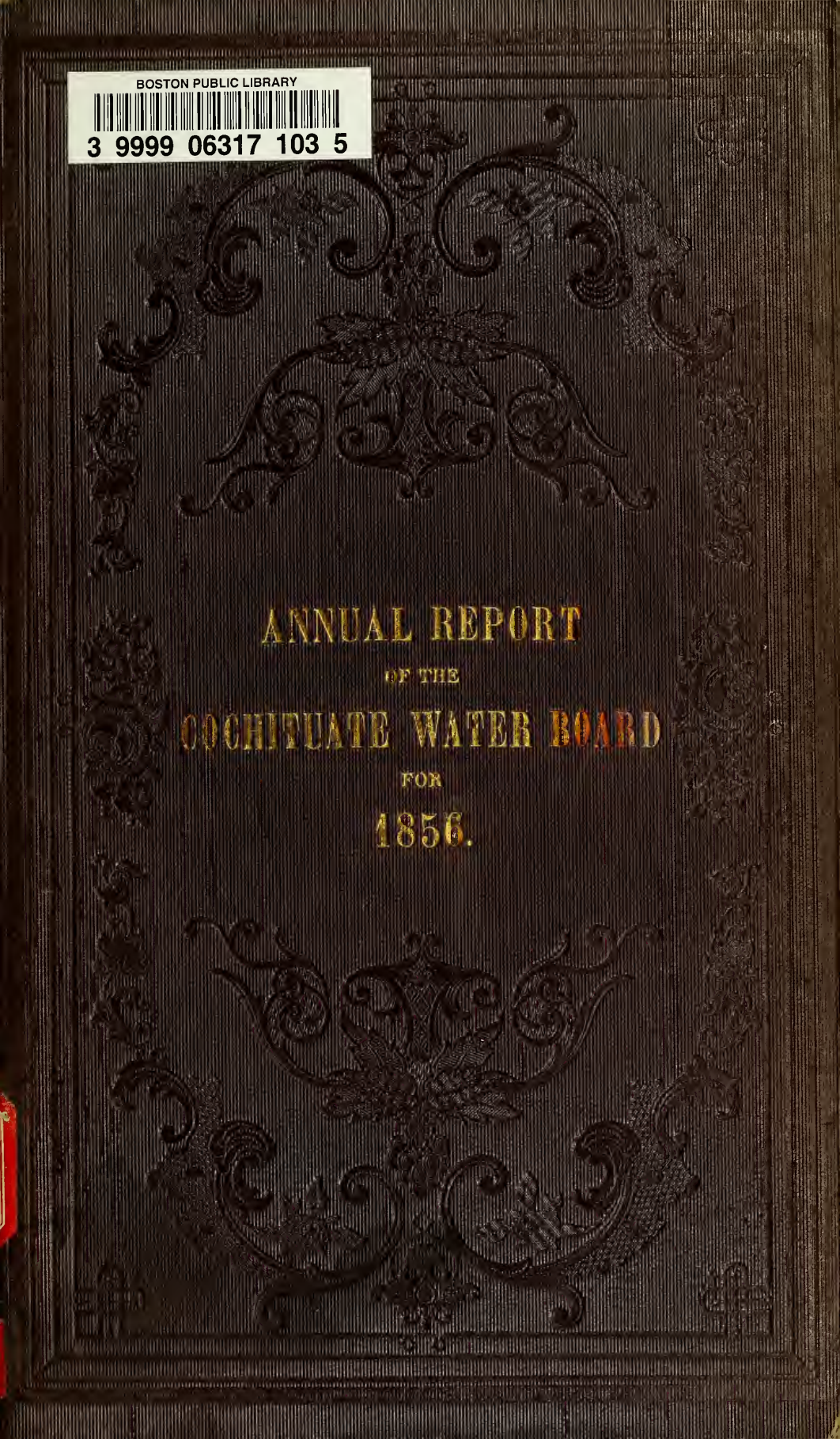


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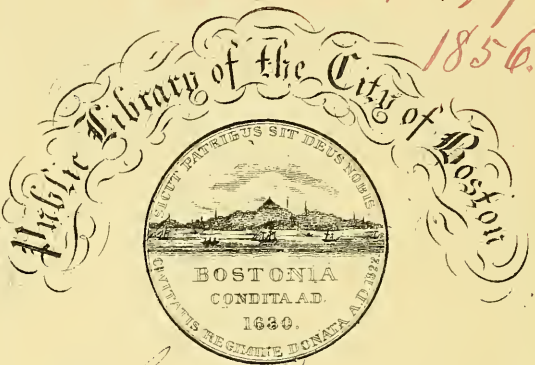
The entire cover is framed by a complex, embossed decorative border. It features symmetrical scrollwork, floral motifs, and intricate patterns that create a rich, textured appearance. The central text is set within this ornate frame.

ANNUAL REPORT  
OF THE  
COCHITUATE WATER BOARD  
FOR  
1856.

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1856.



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REPORT

653-79218

OF THE

COCHITUATE WATER BOARD,

TO THE

CITY COUNCIL OF BOSTON,

FOR THE YEAR 1856.



BOSTON:

GEO. C. RAND & AVERY, CITY PRINTERS,

No. 3, CORNHILL.

1857.





# REPORT .

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OFFICE OF COCHITUATE WATER BOARD,  
*January 15, 1857.*

Agreeably to the provisions of the City Ordinance, the Cochituate Water Board beg leave to make their Annual Report to the City Council; together with the Reports of the City Engineer, the Water Registrar, and the Clerk of this Board. To these very full and detailed Reports, the Board would refer for much information in relation to the state of the works and of the water, and of operations and doings in regard to the same, during the last year.

The Board are happy in being able to state that all the works are in a satisfactory condition.

Ever since the Water Board was originally organized, there has been entertained a desire to dispose of all the property owned by the City and connected with the Water Works, but not needed for the purposes of use or security in regard to them. A large amount of land lying near the Lake and its outlet, and also distributed along the line of the conduit, having served all the purposes for which their several portions were purchased,

has been generally unproductive, while the taxes upon them and their fencing have been, of course, a burden without any equivalent. And so of the mill privileges owned by the city below the outlet; they have produced little, if any thing, to the city, above the taxes and repairs.

Former Boards having failed to carry their often expressed intentions into effect, the present Board took the matter seriously in hand. They had surveys made of the different parcels that could be disposed of without detriment to the works, (always reserving ample means and rights for the use of the City); and during the season, at private sale, and at two different public sales, they disposed of lots embracing 145 acres, at prices varying from \$19 to \$550 per acre — making a total amount of \$13,632.12. The result of this effort was highly satisfactory to the Board. There still remains a considerable amount unsold, embracing the upper mill privilege, which should and probably will engage the early attention of the next Board.

Among the parcels sold were those heretofore used for flowage, and constituting what was called the *lower privilege*. The dam, by which this privilege was formed, was the causeway constituting a public road or highway. At very high water, breaches had been made over this highway, by the current, and accidents more or less serious had occurred — one at least which, on trial, resulted in a judgment against the Town of Framingham, of about \$400. This amount the said town called upon the City of Boston to pay, but the Board declined to pay it. At quite high water, the water in the lower privilege backed upon the wheels at the upper privilege,

and thus diminished its value. Considering, therefore, the possibility of disputes in future with the town of Framingham, as to who should keep the causeway in repair; and considering the fact that the factory at this privilege was burnt, and the upper privilege would be enhanced in value by its use being discontinued, the Board deemed it expedient to abolish this lower privilege, and sell the land for farming purposes, on the condition that no mills should ever be constructed on the stream passing through or by it. It is believed that the City realized more money for it on this condition, than could have been obtained for it as a mill privilege. Ample rights of flowage over these lands have been secured to the city, whether the same shall occur from accident or by design.

In addition to land sold in the neighborhood of the Lake or works, there has been sold wood to the amount of near \$500, mostly growing on the five rods belonging to the City, bordering upon the water.

Besides these parcels of land near the Lake and line of aqueduct, the Board have disposed of *Boon Pond and Ram's Horn Meadow*, in the town of Stow. These were purchased with the view of forming a compensating reservoir, auxiliary to the Marlborough reservoir. But nothing has ever been done with them. They embraced about 130 acres, nearly or quite half covered with water. The City's property consisted mainly in rights of flowage; there being besides these only a narrow margin of woodland that could be regarded as of much value. It was deemed best, therefore, to dispose of the whole to Mr. Amory Maynard, (who owns a factory below,) for the sum of \$1,674. Mr. Maynard can

add value to his mill privilege by exercising these rights of flowing, but the City could derive no benefit from them whatever.

*Jamaica Pond*, and the water works connected therewith, were purchased of the Boston Aqueduct Company, in 1851. The reasons for this purchase were: 1st, To be rid of rival water works. 2nd, To quiet claims already incurred by injury to their pipes, in laying down our pipes; and 3rd, To annul the privilege which that corporation possessed, of breaking up and injuring the streets, whenever and wherever they saw fit. The Board feel no hesitancy in expressing the belief that on all these accounts the purchase, at the price of \$45,000, was a very favorable one to the city; and that a much larger benefit than the interest of that sum has annually accrued to the city from the purchase.

The *object* of the original charter of that corporation was to supply the *City of Boston with water*. It was somewhat loosely drawn; and it was not clear what rights or privileges of supplying other places were embraced in it. It gave no authority to break up pavements and injure highways, for the purposes of supply, except in Boston. Of late years there has been growing up in the Roxbury part of the Tremont road a somewhat dense population, which has applied for the use of the water; and the City of Boston has supplied it, without, however, attempting to exercise any right of opening streets, or laying service pipes, except along the line of the main pipe. This service, however, yielded a gradually increasing income, which in the last year amounted to \$2,624.64, — being near the interest of the cost of the purchase.

Although at the outset it was deemed probable that an income might be derived from the use of these works equal to or exceeding the interest on the cost of their purchase, yet it has been the constant desire of all the successive Water Boards to sell them, when a favorable opportunity should occur. It was always felt that these works were a kind of excrescence upon the city system, being disconnected entirely with it. The condition of the works, their state of repair and prospective durability have not been very well understood; while there has been reason to suppose that in certain places, at least, the pipes had become quite tender.

Besides these reasons for effecting a sale, it was felt that there might some odium attach, or at least some ill feeling arise, from the circumstance of one city supplying the inhabitants of another with water, and taxing them therefor at its own discretion, without their having a voice or remedy in the matter. There can be no reason to suppose that the Legislature would grant the city such privileges, on an original application; and, therefore, it was deemed to be good policy to exercise them as short a time as practicable, while in possession for other purposes.

The Board, therefore, voted to advertise for proposals to purchase these works; and as a consequence, proposals were made, which resulted in a sale to George H. Williams, Esq., of Roxbury, for the sum of \$32,000 — \$5,000 cash, (which has been paid;) the balance in nine annual payments of \$3,000 each, interest annually, secured by mortgage of the works. Of course, the sale is conditioned that no water shall be supplied in the city of Boston from these works.

It is proper to add, that under a certain contingency of failing to obtain a legislative act, at the present session, which shall confirm certain doings under the charter and privileges conveyed by it, the purchaser may, in May next, annul the bargain. But, as even without that confirmation, the purchase is now, and prospectively will continue to be, a profitable investment, there can be no reason to suppose that the purchaser will wish to exercise this right.

Besides these sales, the Board have during this year *leased* the Hopkinton Reservoir, for a term of ten years, at a rental of \$1,250 per annum. There are two old factories attached to the privilege; but they are regarded by neither party as of any value, — the water being intended for use as a reservoir, to be drawn off in dry times, for the benefit of mill owners below, who become joint lessees of the same. Should the Board have opportunity and inclination to sell, it has the power to annul the lease at any time, by relinquishing a year's rent. Though the amount received in the way of rent is small, considering the cost of this reservoir, it is to be regarded as all gain; for the city has hitherto derived no benefit whatever from it.

