonably expect the 1,261 freemen who had voted by ballot *for* water and the act, to rest satisfied to be thus unceremoniously put down by 535 votes, taken under such circumstances, and under such sudden excitement and misapprehension.

We received our powers and instructions under a vote by BALLOT, under all the sanctions and safeguards of law; and under all the preliminary notices and preparations which, in the minds of the whole community, were to put this question finally at rest.

These votes, by BALLOT, have never been reconsidered, and cannot be now reconsidered, without establishing a dangerous precedent in the management of public affairs; without a violation of good faith to those who have made contracts, relying upon the stability and honor of the city; and without involv-

ing the city in litigation, expense, difficulties and disgrace. We are by law, by our instructions, by our delegated powers and duties, authorized and directed to go on and complete the works. Any delay at this time will rapidly accumulate unnecessary expense and damages against the city.

There can be no claim, by the opponents of the project, for another vote on the water question, because this question was settled legally and fairly, in the opinion of the whole community, in the manner appointed by the Legislature, and ratified by the city. But we will not stand up against the public sentiment of the city, if it can be *clearly and fairly* ascertained that there has been any *decided change* of the public will.

If a BALLOT can be taken as fairly and as fully as the two former ballots, which conferred upon us our powers and duties, and if, by this BALLOT, it shall appear that a majority of the freemen will not appoint an agent to execute and issue the bonds, as directed by the charter; and if the CITY OF NEW HAVEN is willing thus to REPUDIATE ITS OWN ACTS, and to abide the consequences upon its interests and its HONOR, we are ready to bow to the public will, when fully and fairly expressed, and to pause for further instructions. We have done all in our power to execute faithfully the trust committed to us by our fellow-citizens. We now leave the responsibility to them.

A. N. SKINNER,
H. HOTCHKISS,
EZRA C. READ,
L. G. CANNON,
ASAHEL PIERPONT,
MATTHEW G. ELLIOTT,
JAMES PUNDERFORD.

New Haven, Feb. 21, 1854.