In regard to leasing the Marlborough Reservoir for like purposes, a negotiation is now going on. But what success may attend it cannot now be foretold. All the property owned by the city in Marlborough and its vicinity, is now but a bill of expense; and should the efforts of the Board fail to lease the reservoir for some reasonable amount, the question whether it will not be good policy to sell off the whole at the most it will bring, will present itself under circumstances highly favoring an affirmative answer.

*The unnecessary waste of water* is a topic which has been pressed upon public notice by this Board, every year since its organization, with what effect will shortly be seen. To those who are accustomed to regard the people of Boston as an orderly and brotherly community, it cannot but seem strange that a habit prevails, which not only involves an enormous and useless waste of water, but also involves the deprivation of this necessary of life to quite a large number of citizens, who have (in this respect, at least) the *misfortune* to dwell in costly houses, in the elevated portions of the City. This Board has done its duty, and spared no effort to check this evil. It is extremely desirable that a wholesome public sentiment should be created on this subject, that would make water-takers ashamed of these wasteful practices. The consciousness of unnecessarily wasting water would then suffuse the cheek with a blush scarcely less deep than accusation of misdemeanor or crime. But, in spite of all that has been done, and all that has been said, the evil seems to increase. For it will be seen, by reference to the Engineer's Report, that the average daily consumption in 1856, has been 12,048,600 gallons, while in 1855, it was 10,346,300, — i. e., an increase in consumption of nearly 20 per cent. The number of water-takers is now 20,806, and, at end of 1855, it was 19,998, — i. e., an increase of little more than 4 per cent. Thus, in 1855, (taking the number of inhabitants at 163,000,) the daily average consumption for each individual was near  $63\frac{1}{2}$  gallons; while, in 1856, (taking the population at 168,000,) the daily average consumption for each individual has been nearly 72 gallons. Now *all this increase can be nothing but sheer waste*; (for

among the new water-takers there are few great consumers); and, of course, the *waste of 1856 was equal to 8½ gallons (or 12½ per cent.) per day, for each individual, more than it was in 1855.*

In this respect let 1855 be compared with 1854. In 1855 the daily average consumption was, as before stated, 63 1-2 gallons for each individual. In 1854 the daily average consumption was 9,902,000; equal (calling the number of inhabitants 158,000,) to near 63 gallons to each individual. So that in that year the increase of consumption was but a trifle more than what was indicated by the increase of population.

The subject might be further illustrated by comparing other years embraced in the table. No doubt different ratios of waste would be found to characterize the consumption of different years. But it is to be feared that in no year will the waste be found to bear a less ratio to the consumption, than in the year preceding it; while, as has been seen, it has increased during the last year 12 1-2 per cent.

The greatly increased consumption of the past season has put it out of the power of the Board to allow any considerable playing of the fountains, except occasionally on public days,—thus depriving the citizens of one of their most valued pleasures. The continued draft upon the pipes and consequent tendency to reduction of the water in the reservoirs, has rendered the utmost watchfulness and care necessary, on the part of the Superintendent, to turn on and off the water at various points, so as to keep the water in all the reservoirs at a height suitable for the convenient supply of the neighborhood



and also for an indispensable resource in case of fire.\* After effecting these objects properly, there has been little surplus that could be let on to the public fountains.

A good deal of the waste undoubtedly results from the improper and imperfect manner in which the distributing pipes are put into and carried through the houses. And it has occurred to the Board to suggest to the City Government, *if it has the power*, the propriety and utility of exercising more control than it has hitherto done over the inserting and arranging the water fixtures within and upon the premises of the water-takers. The pipe should enter the house at a place secure from frost, and should be continued in the most secure places the premises afford; and if the premises do not offer places reasonably secure, they should be made so by artificial means. No pipe should be carried in a horizontal direction, but at an angle of less or greater elevation, so that, by means of a cock in the cellar, all the upper pipes could be emptied as a precaution against frost. Again, it is believed that persons are often more nice than wise in putting their pipes behind the plastering and next to a thin, exposed wall, where the risk of freezing is very great. If they would carry their pipes within the plastering, through rear halls and kitchens, where they would partake of the

\* The importance of keeping a supply in the reservoirs, in case of fire, it is feared, is not generally fully appreciated. At the recent fire in East Boston, (which has occurred since the date of this Report,) more than 10,000 barrels of water were drawn from the reservoir, over and above what was drawn from the pipes constantly conveying water outside the reservoir. Had the reservoir been empty, it would seem as if the damage must have been greatly increased.

general warmth of the house, the liability to frost would be greatly diminished if not entirely obviated; while paint or whitewash might be made to disguise them so that they would attract little or no notice. If arranged in this manner they would be always accessible when repairing should be necessary.

But, to attain these objects, some person of judgment and skill should be consulted at the outset, and have power to direct and distribute the water fixtures in the best possible manner. Would it not, then, be well to consider the right and power of the City in the matter, and, if practicable, by ordinance or otherwise, to require that in all new buildings, or insertion into old ones, the arrangement of the pipes should be superintended or directed by some person or persons appointed or licensed by the City government. It is believed that we have among us many plumbers and other mechanics, who, if clothed with power to exercise their judgment in the matter, would carry and arrange the pipes through the houses in such a manner as to secure the works from liability to frost. Further provision might and should be made, that the water should not be let on for the first time in any case till a certificate should be received from some proper person that the fixtures were arranged in a satisfactory manner. Should such regulations be made to attach to all new cases, it is not to be doubted that a great many old water takers, whose fixtures are imperfect or improperly arranged, would willingly be at the expense and trouble of having them overhauled and made to conform to a safe system or plan. In this way, it is believed, that in

a comparatively short period the whole city would become habituated to a much less consumption of water than now prevails, while the takers would enjoy all the luxury of a full supply for all domestic purposes.

Unless these suggestions, or others having the same object, can be wrought out into practical results that shall effect a substantial diminution in the individual consumption of water in future, as the population increases, the Board is forced to admit that the necessity for obtaining additional supply is no longer to be disregarded. If the lesson which experience has for years been teaching and impressing upon us is to be accepted as the future rule, it is no longer to be winked out of sight, that the enormous and constantly increasing yearly consumption is rapidly bringing the City to a period when the present source and mode of supply will no longer satisfy the demands of the population.

Considering the intrinsic difficulty of deciding upon the most judicious method of obtaining and distributing an additional supply, it appears to be high time that competent minds should be investigating the subject. For example, if means can be devised to furnish East Boston from another source, and in a manner less hazardous and disadvantageous than the present mode, *that* would be regarded as the very first step for relief. But to determine whether this be practicable, investigation must be made, comparisons be instituted, and finally, details must be wrought out into results; and these will require time as well as talent.

In order to aid the Board and the City Council, in

forming opinions upon these matters, the City Engineer has, in his very clear and able Report, hereto annexed, collected many pertinent facts and observations, going to show the capabilities of Lake Cochituate to yield the additional supply, and has touched upon the additional works necessary to bring the same to the city, — all of which are worthy of attention. It appears from this Report, that during every year, when an account was kept, since the works have been constructed, there has been wasted or allowed to pass down the river, from the Lake, a greater quantity than has been brought to the city. Experience seems to have established, beyond doubt, that the capacity of the Lake, as a source of supply, was very much under-estimated by the early engineers who computed it; and that instead of being capable of supplying ten or eleven millions of gallons daily, it might be relied on to supply sixteen millions. And so numerous and obscure are the causes operating unseen to mislead the judgment, and to render uncertain the data of calculation, that it would be no matter of surprise if experience should finally show that this Lake would yield twenty millions daily, by simply raising the dam.

But when this additional supply is talked of, the question of the ability of the conduit to bring it to Brookline, is immediately suggested. The conduit was intended originally to convey water *as a channel*, filled half or two thirds full. But the exigencies of the city have been such that much of the time it has been running full, and a part of the time the water has been pressed through it under a head 1 1-2 and even more feet, — thus putting it to the use of a pipe, instead of

simply a channel.\* This is putting the works to a very undesirable strain, and one which, of course, they were never intended to be subjected to. And should a breach occur, not only might much damage result, but the water takers might be subjected to much suffering and trouble for the want of water, before the breach could be repaired. It is known how much pressure the conduit has sustained without giving way, but it is not known how much it can sustain without a breach. But it is certain that if it is to be relied upon to bring an average of sixteen millions of gallons daily, it must be subjected to a greater and more constant pressure than it has been yet. What may be the result, time alone can make manifest. As a first step towards obtaining an additional supply, the Board are of opinion that the dam at the Lake should be raised two or more feet; and as it is doubtful whether the city now has authority to do it, the Board recommend that application be made to the Legislature for such authority.

It will be seen by the Report of the City Engineer, that the dam at the outlet has betrayed indications of weakness during the last season. In consequence, it has been deemed prudent to support it by constructing

\* Since the date of this Report, during one week of our coldest weather, the following quantities have been forced through the conduit, under the annexed head of water, in feet and tenths.

1857.	January 20th,	16,576,000	gallons,	1.66	feet	head.
	" 21st,	17,203,000	"	1.79	"	"
	" 22d,	16,765,000	"	1.70	"	"
	" 23d,	16,765,000	"	1.70	"	"
	" 24th,	16,765,000	"	1.70	"	"
	" 25th,	16,763,000	"	1.70	"	"
	" 26th,	16,961,000	"	1.74	"	"

The circumstance that the earth covering the conduit was frozen, undoubtedly gave additional security to the works.

a new dam, 460 feet below the present one. This will back the water upon the present dam 6 feet or more, so that it will not be subject to pressure of more than 4 feet, and ordinarily not so much; while the new dam will be sustained by the dam at the upper privilege in such manner that it will be relieved from any dangerous pressure. This system of supporting successive dams by back water, is deemed to be safer than to attempt to construct a single impregnable dam. The soil is so loose, and the water, under high pressure, percolates so freely through the neighboring soil, that the difficulty and expense of a structure that should be perfectly reliable, especially if the pond should be raised, would be very great.

The work of constructing the new dam, was commenced too late in the season to allow of its completion this year. Its foundation, however, was laid, and it has been put in a condition to serve a temporary purpose until it can be completed in the spring. Most of the materials are on the spot, and paid for. The whole expense, it is expected, will be something less than \$8,000.

Since the last Annual Report, the sense of the citizens has been taken in regard the annexation of Chelsea to the city. The result was a decisive majority against such annexation. So far as the distribution of Cochituate water is concerned, that decision must be regarded as eminently wise. As in all applications for annexation to the city, a leading reason for the measure will always be a participation in the use of Cochituate water; so it must continue to be the part of wisdom on the part of the citizens to reject such applications, so long

as the proposed extension will endanger the sufficiency of their own supply. Certainly the benefits arising to the city from any annexation of foreign territory, ought to be very obvious and to be very great, before the citizens would be justified in sharing with others that supply which has cost them so much, and which experience admonishes them may soon be too scanty for themselves.

By great watchfulness and care in the management of the stop-cocks, a sufficient supply for ordinary demand has been kept in the various city reservoirs during the year. But during the very severe weather of December 18th, and a few days following, the reservoir on Beacon Hill was entirely exhausted; and many takers residing upon the high parts of the city, were entirely destitute of water. During twenty-four hours, the enormous sum of 17,894,000 gallons was used and wasted; and if such consumption should continue for any number of days, much suffering would inevitably result.

It may be well here to remark, that the attention of the Board has been called during the year to several kinds of newly invented meters. A good, simple and cheap meter is a great *desideratum*; and if one could be found that should be reliable, and come at a reasonable price, (twelve or fifteen dollars, or even cheaper,) it would undoubtedly be good policy to introduce their use to a certain extent. The Board is happy to say, that a model has been exhibited, which promises great advantages over any hitherto in use; and if it shall appear on further trial that its promises are fulfilled, it will no doubt be well to procure a quantity for use.

There has been no complaint made during the last year, of the *quality of the water*.

The *quantity* at the Lake has been more than usually abundant. A good portion of the time there has been 9 feet of water above the flume. Though there does not appear, from the annexed table, to have fallen more than an average quantity of rain during the year, (40 inches,) yet the heavy rains falling in mid-summer, have served to keep the water unusually high during the period when it is usually quite low.

*The extension of the works* has been continued through the season, on the principle which former Boards adopted, of laying pipes wherever the income would cover the interest upon the cost. Of 12-inch pipe there has been laid during the year 2663 feet, against 2051 feet in 1855. Of 6-inch, 9789 feet, against 10,384 feet in 1855. Of 4-inch, 1871 feet, against 1396 feet in 1855. In all, 14,323 feet in 1856, against 13,829 in 1855. The whole length of pipes of 4 inches and upwards, is now a little over 116 miles.

The number of new *Stop-cocks* is 21 — making the whole number 1001.

The number of *Service Pipes* laid during the year has been 832, the whole length of which is 29,754 feet — making the whole number 19,629.

New *Hydrants* to the number of 30 have been added this year, making the whole number 1282.

By far the heaviest job of *Repairs* (if this can be so called) undertaken during the year, was the raising of the pipe in Tremont road. Since the pipe was originally laid, the street has been raised, (twice or more.) And



as buildings are now being erected along a large portion of the road, frequent calls for water were made. The supply of these demands was found to be both difficult and dangerous; and it was deemed best to meet the difficulty at once by raising the pipe. 1852 feet of 12-inch, and 844 feet of 6-inch, (making more than half a mile of both) have been raised.

The leak in East Boston Reservoir, which has always been troublesome, has not yet been repaired. But liability to damages resulting from leakage upon the lands abutting upon it, it is believed, has been obviated for the present, by the construction of a trench filled with stones, between the reservoir and said lands. There does not appear to be any urgent call for further repairs at present; but the time cannot be far distant when a very considerable outlay must be there made.

*The Annual Report of the Water Registrar* contains, as required by the ordinance, "a statement of the number of water takers, the number of cases where the water has been cut off, the number and amount of abatements, and the expenditures of his department." The list of water takers has been arranged, as usual, into different classes, and the amount of water rate paid by each class given, the water rate being, as usual, paid to the clerk of the Treasurer, in the office of the Water Registrar.

*The whole amount received for water rents* during the year, has been \$282,651.84, i. e., \$2,651.84 more than was estimated at the beginning of the year. The estimate for 1857, is \$295,000.

*The number of water takers* is now 20,806; being an increase of 808 over 1855.

The usual *condensed classification* of the various water tenants has been prepared, and a statement of the amount of water rate paid by each class; the whole, being collated with similar tables for the preceding year, is here inserted.

1855.	1856.		1855.	1856.
14,483	15,260	Dwelling Houses, .....	\$157,318 88	\$169,129 69
3,263	3,515	Stores, Shops, Offices, Cellars, &c. ....	23,587 00	26,542 93
340	426	Hotels, Restaurants, and Saloons, ....	10,895 63	11,065 53
551	648	Stables, .....	7,578 75	8,297 10
7	8	Railroads, .....	7,523 40	8,681 68
3	3	Ferry Companies, .....	2,608 28	2,712 16
31	30	Steamboats, .....	4,370 01	4,865 71
728	720	Hose, .....	2,205 00	2,192 00
1	1	Motive Power, .....	800 00	516 23
81	84	Sugar Refineries, Distilleries, Brew- eries, and Bakeries, .....	11,237 20	10,202 25
4	4	Gas Companies, .....	655 52	621 22
		Other Manufacturing Purposes, .....	18,272 51	22,857 68
		City Buildings and other City uses, ...	4,011 50	3,777 72
		Public Buildings, Charitable Institu- tions, &c., .....	1,834 40	1,989 95
		Shipping Contract with Waterman, ..	4,223 78	4,387 30
		Street Waterers, (in Roxbury, 1856,) ..	973 72	100 00
		Building Purposes, .....	735 05	1,085 05
		Other Purposes, .....	920 17	1,010 24
			\$259,750 80	\$280,034 44

A statement of *receipts and expenditures*, the last year, by the Clerk of the Water Board, or Service Clerk, is hereto annexed. The whole amount of expenditure

has been \$81,429.35. Of this, \$52,588.21 was for Extension of the Works; leaving \$28,841.14, as the amount of the expenses of this department. This is in excess of the expenses of 1855, \$1,528.56, — just about the amount paid for surveying and selling the lands about the Lake and along the aqueduct.

As this item covers all the expenses of repairs, and the salaries of those having charge of the works, &c., it must be expected to increase. The works are continually being extended, and the older they grow of course they become more liable to breaks and leakage; and from the nature of the case, more expense must be annually required to keep them in order.

For the purposes of engineering, in relation to a separate supply of East Boston, and also in relation to the damages that will result by raising the dam at the Lake, it is recommended that provision be made in the annual Appropriation Bill.

All which is respectfully submitted.

JOHN H. WILKINS,  
SAML HATCH,  
TISDALE DRAKE,  
JONATHAN PRESTON,  
CHARLES STODDARD,  
THOMAS P. RICH,  
JOHN T. DINGLEY.

#### N O T E .

London is regarded as being exceedingly well supplied with water. The ten Water Companies supplied recently (probably in 1856), 81,025,822 gallons to 328,561 houses. Taking the individuals in each house at six, and the supply is 41 gallons *to each individual using the water*. But if the consumption be averaged upon the *whole population*, (say 2,400,000) the *individual* consumption is little less than 33 gallons. The gallons used are probably *imperial* gallons, which are larger than our *wine* gallons.

RECEIPTS AND EXPENDITURES.

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STATEMENT OF EXPENDITURES MADE BY THE COCHITUATE  
WATER BOARD, FROM DECEMBER 31ST, 1855, TO JANUARY  
1ST, 1857.

Beacon Hill Reservoir, for labor, &c.,	\$462 79
South Boston " " "	256 92
East Boston " " "	365 61
Brookline " " "	782 12
Marlborough " " "	3 75
Laying Main Pipe, for stock, &c., -	1,458 88
Main Pipe, - - - - -	17,182 22
Service Pipe, - - - - -	10,846 61
Stable, for a horse, wagon, hay, grain, &c., - - - - -	897 24
Hydrants, - - - - -	577 71
Stop-cocks, - - - - -	688 04
Backsmith Shop, for stock, &c., -	345 51
Plumbing Shop, " " -	82 72
Proving Yard, " " in repair shop, - - - - -	107 75
Pipe Yard, altering Counting Room, &c., - - - - -	180 92
Aqueduct Repairs, for labor, &c., -	1,148 32
Lake, on account of new dam at the outlet, labor, &c., - - - - -	6,732 04
<i>Amount carried forward,</i>	\$42,119 15

<i>Amount brought forward,</i>	\$42,119	15
Jamaica Pond Aqueduct, labor, &c.,	273	88
Hydrant and Stop-cock Boxes, -	792	01
Salaries, - - - - -	7,015	20
Travelling Expenses, - - -	159	73
Office Expenses, rent, fixtures, &c.,	1,950	81
Taxes, - - - - -	628	25
Miscellaneous Expenses, surveying and selling land, &c., - -	1,664	56
Tolls and Ferriage, - - -	288	25
Fountains, - - - - -	101	13
Hose, for blowing off hydrants, &c.,	287	45
Carting, - - - - -	557	01
Postage and Express, - - -	11	62
Tools, - - - - -	297	27
Stationery, - - - - -	202	20
Rents, - - - - -	43	10
Land and Water Rights, - -	175	00
Off and On Water, - - -	2,817	08
Damage, caused by laying the pipes through drains, &c., - -	623	68
Oil, - - - - -	89	90
Printing, - - - - -	280	14
Proving Press, - - - - -	72	64
Repairing Main Pipe, - - -	772	05
“ Service Pipe, - - -	1,833	28
“ Streets, - - - - -	1,214	08
“ Hydrants, - - - - -	1,577	87
“ Stop-cocks, - - - - -	188	77
“ Meters, - - - - -	287	62
Wages, Proving Yard, - - -	3,423	77
“ Plumbing Shop, - - -	680	29
“ Blacksmith Shop, - - -	778	71
“ Laying Main Pipe, - - -	6,223	93
<i>Amount carried forward,</i>	\$77,430	43

<i>Amount brought forward,</i>	\$77,430 43	
Wages, Laying Service Pipe,	- 3,940 05	
“ Miscellaneous, - - -	- 58 87	
	<hr/>	\$81,429 35

*Cash paid the City Treasurer.*

Amount paid by the former Clerk, -	\$965 43	
For Grass, at sundry places, -	186 00	
“ Wood, - - - - -	108 00	
“ Land, - - - - -	3,431 90	
“ Labor and Material, - -	238 26	
“ One Horse, - - - - -	150 00	
“ Posts and Rails, - - - -	108 70	
“ Shutting off and on Water, -	2,001 75	
“ Service Pipe and Laying, -	650 39	7,840 43
	<hr/>	<hr/>
Balance,		\$73,588 92
		<hr/>
Amount of Expenditures,		81,429 35

## EXTENSION OF THE WORK.

Main Pipe, - - - - -	\$17,182 22	
Service Pipe, - - - - -	10,846 61	
Laying Main Pipe, - - - -	1,458 88	
Wages, Laying Main Pipe, -	6,223 93	
“ “ Service Pipe, - - - -	3,940 05	
“ Proving Yard, - - - - -	3,423 77	
Lake, on account of new Dam, -	6,116 80	
Stop-cocks, - - - - -	688 04	
Hydrant and Stop-cock Boxes, -	396 01	
Hydrants, - - - - -	577 71	
Tools, - - - - -	297 27	
Land and Water Rights, - -	175 00	
Blacksmith Shop, Labor, &c., -	403 75	
	<hr/>	<hr/>
<i>Amounts carried forward,</i>	\$51,730 04	\$81,429 35

<i>Amounts brought forward,</i>	\$51,730 04	\$81,429 35
Plumbing Shop, Labor, &c., -	398 17	
Carting, — carting pipes, &c., -	460 00	52,588 21
		<hr/>
Amount of Annual Expense,		\$28,841 14
(Including the expense of the Water Registrar's office.)		

*Statement of the Expenditures and Receipts, on account of the  
Water Works, to Jan. 1st, 1857.*

Amount drawn by the Commissioners, -		\$4,043,718 21
“ “ “ Water Board, 1850, -		366,163 89
“ “ “ “ “ 1851, -		141,309 23
“ “ “ “ “ 1852, -		89,654 20
“ “ “ “ “ 1853, -		89,854 03
“ “ “ “ “ 1854, -		80,182 35
“ “ “ “ “ 1855, -		63,866 33
“ “ “ “ “ 1856, -		81,429 35
		<hr/>
		\$4,956,177 59
Amount paid to the City Treasurer		
by the Commissioners, -	\$47,648 38	
Amount paid to the City Treasurer		
by the Water Board, 1850, -	8,153 52	
Amount paid to the City Treasurer		
by the Water Board, 1851, -	5,232 38	
Amount paid to the City Treasurer		
by the Water Board, 1852, -	15,869 12	
Amount paid to the City Treasurer		
by the Water Board, 1853, -	4,621 40	
Amount paid to the City Treasurer		
by the Water Board, 1854, -	12,423 29	
		<hr/>
<i>Amounts carried forward,</i>	\$93,948 09	\$4,956,177 59



<i>Amounts brought forward,</i>	\$93,948 09	\$4,956,177 59
Amount paid to the City Treasurer		
by the Water Board, 1855,	- 9,990 38	
Amount paid to the City Treasurer		
by the Water Board, 1856,	- <u>7,840 43</u>	<u>111,778 90</u>
		\$4,844,398 69
Sundry payments by the City, -	\$46,860 44	
Discount and interest on loans,	<u>2,368,838 99</u>	<u>2,415,699 43</u>
		\$7,260,098 12
Sundry credits by the City, -	\$7,240 45	
Amount rec'd for Water Rates,	<u>1,473,617 92</u>	<u>1,480,858 37</u>
Amount due, January 1st, 1857,		<u><u>\$5,779,239 75</u></u>

SAMUEL N. DYER,

*Clerk Cochituate Water Board.*



# A P P E N D I X .

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## CITY ENGINEER'S REPORT.

BOSTON, JANUARY 5, 1857.

HON. JOHN H. WILKINS,

*President of the Cochituate Water Board.*

SIR:—The usual Annual Report of matters pertaining to the Water Works is herewith submitted.

*Lake Cochituate. Purity of the Water.*

During the entire year of 1856, the water in the Lake has been quite as pure as at any time since its introduction into the City. There has, also, been an abundant supply of water in it throughout the year.

On the 28th of January, holes were cut through the ice in different parts of the Lake, and water was drawn from a depth of sixty feet, and from various lesser depths. There was no perceptible difference to the taste, in the water, but it all appeared pure and sweet.

During the entire season the water has been allowed to flow freely over the meadows connected with the Lake, and with Snake Brook; and it has, at all times, been perfectly good.

June 20th, the outlet of Dug Pond was opened, and kept

so until it had drawn the pond down two feet. The water was not needed for use, but it was thought best to keep up the circulation. This pond is invariably filled up in the winter.

#### *New Dam.*

The dam originally built at the outlet of the Lake, is underlaid by a bed of quicksand. Whenever the Lake was full, or nearly so, a great many springs boiled up through it outside of the dam; some of them within thirty or forty feet of it, others at distances of one and two hundred feet from it. The amount of water thus lost from the Lake, has not, to the present time, been a matter of any moment, because, without it, the supply of water has been ample; the time will soon come, however, when it will all be wanted. The springs, or a part of them, were constantly bringing out small quantities of sand, and to such an extent, that it was considered unsafe to keep the Lake full, unless back water could be kept on the dam. This has, accordingly, been done, during the greater part of the year. At one time, a very considerable leak occurred through the dam, about six feet below high water mark in the Lake. It was, with considerable difficulty, stopped, and it became necessary to draw down the water from this part of the Lake to save the dam. The means of keeping up back water consisted in part of a very small temporary wooden dam, on the outlet stream, below the main dam, which had been used as an over-fall, for the measurement of the quantity of water wasted and leaking from the Lake.

Still lower down the stream, the dam of the upper mill privilege backed the water up to the small dam. These dams having both become very much out of repair, they were in danger of breaking away at any moment; consequently they required close watching, in order that if either of them broke away, immediate measures might be taken to reduce the level of the water in the Lake.

The dam at the mill was particularly examined with reference to its being repaired for the purpose of keeping water backed up to the main dam. Several other sites for new dams were examined; and it was finally concluded, by your Board, to commence the construction of a new dam near the present one. A point was chosen, at a distance of 460 feet outside of the present dam, because the soundings showed that the bottom was composed principally of gravel, whilst all other points nearer the Lake gave positive assurance of quicksand. Its construction was commenced on the twentieth day of October. A row of piling, eight inches thick, has been driven to depths of from fifteen to twenty feet in the gravel. They were tongued and grooved, each pile being ringed, and great care was taken to keep the joints close.

The dam is to have an over-fall of eighteen feet in length, divided into three parts, by walls of heavy masonry, the over-fall of the dam being two feet below high water mark in the Lake. Stop-planks are to be inserted in the dam, from bottom to top, so that, in case of need, the Lake may be drawn down as low as by the present dam. When finished its over-fall will afford a ready means of measuring the surplus water hereafter. It is important, in view of the large increase in its use in the City, to know as accurately as possible the full amount which the Lake will afford, and it will be advisable to have constant measurements made.

#### *Consumption of Water in the City.*

Three days in the last week of July, the consumption of water exceeded 19,000,000 gallons per day; the average of the last eight days in July, was 17,550,000 gallons per day, the mercury in the shade at noon ranging from 86 to 94 degrees, whilst in the previous portion of the month, with comparatively comfortable weather, the average daily consumption was but 11,640,000 gallons.

In the month of December, the average daily consumption

in moderate weather, was 12,500,000 gallons; whilst on the 18th, 15,287,000, and on the 19th, 17,894,000 gallons were used, the mercury on these two last days having fallen eight degrees below zero.

On the days of the greatest consumption, the residents on the higher parts of Beacon Hill and East Boston were entirely deprived of water.

The increase of houses and buildings is almost entirely on the low grounds of the city, and this is constantly drawing more and more water from the higher parts of the city.

#### *New Main from Brookline to the City.*

As there does not appear to be any very effectual method of abating the waste of water in the City, it is best that the subject of laying another large main, from the Brookline Reservoir to the City, should receive your earliest attention. Should it be determined at once to lay it, so much time would be required in getting the pipes cast, and all the necessary labor of proving, trenching, and laying them, that it is scarcely possible that they could be ready for use before there would be actual suffering for the want of the water, in extreme hot, as well as in extreme cold weather, in East Boston, at least. Additional pipes may be laid in East Boston, which will, to some extent, relieve the low grounds there; but even then there will be quite as much necessity for the new pipes by the time they can be laid. The streets in Brookline, through which they would most likely be laid, are already occupied with the two lines now in use, and they are laid in a trench, which is much of the way through rock, which required blasting. In laying other pipes in the rock, by the side of the present ones, great care would be required, and it is not likely that blasting could be resorted to, because of the great probability, not to say certainty, of breaking the pipes now laid. For these reasons it would take much more

time to lay another line of pipes than was originally required to lay both of the present lines, which are in one trench. The Gate House in Brookline, when built, was expressly prepared to receive the third pipe, and, therefore, very little expense would be required there to receive it.

Some surveys and estimates would be necessary before determining the best route, as well as the most suitable size to be laid, and its cost.

*Lake Cochituate.—Its Capabilities of Supply.*

Before determining what amount of expense should be incurred in laying new mains from Brookline Reservoir to the City, it is important to know the amount of supply afforded by Lake Cochituate. By knowing the amount used in the City in any one year, and also the amount wasted and lost by leakage from the Lake, we know its capability of supply for that year. If, for the same year, we know that the total annual fall of water, in the form of rain and snow, is just about the average annual amount for a series of years, we may rely upon it as the amount which we may derive from the Lake, provided we give it sufficient storage room.

Loammi Baldwin, Esq., in 1834, made a gauge of this Lake, from which he obtained 16,156,800 gallons, as its flow in twenty-four hours.

By the observations and computations made by the Commissioners of 1837 and 1838, they concluded that the flow from the Lake was at the rate of  $15\frac{1}{2}$  cubic feet per second, equal to 9,909,500 gallons per day, from July 27th, 1837, to July 27th, 1838. (See City Document, No. 33, of 1838, p. 7.) This, with one exception, was a year of greater drought than any other for the preceding twenty years, according to the observations made by Dr. Hale, in Boston; the total rain fall for 1837, being only 29.98 inches. From November, 1837, to November, 1838, the discharge from the Lake was 21.82 feet per second, equal to 14,101,600 gallons per day.

The Commissioners of 1845, pp. 59 to 67, instituted a series of experiments, from July 30th to Nov. 1st, in that year — a period of three months — to determine the capabilities of supply of the Lake. By their observations, and comparisons with previous gaugings, they estimated that the daily average which the Lake would afford, was equal to 10,176,570 gallons per day. This estimate was made on the basis that the area of drainage into the Lake, 11,400 acres, equal to 496,584,000 square feet, would afford 4-10 of the 30 inches (29.98) of rain fall in the year of great drought, 1837. This, it will be observed, was given by them as an estimate of the least quantity to be obtained from the Lake.

All the observations which have since been made show a much larger amount of rain fall in each year than that of 1837, and, as a natural consequence, a much larger amount of water has been afforded by the Lake.

In the year 1850, water was wasted from the outlet dam at the Lake, from April 12th to the end of the year, but no estimate seems to have been made of the quantity thus wasted. The greatest quantity used in that year was in July, when the average daily amount was 8,514,200 gallons. The least amount used was in October, equal to 4,504,300 gallons daily, whilst the average for the whole year was but 5,837,900 gallons daily.

In 1851, the greatest average amount used was 7,925,000 gallons, in the month of June. The least was 5,365,200 gallons, in April. The daily average for the whole year was 6,883,800 gallons. During the year water was wasted from the Lake, from January 1st to July 1st, equal to 182 days in succession. The total amount lost was estimated to be equal to 4,892,472,480 gallons, equal to 13,404,034 gallons for each day of the entire year. This, added to the amount used, shows the Lake to have been capable of affording a daily average of 20,287,834 gallons, for the entire year, had provision been made for its storage. The rain gauge was kept for only a few months at the Lake in this year.



In 1852, the greatest average amount used was 9,608,000 gallons, in the month of July. The least was 6,637,900 gallons, in November. The daily average for the whole year was 8,125,800 gallons. During the year water was wasted from the Lake, from January 1st to May 24th, equal to 144 days in succession. The total amount lost was estimated to be equal to 4,020,566,885 gallons, equal to 11,015,251 gallons for each day of the entire year. This, added to the amount used, shows the Lake to have been capable of affording a daily average of 19,141,051 gallons for the entire year, had it been stored.

The rain gauge kept at the Lake shows a total fall of 47.93 inches in the year. Taking the proportion of the rain fall (4-10) as used by the Commissioners of 1845, and we should have had a daily average supply, for this year, of 16,258,766 gallons; but we have an excess over this of 2,882,285 gallons per day.

In 1853, the greatest average amount used was 9,228,400 gallons, in December. The least was 7,903,600 gallons, in April. The daily average for the whole year was 8,542,300 gallons. During the year water was wasted from the Lake, from January 26th to June 18th, and at various other times throughout the year; in all, 194 days. The total amount lost was estimated to be equal to 3,166,417,500 gallons, equal to 8,675,117 gallons for each day of the entire year. This, added to the amount used, shows the Lake to have been capable of affording a daily average of 17,217,417 gallons for the entire year, had it been stored.

The rain gauge kept at the Lake shows a total fall of 55.86 inches in the year. Taking the proportion of the rain fall, (4-10) as in 1852, and we should have had a daily average supply, in that year, of 18,945,381 gallons. The measurements and estimates of quantities used and wasted being 17,217,417 gallons, show an average of 1,727,964 gallons, less than 4-10 of the entire rain fall. This is accounted

for by the fact that heavy storms occurred in November and December, and large quantities were stored and kept over until 1854, in which year there was an excess of water used and wasted over the amount stored.

In 1854, the greatest average amount used was 11,745,200 gallons, in June. The least was 8,030,200 gallons, in November. The daily average for the whole year was 9,902,000 gallons. During the year water was wasted from the Lake, from January 1st to May 30th, constantly, and for some days in June; in all 154 days. The total amount lost was estimated to be equal to 4,187,733,020 gallons, equal to 11,473,241 gallons for each day of the entire year. This, added to the amount used, shows the Lake to have been capable of affording a daily average of 21,375,241 gallons for the entire year, had it been stored.

The rain gauge kept at the Lake shows a total fall of 43.15 inches in the year. Taking the proportion of the rain fall, (4-10) as before, and we should have had a daily average supply, in that year, of 14,637,300 gallons; but we have an excess over this of 6,737,941 gallons per day. The excess of water this year was owing to the fact that much of the rain which fell in 1853, was wasted in large quantities early in this year, it having been stored over from 1853.

In 1855, the greatest average amount used was 11,710,800 gallons, in the month of September. The least was 8,540,000 gallons, in April. The daily average for the whole year was 10,346,300 gallons. Water was wasted from the Lake, from January 15th to March 5th, and at various other times; in all, 76 days during the year.

The rain gauge kept at the Lake shows the total fall to have been only 34.96 inches during the entire year.

There does not appear to have been any account kept of the amount wasted from the Lake during the year, owing, no doubt, to the fact that the temporary dam at which the gauge was kept, had become so out of repair as to be unreliable.

In 1856, the greatest average amount used was 13,284,007 gallons, in December. The least was 10,377,865 gallons, in May. The daily average for the whole year was 12,048,964 gallons. During the year water has been wasted from the Lake, in various months; in all, 69 days.

The rain gauge kept at the Lake shows the total fall to have been 40.8 inches during the entire year.

No account of the waste from the Lake has been kept, because the temporary dam before spoken of had become useless for this purpose, and because the arrangement of the outlet dam, as originally constructed, did not permit of measurements being kept with any degree of accuracy at it. The new dam, when finished, with its wide over fall, will obviate this difficulty.

From the above observations and measurements, it would seem that there could be no doubt that Lake Cochituate could be made to furnish an average daily supply of 16,000,000 gallons, or even a greater amount, by storing all its waters, one year with another. The precise amount of expense necessary to accomplish this, can only be determined by surveys to be made hereafter. The amount of supply which may be added to it, by taking other ponds and streams, is also a matter for determination hereafter.

### *The Conduit.*

On the 4th of February a portion of the embankment, over the conduit, near Morse's Pond, was washed off by the pressure of the water through an old crack in the conduit. It was temporarily repaired at the time, and in April it was thoroughly repaired.

In July, about four hundred feet in length, of the bottom of the conduit in Newton Centre, was repaired, and is now in good condition.

During the coming season it will be necessary to repair about fifty feet in length, near Webber's barn, in the third

section; about three hundred feet, near Knowles's road, in the same section; and about two hundred feet in length, near Morse's pond, in the first section.

Several examinations of the conduit were made during the season. No new cracks were discovered. It was thoroughly cleansed in July, between Charles River and Brookline Reservoir.

The form of the conduit is, as is well known, an egg-shaped oval, with a clear height of 6 feet 4 inches, and greatest width 5 feet, the largest end being down. The original estimates of its flow, as made by Robison's formulæ, corrected by observations on the flow of the Croton Aqueduct, gave, for a depth of 3 feet 10 inches, 8,305,000 wine gallons in twenty-four hours; and for a depth of 4 feet 4 inches, a flow of 9,430,000 gallons in twenty-four hours. It will be observed that the greatest depth then calculated for the water in it, left two feet of clear space in the conduit, above the water. From all previous experience, it was judged that it would be unsafe to fill it any nearer full, and it, therefore, in its estimated flow, partook of the nature of a canal, covered over only for the purpose of keeping impure matters from the water, in its course to the City. The conduit was built with American hydraulic cement. It has been repaired in the quicksands, and some other portions, by the use of Portland (English) cement, and is now, in such places, quite as strong as in any other part of it.

Instead of having water flowing in it, at a depth of only 4 feet 4 inches, it has been filled entirely full, and it has had a head on it, at times, above its top, of over two feet, thus making it in effect a pipe.

When the repairs are made, which are suggested above, with some additions to the thickness of some parts of the embankments, there can be no doubt that it can, with perfect safety, have such a head put on it as will cause it to deliver 20,000,000 gallons daily, in Brookline Reservoir.

*Charles River Pipes.*

The pipe chambers at Charles River were designed for *three* pipes. *Two* only have as yet been laid. These two have sufficed thus far; when the third is laid, with the additional head on the conduit, it is clear that we shall have an increase of more than fifty per cent. over the delivery of the present ones. If the incrustations still continue, they may be readily cleansed, and restored to their original capacities at slight expense.

*Meters.*

The two large meters have been removed during the past fall, from the Brookline Gate House. They were found not to answer the purpose for which they were designed. There is a small leak in the Gate House, which may be repaired in the spring, now that the meters are out of the way.

*Structures.*

There are some signs of settlement in the apron way of the small Gate House, at the end of the conduit, at Brookline Reservoir. With this exception, and the leak in the Gate House, all the structures on the line of the works are in good order.

*Raising Pipes on Tremont Street.*

When the pipes were first laid in the City, Tremont street, south of Dover street, was at a very low grade, and all the pipes laid there, at that time, were laid at the usual depth below the surface. Since then the grade has been raised several feet, and all the pipes laid there since, have been laid at the usual depth below the new surface. Many houses have been built, within the past year or two, on the street; and, it appearing probable that it would very soon be all built upon, it became a matter of importance to raise that

portion of the 12-inch pipe which was at the lowest grade. In doing this it became also necessary to raise those 6-inch pipes branching from it to the side streets. All the 12-inch and part of the 6-inch pipes were at a depth, generally, of twelve feet below the surface. Whenever a service-pipe was laid, great trouble was experienced by caving in, endangering the lives of the workmen, as well as being extremely expensive. It was, therefore, determined by your Board to raise the pipes, and 1,851 feet of 12-inch, and 844 feet of 6-inch pipes have been raised.

*Average Monthly Heights of Water in the Reservoirs at Brookline, Beacon Hill, South Boston and East Boston, 1851 — 1856.*

MONTH	BROOKLINE.					BEACON HILL.					SOUTH BOSTON.					EAST BOSTON.									
	1851	1852	1853	1854	1855	1856	1851	1852	1853	1854	1855	1856	1851	1852	1853	1854	1855	1856	1851	1852	1853	1854	1855	1856	
JAN. . .	124.24	123.91	122.46	123.55	124.02	120.44	117.91	117.73	115.08	113.34	118.84	115.87	.....	113.87	114.05	108.39	113.41	109.83	106.63	105.64	100.32	100.73	89.45		
FEB. . .	123.42	124.04	122.51	123.72	123.91	123.71	118.59	118.23	113.87	115.49	117.16	116.86	117.65	114.91	113.78	111.55	114.64	109.80	107.54	103.74	95.43	92.08	87.17		
MAR. . .	123.25	124.18	122.86	123.49	124.30	123.50	120.67	118.96	115.62	117.48	119.47	116.87	119.41	115.92	114.96	111.83	114.41	109.86	107.03	103.74	92.99	97.61	90.05		
APRIL,	122.75	124.43	123.42	123.07	124.37	124.18	120.11	119.32	116.64	117.34	119.68	118.48	118.61	116.41	115.88	120.56	115.63	109.58	.....	106.92	101.87	99.68	95.33		
MAY, . .	122.66	122.55	122.67	122.35	124.17	124.27	118.72	116.85	114.42	118.36	119.27	118.03	117.86	113.69	114.12	119.99	112.38	107.64	100.79	103.50	102.07	100.64	99.36		
JUNE, . .	123.23	124.29	123.13	122.63	123.48	124.25	119.02	116.64	114.08	117.13	113.59	113.42	111.29	113.13	111.92	118.55	115.10	109.30	106.57	104.22	98.33	98.29	101.05		
JULY, . .	122.67	124.53	122.86	123.99	124.05	123.72	120.28	115.85	114.46	116.54	117.84	114.92	112.95	115.48	111.94	116.87	114.32	109.73	104.32	99.76	90.19	94.98	91.31		
AUG. . .	122.01	124.59	123.67	124.37	123.60	124.02	118.70	115.85	115.08	114.40	117.47	116.84	114.38	116.73	112.29	113.31	113.60	110.65	100.70	100.88	99.39	95.30	94.15		
SEPT. . .	124.12	124.25	122.83	124.61	122.33	124.12	119.73	114.33	114.16	115.22	117.41	115.92	116.93	112.99	111.22	114.46	112.16	108.70	99.52	103.28	102.56	94.42	94.68		
OCT. . . .	123.80	123.25	122.77	124.70	123.38	123.97	119.75	116.08	115.32	114.93	117.92	116.41	117.76	115.50	111.45	114.89	111.62	107.68	103.15	103.25	102.56	96.90	95.18		
NOV. . . .	124.42	122.64	122.93	124.70	124.19	123.98	119.90	116.14	115.19	114.93	117.91	115.77	118.39	115.91	112.22	115.00	102.06	107.55	105.30	105.73	102.74	100.23	96.94		
DEC. . . .	123.80	122.45	122.53	122.70	123.45	123.79	119.36	113.27	114.79	113.12	116.88	114.40	116.51	114.61	111.28	111.54	108.98	109.84	103.20	106.16	100.61	98.39	94.65		
Average,	123.36	123.67	122.86	123.65	123.82	123.66	119.39	116.60	114.89	115.69	117.79	116.15	116.52	114.93	112.92	115.24	112.35	109.18	104.07	104.91	99.84	97.49	94.11		

NOTE. — The above average heights are given in feet, and parts, above marsh level. Maximum high water in the Brookline reservoir is 124.6 feet above marsh level. By deducting the heights in the City reservoirs from the heights in the Brookline reservoir, in each month, we find the loss of head in the different sections of the City at that time.

*Loss of Head from Brookline Reservoir to Beacon Hill and East Boston Reservoirs.*

The effect of increased consumption of water in the City may be seen by reference to the table in this and previous reports of *average annual heights of water in the Reservoirs.*

A synopsis is given in the following table.

YEAR.	Heights of Water above Marsh Level in			Loss of Head from Brookline to Beacon Hill Reservoir.	Loss of Head from Brookline to East Boston Reservoir.
	Brookline Reservoir.	Beacon Hill Reservoir.	East Boston Reservoir.		
1850 .....	123.16	119.04	.....	4.12	.....
1851 .....	123.36	119.39	105.06	3.97	18.30
1852 .....	123.67	116.60	104.07	7.07	19.60
1853 .....	122.86	114.89	104.91	7.97	17.95
1854 .....	123.65	115.69	99.84	7.96	23.81
1855 .....	123.82	117.79	97.49	6.03	26.33
1856 .....	123.66	116.15	94.11	7.51	29.55

Extreme high water in Brookline Reservoir is 124.6 feet, and it will be seen that Brookline Reservoir has averaged, during the last three years, within one foot of high water mark in it; that Beacon Hill Reservoir has averaged very nearly a uniform depth, in the same time; whilst the water in the East Boston Reservoir is constantly decreasing in its average height.



To show the effect on the *head*, occasioned by a few successive hot, as well as a few successive cold days, the following table is inserted.

1856.		Heights of Water above Marsh Level in			Loss of Head from Brookline to Beacon Hill Reservoir.	Loss of Head from Brookline to East Boston.
DATE.	Mercury in Shade.	Brookline Reservoir.	Beacon Hill Reservoir.	East Boston Reservoir.		
July 26,	94°	121.60	111.78	84.43	9.82	37.17
July 28,	91°	123.10	112.86	84.43	10.24	38.67
Dec. 19,	-8°	123.27	Empty. Water in Pipe, 105.36	Water in Pipe, 43.00	17.91	80.27

NOTE.—For twenty-four hours, December 19, water did not run over the hill in East Boston. In anticipation of extreme cold weather water is shut in the East Boston Reservoir, to be let on the pipes in case of fire.

The distance from Brookline Reservoir to Beacon Hill Reservoir is nearly 5.1 miles, and from Brookline to East Boston Reservoir it is over 8½ miles, by the lines of pipes.

1857, January 10th.—During the last few days, with the mercury below zero, Donald McKay, Esq., has been, most of the time, entirely out of water, it rising in the pipes to about 75 feet above marsh level, showing a loss of head equal to 49 feet.

## CONSUMPTION OF WATER.

*Daily Average Number of Wine Gallons drawn from the Brookline Reservoir.*

MONTHS.	1849	1850	1851	1852	1853	1854	1855	1856
January, .....	1,700,000	5,181,700	7,233,700	8,280,900	8,050,500	10,695,200	9,702,700	12,669,000
February, .....	.....	5,214,000	7,221,100	8,790,300	8,643,600	10,654,200	10,349,800	12,791,000
March, .....	1,550,000	4,841,200	6,137,900	8,521,100	8,202,200	9,582,100	10,125,600	12,504,000
April, .....	.....	4,961,000	5,365,200	8,048,700	7,903,600	8,738,500	8,540,000	10,800,000
May, .....	3,600,000	5,346,100	6,238,400	8,350,000	8,123,400	9,685,300	9,103,800	10,378,000
June, .....	4,300,000	6,906,500	7,925,000	8,033,100	8,945,900	11,745,200	9,984,400	11,223,000
July, .....	4,800,000	8,514,200	7,180,200	9,608,000	8,809,200	10,613,800	11,056,600	13,167,000
August, .....	4,100,000	8,004,600	7,235,000	9,709,300	8,461,900	10,028,100	11,120,800	12,664,000
September, .....	4,800,000	6,585,500	7,230,600	7,920,000	8,640,700	9,712,400	11,710,800	11,522,000
October, .....	4,550,000	4,504,300	6,716,600	6,930,000	8,871,100	8,769,800	10,771,200	11,891,000
November, .....	3,800,000	4,960,500	6,473,500	6,637,900	8,624,700	8,030,200	10,383,200	11,691,000
December, .....	3,600,000	5,037,000	7,663,400	7,195,800	9,228,400	10,597,600	11,307,200	13,284,000
Average for the year,	3,680,000	5,837,900	6,883,800	8,125,800	8,542,300	9,902,000	10,346,300	12,048,600

*Monthly Fall of Rain, in inches, in 1856.*

MONTH.	PLACES AND OBSERVERS.						
	Lake Cochituate, by E. F. Knowlton.	Boston, by J. P. Hall.	Lowell, by Merrimack Manufacturing Co. J. B. Frances.	Lowell, by Locks and Canals Co. J. B. Frances.	Waltham, by E. Hobbs.	Cambridge, by W. C. Bond.	Providence, by A. Caswell.
January, . . . . .	1.44	5.32	2.83	3.51	} 1.30	5.30	5.25
February, . . . . .	0.22	0.80	1.07	1.26		0.57	0.80
March, . . . . .	0.66	1.33	0.90	1.37	0.63	0.97	1.55
April, . . . . .	4.27	4.37	3.48	3.49	3.33	3.44	2.80
May, . . . . .	7.81	7.10	5.31	5.89	5.17	6.73	4.10
June, . . . . .	1.77	2.90	2.09	2.18	1.59	2.87	2.47
July, . . . . .	1.76	4.02	1.73	1.86	4.27	4.24	4.20
August, . . . . .	11.40	11.11	12.31	12.42	13.97	14.98	5.75
September, . . . . .	3.13	4.90	4.79	4.78	4.79	4.66	5.10
October, . . . . .	2.34	2.70	2.03	2.52	2.23	3.24	1.15
November, . . . . .	1.43	3.33	2.53	2.53	3.09	2.89	2.00
December, . . . . .	4.57	4.28	3.42	4.16	1.96	3.90	5.80
Average, . . . . .	40.80	52.16	42.49	45.97	42.33	53.79	40.97

The above table of rain fall has been again kindly furnished by the respective observers. By reference to the previous part of this Report, it will be seen that the record of the annual rain fall is important, as furnishing a means of estimating the supply to be derived from the Lake.

Professor Caswell informs me that the average for the past 25 years, in Providence, has been 40.30 inches.

*Statement of the Location, Size and Number of Feet of  
Distributing Pipes, laid in the Year 1856.*

IN WHAT STREETS.	BETWEEN WHAT STREETS.	Diam. of Pipe in inches.	Feet of Pipe.
<b>BOSTON PROPER.</b>			
Tremont, .....	Hanson and Milford, .....	12	136
Tremont, .....	Concord and Worcester, .....	12	225
Waltham, .....	Bradford and Harrison Avenue, .....	12	686
Tremont, .....	Milford and Groton, .....	12	168
	Total 12-inch in Boston Proper, .....		1215
Milford, .....	Shawmut Avenue and Tremont, .....	6	221
Indiana Place, .....	Connecting with Tremont, .....	6	214
Worcester, .....	Shawmut Avenue and Tremont, .....	6	247
Chester, North side, .....	Shawmut Avenue and Tremont, .....	6	366
South, .....	Connecting with Lehigh, .....	6	430
Groton, .....	Shawmut Avenue and Tremont, .....	6	510
East Chester, .....	Connecting at Harrison Avenue, .....	6	306
Camden, .....	Shawmut Avenue and Tremont, .....	6	250
Concord, .....	Washington and Tremont, .....	6	655
Lenox, .....	Tremont and Shawmut Avenue, .....	6	278
Parker, .....	Washington and Harrison Avenue, .....	6	129
Tremont, .....	Groton and Dover, .....	6	98
Groton, .....	Connecting with Tremont, .....	6	23
	Total 6-inch in Boston Proper, .....		3727
Avenue to People's Ferry, .....	East of Commercial, .....	4	264
London, .....	Connecting with Indiana Place, .....	4	68
Shaving, .....	Connecting with Federal, .....	4	383
Vernon, .....	Connecting with Lowell, .....	4	112
Ashland Avenue, North side, .....	Washington and Harrison Avenue, .....	4	275
Cumston, .....	Concord and Rutland, .....	4	235
	Total 4-inch in Boston Proper, .....		1337
<b>SOUTH BOSTON.</b>			
Midland, .....	Baldwin and Munroe, .....	6	250
O .....	To the North side of Broadway, .....	6	153
Granite, .....	Baldwin to Mount Washington Avenue, .....	6	1209
Eighth, .....	K and P .....	6	1335
First, .....	West of I .....	6	140
Third, .....	I and K .....	6	436
	Total 6-inch in South Boston, .....		3523
Telegraph, .....	Gates and Old Harbor, .....	4	100
	Total 4-inch in South Boston, .....		100
<b>EAST BOSTON.</b>			
White, .....	Marion and Brooks, .....	12	391
Meridian, .....	White and Condor, .....	12	757
Chelsea, .....	Porter and Marion, .....	12	300
	Total 12-inch in East Boston, .....		1448
Princeton, .....	Brooks and Putnam, .....	6	493
Border, .....	Eutaw and White, .....	6	482
Prescott, .....	Chelsea and Bremen, .....	6	27
Meridian, .....	Condor and the New Bridge, .....	6	204
Decatur, .....	East of Bremen, .....	6	192
Marginal, .....	Orleans and Cottage, .....	6	366
Havre, .....	Porter and Marion, .....	6	775
	Total 6-inch in East Boston, .....		2539
Chelsea Street, .....	Holden and Gallagher's Shipyard, .....	4	119
Border, .....	Curtis's Shipyard, .....	4	315
	Total 4-inch in East Boston, .....		434

## RECAPITULATION.

SECTION.	1856.	Diameter in Inches.		
		12	6	4
Boston Proper, .....	{ Total number of feet laid, .....	1215	3727	1337
	{ Stop-cocks in the same, .....	4	7	4
South Boston, .....	{ Total number of feet laid, .....	....	3523	100
	{ Stop-cocks in the same, .....	....	1	....
East Boston, .....	{ Total number of feet laid, .....	1448	2539	434
	{ Stop-cocks in the same, .....	1	2	2
	Sums of Pipes, .....	2663	9789	1871
	Sums of Stop-cocks, .....	5	10	6

*Statement of the Length of different Sizes of Pipes laid, and the Number of Stop-cocks put in, to  
January 1, 1857.*

DIAMETER OF PIPES IN INCHES.									
	36	30	24	20	16	12	6	4	AGGREGATE.
Feet of Pipe laid in Brookline, Roxbury, and Boston Proper, .....	19,355	30,332	5773	.....	5714	50,251	211,281	72,473	
Number of Stop-cocks in the same, .....	4	7	10	.....	12	99	428	185	
Feet of Pipe laid in and for South Boston and Dorchester, .....	.....	.....	.....	8,155	.....	12,461	61,810	18,410	
Number of Stop-cocks in same, .....	.....	.....	.....	4	.....	26	77	24	
Feet of Pipe laid in and for East Boston, .....	.....	.....	.....	15,972	1523	12,812	62,064	2,725	
Number of Stop-cocks in same, .....	.....	.....	.....	6	3	*18	83	13	
Feet of Pipe laid in Newton and Needham, .....	.....	1,958	.....	.....	.....	.....	.....	.....	
Number of Stop-cocks in same, .....	.....	.....	.....	.....	.....	1	.....	.....	
<b>TOTALS:</b>									
Length of Pipes laid, .....	19,355	32,290	5773	24,127	7237	75,524	335,155	93,608	593,069 ft., equal to 112 miles 1709 ft.
Number of Stop-cocks put in, .....	4	7	10	10	15	144	589	222	1,001

\* Including one in Branch, for State Prison Pipe.

Adding to the above, the length of the hydrant branches and bends, which is about 20,160 feet, or  $3\frac{3}{4}$  miles, and we have a little over 116 miles, as the total length of Pipes of 4 inches and upwards, in diameter, laid down in and for the City of Boston.

*Statement of Service Pipes laid in 1856.*

Diameter in Inches.	Boston Proper.		South Boston.		East Boston.		Total.	
	Number.	Length in Feet.	Number.	Length in Feet.	Numb'r.	Length in Feet.	Numb'r.	Length in Feet.
1	16	616	2	158	1	96	19	870
$\frac{3}{4}$	8	269	....	....	3	237	11	506
$\frac{5}{8}$	512	18,607	124	4396	166	5375	802	28,378
Aggregate, .....							832	29,754

Making the total number up to January 1, 1857, ..... 19,629

During the year, one thousand eight hundred and fifty-one feet of 12-inch pipes, and eight hundred and forty-four feet of 6-inch pipes, have been taken up, and re-laid, on Tremont road.

*Repairs of Pipes during the Year 1856.*

Where.	DIAMETER OF PIPES IN INCHES.													Total.
	36	30	24	20	16	12	6	4	2	1½	1	$\frac{3}{4}$	$\frac{5}{8}$	
Boston Proper, .....	5	3	....	....	1	9	25	17	2	44	8	6	130	250
South Boston, .....	....	....	....	2	....	....	....	1	....	....	1	....	16	20
East Boston, .....	....	....	....	4	1	3	2	2	....	....	....	6	19	37
Totals, .....	5	3	....	6	2	12	27	20	2	44	9	12	165	307

Of the leaks that have occurred in pipes of four inches in diameter and upwards, fifty-nine were caused by the loosening of lead in the joints, six by the settling of the earth, seven by frost, and one by a flaw in the stop-cock, one by driving piles, and one by flaw in the pipe. Total, *seventy-five, in pipes of 4 inches and upwards.*

Of the leaks that have occurred in the service pipes, and two-inch pipes, fifty-seven were caused by settling of the earth, six by defective stop-cocks, twenty-four by defective couplings, nine by frost, forty-nine by flaws in pipes, thirty-one by stiff connections, two by leaks in joints, nine by settling of boxes, six by tenants, one by rats, one by stop-cocks blowing out, nine struck by picks, three by driving piles, three by digging drains, one by rust, one by defective packing, twenty opened to take out fish. Total, *two hundred and thirty-two in service and two-inch pipes.*

*Statement of the Number of Leaks, 1850-56.*

LEAKS IN PIPES OF A DIAMETER OF			
YEAR.	4 Inches and upwards.	Less than 4 Inches.	Total.
1850 .....	32 .....	72 .....	104
1851 .....	64 .....	173 .....	237
1852 .....	82 .....	241 .....	323
1853 .....	85 .....	260 .....	345
1854 .....	74 .....	280 .....	354
1855 .....	75 .....	219 .....	294
1856 .....	75 .....	232 .....	307



*Hydrants.*

During the year fifteen new hydrants were established in the City proper, eight in South Boston, six in East Boston, also one in Roxbury. Altogether there have been established up to the present date

In Boston proper, - - - - -	871
“ South Boston, - - - - -	224
“ East Boston, - - - - -	163
“ Brookline, - - - - -	1
“ Roxbury, - - - - -	5
“ Charlestown, - - - - -	11
“ Chelsea, - - - - -	7
	<hr/>
Total, - - - - -	1,282

Fifty-five hydrants have been taken out and replaced by new or repaired ones. One hundred and twenty-seven decayed hydrant boxes were taken out and replaced by others made of Burnetized lumber, and the same material was used to cover thirty hydrants that have been established this year.

The hydrants are all in good condition, and have been packed with salt hay, and every precaution taken to keep them in a working condition through the cold weather.

*Stop-cocks.*

All the stop-cocks have been cleansed and oiled the past season. Twenty-one new boxes have been put in to cover the stop-cocks put in this year, and forty-nine boxes have been renewed. The stop-cocks are, with two or three exceptions, in good order.

*Statement of Pipes and other Stock on hand, exclusive of  
Tools, January 1, 1857.*

Number of	DIAMETER IN INCHES.										Jamaica Aqueduct.
	36	30	24	20	16	12	6	4	2	1½	10
Pipes, .....	5	70	9	33	22	84	44	17	....	33	5
Blow-off Branches, .....	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Y Branches, .....	.....	1	.....	.....	1	2	1	.....	.....	.....	.....
3-Way Branches, .....	4	4	....	2	3	2	7	4	.....	.....	.....
4-Way Branches, .....	.....	2	1	....	1	5	5	.....	.....	.....	.....
Flange Pipes, .....	8	9	2	2	.....	.....	.....	.....	.....	.....	.....
Sleeves, .....	5	4	9	3	3	3	13	5	41	....	.....
Clamp Sleeves, .....	.....	6	2	....	3	1	5	10	.....	.....	2
Caps, .....	.....	2	.....	.....	1	12	25	9	.....	.....	.....
Reducers, .....	.....	1	....	1	1	1	6	.....	.....	.....	.....
Bevel Hubs, .....	.....	.....	.....	.....	.....	.....	4	3	.....	.....	.....
Curved Pipes, .....	4	3	1	2	2	2	....	6	.....	.....	.....
Quarter Turns, .....	.....	.....	.....	4	....	7	7	5	.....	.....	.....
Double Hubs, .....	.....	.....	.....	7	7	....	1	.....	600	.....	.....
Offset Pipes, .....	.....	.....	.....	.....	.....	1	5	1	.....	.....	.....
Stop-cocks, .....	4	2	2	3	3	2	2	8	5	....	2
Pieces of Pipe, .....	4	1	2	5	....	11	21	8	.....	.....	1

*Hydrants.*

5 Wilmarth,  
5 Lowell,  
3 Kingston,  
2 Hooper,  
8 Ballardvale,  
4 Long N. Y. Pattern.

*For Hydrants.* 15 lengtheners, 11 hydrant bends, 5 frames, 10 covers, 4 boxes, 25 unfinished boxes, 30 second hand caps, 3 wharf hydrants, 47 wastes, 309 lbs. composition castings, 15 spare screws, 3 plungers, 10 stuffing boxes, 9 nipples, 25 unfinished hydrants with screws, nipples, plungers, valves,

&c., belonging to same, 5 wharf hydrant boxes, 1 sample hydrant, 20 wharf hydrant cocks, 10 bands, 36 rings, 150 straps, 150 washers.

*For Stop-cocks.* 35 stop-cock braces, 8 sets of stands and gearing for 36 and 30-inch, 25 wrought iron nuts, 13 4-inch flanges, 739 lbs. of  $\frac{5}{8}$ -inch bolts, 197 lbs.  $\frac{7}{8}$ -inch bolts, 164 lbs. of  $\frac{3}{4}$ -inch bolts, 152 lbs.  $1\frac{1}{8}$ -inch bolts, 319 lbs. inch bolts, 109 lbs.  $\frac{1}{2}$ -inch bolts, 2 36-inch composition screws, 1 12-inch valve, 8 cast iron nuts, 1 30-inch composition screw, 6 6-inch composition screws, 18 6-inch wrought iron screws, 8 4-inch wrought iron screws, 4 sets of friction wheels, 350 lbs. of old bolts (various sizes), 2 2-inch stop-cocks (not in order), 3 12-inch screws, 2 sample cocks, 11 4-inch gate caps, 2 6-inch gate caps, 1 30-inch valve.

*For Service Pipe.* 450 square boxes, 46 long boxes, 6 Y boxes, 2 T boxes, 90 caps, 37 tubes, 3 4-inch cocks, 8 flanges and 2 caps for do., 10 inch air cocks, 2 1-inch union cocks, 8  $\frac{3}{4}$ -inch do., 45  $\frac{5}{8}$ -inch do., 17 straight cocks, 14 inch T cocks, 4  $\frac{3}{4}$ -inch T cocks, 10  $\frac{5}{8}$ -inch T cocks, 11  $\frac{5}{8}$ -inch Y cocks, 189  $\frac{5}{8}$ -inch flange cocks, 14  $1\frac{1}{4}$ -inch connection couplings, 11 inch connection couplings, 28  $\frac{5}{8}$ -inch connection couplings, 9  $2\frac{1}{2}$ -inch connection couplings, 214 lbs. of old couplings of various sizes, 334 lbs. of union cock castings, 36 composition flanges.

*Water Meters.* 28 large meters, (2 are out of order), 27 small meters, (2 are out of order), 2 power meters, 1 small Philadelphia meter, 600 lbs. of connection pipes, 40 connection nipples, 16 connection couplings.

*Lead Pipe.* 1,100 lbs. of  $2\frac{1}{2}$ -inch, 1,120 lbs. of inch, 1,205 lbs. of  $\frac{5}{8}$ -inch, 322 lbs. of  $1\frac{1}{4}$ -inch, 336 lbs. of  $\frac{3}{4}$ -inch.

*Block Tin Pipe.* 84 lbs. of  $\frac{3}{4}$ -inch, 135 lbs. of  $\frac{5}{8}$ -inch, 68 lbs. of  $\frac{3}{4}$ -inch (old), 41 lbs. of  $\frac{5}{8}$ -inch (old), 16 lbs. of  $\frac{3}{8}$ -inch, 53 lbs. of  $\frac{1}{4}$ -inch.

*Block Tin.* 47 lbs., 60 lbs. of solder, 650 lbs. of gasket.

*Pig Lead.* 1,445 lbs.

*Blacksmith Shop.* 3,409 lbs. of working iron, 236 lbs. of cast steel, 700 lbs. of scrap iron.

*Miscellaneous.* 15,000 feet of Burnetized 2-inch plank, 1,000 feet of boards, 2 sets of stove box coverings, 1,900 lbs. of scrap cast iron,  $1\frac{1}{2}$  cords of pine wood, 2 large proving presses and apparatus, 1 small proving press,  $\frac{1}{2}$  cask of rosin,  $\frac{1}{2}$  cask of cement, 1 bbl. of oil, 2 tons of hard coal,  $\frac{1}{2}$  ton of blacksmith coal, 30 baskets of charcoal,  $\frac{1}{2}$  carboy of vitriol,  $\frac{1}{2}$  bbl. of black varnish, 2 dozen new shovels, 50 picks, 1 set of carpenter's tools, 1 bbl. of old composition (354 lbs.), 620 lbs. of composition chips, 80 lbs. of cotton waste, 4 dozen new lanterns, 2 casks of nails, 1,100 lbs. of old scraps, bars, gas pipe, &c.; miscellaneous lot of old bolts, cast-off drills, and tools of various kinds, a large lot of patterns for stop-cocks, hydrants, &c.

*Stable.* 800 lbs. English hay, 1,500 lbs. salt hay, hay cutter, 2 horses, 3 sets of harnesses, 2 waggons, 2 pungs, 3 hand-carts, 1 wheelbarrow, 1 hand-truck, 6 bushels of grain, stable utensils.

*At the Reservoir, Beacon Hill.* 1 cast iron drinking fountain, 5 swivel pipe patterns, 1 copper ball from East Boston Reservoir, 38 feet of  $3\frac{1}{2}$ -inch shafting and gearing, 17 feet of  $2\frac{1}{2}$ -inch do., 14 feet of  $2\frac{1}{2}$  inch square do., lot of iron rods, 2 sets of swing stage-irons, 2 sets of wall clamps, 1 swing stage with clamps complete, 1 stone block, 3 mast rings and rolls, 1 capstan frame with levers, 6 hand-barrows, 3 hods, 2 dirt slides, 1 fall, 3 booms, rail carriages, 2 stone carts, 2 strainer frames, 115 feet of round iron, guys for derrick, 1 iron plate for do., 3 shaft hangers, 7 pedestals, 2 stone lewises, lot of old iron, 4 wrenches, 6 shovels, 2 hammers, 1 sledge, lot of small tools, 1 composition reducer, 4 jets (cast iron), 2 composition jets, 6 waste cocks, 2 pieces of hose, piece of copper pipe, 1 composition cylinder, 6 composition jets, 1 composition 6-inch plate, 1 4-inch do., 1 3-inch do., 5 cast iron jets, 2 scythes, 2 rakes.

The flexible pipe between Chelsea and East Boston was tested four hours, in September, and found to be tight, no water leaking from it in that time.

Respectfully submitted.

JAMES SLADE,

*City Engineer.*

## WATER REGISTRAR'S REPORT.

WATER REGISTRAR'S OFFICE, }  
 Boston, January 1st, 1857. }

HON. JOHN H. WILKINS,

*President of the Cochituate Water Board.*

SIR:—

I herewith submit the following Report, prepared according to the provisions of the Water Ordinance, passed October 31st, 1850.

The total number of Water Takers now entered for the year 1857, is 20,806, being an increase since January 1st, 1856, of 808.

During the year there has been 1,008 cases where the water has been shut off for non-payment of water rates, and unnecessary waste of water. Of these, 678 were for non-payment; 330 were for waste.

The number of cases where the water has been turned on is 1,594. Of these, 583 were cases which had been previously shut off for non-payment of water rates; 286 were those which had been shut off for unnecessary waste of water; and 725 were let on for the first time.

There have been *no abatements* made during the year.

The total amount received, from December 31st, 1855, to January 1st, 1857, is - - - \$282,651 84

Of the above, there was received for water used in previous years, the sum of \$1,617 40

Leaving the receipts for water used during the year 1856, the sum of 281,034 44

Amount of water rates, - - - - \$282,651 84

*Amount brought forward,* \$282,651 84  
*A detailed statement of the receipts for the year 1856, is included in this Report.*

In addition to the above, there has been received, for letting on water, in cases where it had been shut off for non-payment of water rates, 1,140 00

Total amount received during the year, in this office, - - - - - \$283,791 84

The total amount received during the year, for the use of Jamaica Pond water, is - - - \$2,624 64

*This amount is included in the general account.*

The amount of assessments already made for the year 1857, is - - - - - \$237,628 03

The estimated amount of income from the sales of water, during the year 1857, is - - 295,000 00

The expenditures in my department during the year 1856, have been - - - - - 3,126 66

The items of this expenditure are as follows, viz. :

Paid Charles L. Bancroft, for services as clerk,	\$785 00
“ Stephen Badlam, “ “ -	758 00
“ Peter H. Niles, for services as inspector, -	628 00
“ Chas. E. Dunham, “ “ -	628 00
“ Rand & Avery, for printing, - - -	118 97
“ Eayrs & Fairbanks, for books and stationery, - - - - -	112 49
“ W. A. Pierpont, for distributing bills, -	22 00
“ H. M. Davis, “ “ - -	18 00
“ E. R. Jones, “ “ - -	18 00
“ J. Atkinson, “ “ - -	15 00
“ J. W. Greenwood, “ “ - -	15 00
“ Stephen Maddox, for services, - - -	4 72
“ Moore & Crosby, for printing, - -	3 48
Amount, - - - - -	<u>\$3,126 66</u>

STATEMENT, SHOWING THE NUMBER OF HOUSES, STORES, STEAM ENGINES, &C., IN THE CITY OF BOSTON, SUPPLIED WITH COCHITUATE WATER, TO THE FIRST OF JANUARY, 1857, WITH THE AMOUNT OF WATER RATES PAID FOR 1856.

1,314 Dwelling Houses,	\$6 00	\$7,884 00
1,453 " "	7 00	10,171 00
1,835 " "	8 00	14,680 00
1,903 " "	9 00	17,127 00
1,711 " "	10 00	17,110 00
1,447 " "	11 00	15,917 00
1,031 " "	12 00	12,372 00
686 " "	13 00	8,918 00
474 " "	14 00	6,636 00
421 " "	15 00	6,315 00
397 " "	16 00	6,352 00
316 " "	17 00	5,372 00
171 " "	18 00	3,078 00
195 " "	19 00	3,705 00
132 " "	20 00	2,640 00
130 " "	21 00	2,730 00
107 " "	22 00	2,354 00
91 " "	23 00	2,093 00
66 " "	24 00	1,584 00
48 " "	25 00	1,200 00
87 " "	26 00	2,262 00
29 " "	27 00	783 00
40 " "	28 00	1,120 00
34 " "	29 00	986 00
36 " "	30 00	1,080 00
236 " "	31 00	7,316 00
817 " "		4,773 94
<hr/> 15,207		<hr/> \$166,558 94
2 Model Houses,	\$18 00	\$36 00
2 <i>Amounts carried forward,</i>		<hr/> \$36 00 \$166,558 94



2	<i>Amounts brought forward,</i>		\$36 00	\$166,558 94
1	Model House,	\$20 00	20 00	
1	" "	21 00	21 00	
4	" "	24 00	96 00	
1	" "	27 00	27 00	
4	" "	30 00	120 00	
3	" "	36 00	108 00	
2	" "	39 00	78 00	
5	" "	42 00	210 00	
1	" "	48 00	48 00	
1	" "	54 00	54 00	
2	" "	60 00	120 00	
1	" "	63 00	63 00	
1	" "	66 00	66 00	
2	" "	69 00	138 00	
1	" "	72 00	72 00	
3	" "	75 00	225 00	
1	" "	90 00	90 00	
1	" "	192 00	192 00	
1	" "	210 00	210 00	
12	" "		364 75	
<hr/>				
50				2,358 75
1	Lodging House,	57 50	57 50	
1	" "	65 50	65 50	
1	" "	89 00	89 00	
<hr/>				
3				212 00
1,987	Stores and Shops,	6 00	11,922 00	
1	" "	8 00	8 00	
29	" "	8 50	246 50	
604	" "	9 00	5,436 00	
9	" "	10 00	90 00	
13	" "	11 00	143 00	
9	" "	11 50	103 50	
<hr/>				
2,652	<i>Amounts carried forward,</i>		\$17,949 00	\$169,129 69

2,652	<i>Amounts brought forward,</i>	\$17,949 00	\$169,129 69
14	Stores and Shops, \$12 00	168 00	
1	" "	13 00	
30	" "	420 00	
8	" "	120 00	
6	" "	99 00	
5	" "	95 00	
1	" "	20 00	
1	" "	21 50	
3	" "	72 00	
1	" "	49 00	
1	" "	73 95	
<u>264</u>	" "	<u>1,101 54</u>	
<u>2,987</u>			20,201 99
* 142	Offices,	6 00	852 00
1	"	8 50	8 50
48	"	9 00	432 00
2	"	10 00	20 00
1	"	11 50	11 50
3	"	14 00	42 00
1	"	15 00	15 00
1	"	17 00	17 00
1	"	19 00	19 00
1	"	21 00	21 00
<u>27</u>	"		<u>135 91</u>
<u>228</u>			1,573 91
5	Banks,	6 00	30 00
11	"	9 00	99 00
1	"	11 00	11 00
1	"	14 00	14 00
2	"		9 25
<u>20</u>			<u>163 25</u>
	<i>Amount carried forward,</i>		<u>\$191,068 84</u>

<i>Amount brought forward,</i>		\$191,068 84	
1	Building,	\$10 00	\$10 00
3	"	12 00	36 00
1	"	14 00	14 00
1	"	14 16	14 16
19	"	15 00	285 00
1	"	16 00	16 00
3	"	17 00	51 00
1	"	17 50	17 50
8	"	18 00	144 00
7	"	20 00	140 00
3	"	21 00	63 00
1	"	22 50	22 50
3	"	23 00	69 00
8	"	25 00	200 00
2	"	26 00	52 00
8	"	30 00	240 00
3	"	32 00	96 00
1	"	32 50	32 50
1	"	35 00	35 00
2	"	36 00	72 00
1	"	37 00	37 00
1	"	39 00	39 00
1	"	39 50	39 50
5	"	40 00	200 00
1	"	43 00	43 00
2	"	44 00	88 00
2	"	45 00	90 00
2	"	46 00	92 00
2	"	49 00	98 00
1	"	50 00	50 00
1	"	52 50	52 50
1	"	60 00	60 00
1	"	62 00	62 00
98	<i>Amounts carried forward,</i>	\$2,560 66	\$191,068 84

98	<i>Amounts brought forward,</i>	\$2,560 66	\$191,068 84
1	Building,	\$65 00	65 00
1	"	72 96	72 96
1	"	73 00	73 00
1	"	74 00	74 00
1	"	82 00	82 00
1	"	108 00	108 00
1	"	130 00	130 00
7	"	289 14	
<hr/>			
112			3,454 76
36	Churches,	6 00	216 00
1	"	8 00	8 00
1	"	14 00	14 00
1	"	15 00	15 00
2	"	20 00	40 00
<hr/>			
41			293 00
7	Halls,	6 00	42 00
4	"	9 00	36 00
1	"	12 00	12 00
1	"	14 00	14 00
2	"		16 25
2	Private Schools,	6 00	12 00
1	" "	9 00	9 00
2	" "	14 00	28 00
1	" "	15 00	15 00
1	" "	16 00	16 00
<hr/>			
22			200 25
1	Theatre,	10 00	10 00
1	"	25 00	25 00
1	"	93 75	93 75
1	Gymnasium,	5 00	5 00
1	Custom House,	156 00	156 00
1	Hospital,	40 00	40 00
<hr/>			
6	<i>Amounts carried forward,</i>	\$329 75	\$195,016 85

6	<i>Amounts brought forward,</i>		\$329 75	\$195,016 85
1	Hospital,	\$163 75	163 75	
1	Medical College,	30 00	30 00	
1	State House,	134 50	134 50	
1	Library,	6 00	6 00	
1	"	9 00	9 00	
1	"	43 95	43 95	
2	Asylums,	15 00	30 00	
2	"	25 00	50 00	
1	"	35 00	35 00	
1	"	40 00	40 00	
1	"	250 98	250 98	
<hr/>				
19				1,122 93
<hr/>				
36	Market Stalls,	6 00	216 00	
3	" "	9 00	27 00	
5	" "	10 00	50 00	
1	" "		4 00	
1	Market,	47 00	47 00	
1	"	74 00	74 00	
1	"		15 27	
<hr/>				
48				433 27
<hr/>				
103	Cellars,	6 00	618 00	
6	"	9 00	54 00	
11	"		43 75	
<hr/>				
120				715 75
<hr/>				
1	Hotel,	14 00	14 00	
7	"	15 00	105 00	
1	"	16 76	16 76	
1	"	18 00	18 00	
1	"	20 00	20 00	
1	"	21 00	21 00	
1	"	24 00	24 00	
1	"	25 00	25 00	
<hr/>				
14	<i>Amounts carried forward,</i>		\$243 76	\$197 288 80

14	<i>Amounts brought forward,</i>		\$243 76	\$197,288 80
1	Hotel,	\$27 00	27 00	
2	"	30 00	60 00	
1	"	33 00	33 00	
1	"	35 00	35 00	
2	"	36 00	72 00	
1	"	38 00	38 00	
1	"	39 75	39 75	
1	"	40 00	40 00	
2	"	42 00	84 00	
2	"	44 00	88 00	
1	"	45 00	45 00	
2	"	48 00	96 00	
1	"	51 00	51 00	
1	"	56 00	56 00	
3	"	60 00	180 00	
1	"	69 00	69 00	
1	"	71 40	71 40	
1	"	72 92	72 92	
1	"	74 00	74 00	
1	"	84 00	84 00	
2	"	90 00	180 00	
1	"	96 00	96 00	
1	"	103 08	103 08	
1	"	105 00	105 00	
1	"	108 00	108 00	
1	"	113 70	113 70	
1	"	119 50	119 50	
1	"	122 80	122 80	
1	"	137 00	137 00	
1	"	140 00	140 00	
1	"	144 00	144 00	
1	"	150 00	150 00	
1	"	174 10	174 10	
<hr/>				
55	<i>Amounts carried forward,</i>		\$3,253 01	\$197,288 80

55	<i>Amounts brought forward,</i>		\$3,253 01	\$197,288 80
1	Hotel,	\$175 10	175 10	
1	"	180 00	180 00	
1	"	193 10	193 10	
1	"	261 00	261 00	
1	"	289 00	289 00	
1	"	354 00	354 00	
1	"	357 00	357 00	
1	"	421 00	421 00	
1	"	465 00	465 00	
1	"	561 00	561 00	
1	"	672 00	672 00	
1	"	805 00	805 00	
<hr/>				
67				7,986 21
1	Boarding House,	30 00	30 00	
1	" "	31 00	31 00	
2	" "	35 00	70 00	
1	" "	36 00	36 00	
1	" "	42 00	42 00	
1	" "	54 00	54 00	
1	" "	60 00	60 00	
1	" "	109 00	109 00	
1	" "	284 00	284 00	
<hr/>				
10				716 00
33	Restaurants and Sa-			
	loons,	6 00	198 00	
7	" "	8 00	56 00	
192	" "	9 00	1,728 00	
6	" "	10 00	60 00	
35	" "	12 00	420 00	
23	" "	15 00	345 00	
1	" "	16 00	16 00	
1	" "	17 00	17 00	
<hr/>				
298	<i>Amounts carried forward,</i>		\$2,840 00	\$205,991 01

298	<i>Amounts brought forward,</i>	\$2,840 00	\$205,991 01
1	Restaurant and Sa-		
	loon,	\$17 50	17 50
2	"	" 18 00	36 00
2	"	" 20 00	40 00
1	"	" 23 00	23 00
2	"	" 25 00	50 00
2	"	" 30 00	60 00
1	"	" 35 00	35 00
40	"	"	261 82
<hr/>			
349			3,363 32
1	Club House,	12 00	12 00
2	" "	15 00	30 00
1	" "	50 00	50 00
1	" "		7 50
<hr/>			
5			99 50
1	Bathing House,	10 00	10 00
1	" "	15 00	15 00
2	" "	20 00	40 00
1	" "	40 00	40 00
1	" "	45 00	45 00
1	" "	50 00	50 00
1	" "	55 00	55 00
1	" "	135 00	135 00
1	" "		9 17
<hr/>			
10			399 17
265	Stables,	5 00	1,325 00
23	"	6 00	138 00
42	"	6 25	262 50
29	"	7 50	217 50
16	"	8 00	128 00
21	"	8 75	183 75
30	"	10 00	300 00
13	"	11 25	146 25
<hr/>			
439	<i>Amounts carried forward,</i>	\$2,701 00	\$209,853 00



439	<i>Amounts brought forward,</i>		\$2,701 00	\$209,853 00
1	Stable,	\$11 50	11 50	
4	"	12 00	48 00	
15	"	12 50	187 50	
1	"	13 25	13 25	
8	"	13 75	110 00	
1	"	14 00	14 00	
13	"	15 00	195 00	
2	"	16 00	32 00	
1	"	16 25	16 25	
1	"	17 25	17 25	
1	"	17 50	17 50	
2	"	18 00	36 00	
7	"	18 75	131 25	
1	"	19 75	19 75	
6	"	20 00	120 00	
1	"	21 00	21 00	
1	"	22 00	22 00	
3	"	22 50	67 50	
1	"	23 75	23 75	
1	"	24 00	96 00	
4	"	25 00	100 00	
1	"	26 25	26 25	
1	"	27 50	27 50	
1	"	28 50	28 50	
1	"	28 75	28 75	
8	"	30 00	240 00	
3	"	31 25	93 75	
1	"	31 50	31 50	
2	"	32 00	64 00	
1	"	32 50	32 50	
1	"	34 00	34 00	
5	"	36 00	180 00	
1	"	38 00	38 00	
543	<i>Amounts carried forward,</i>		\$4,825 25	\$209,853 00

543	<i>Amounts brought forward,</i>	\$4,825 25	\$209,853 00
7	Stables,	\$40 00	280 00
1	"	43 50	43 50
1	"	44 00	44 00
1	"	45 00	45 00
3	"	50 00	150 00
1	"	53 00	53 00
3	"	56 00	168 00
7	"	60 00	420 00
1	"	62 50	62 50
3	"	70 00	210 00
1	"	72 00	72 00
4	"	75 00	300 00
1	"	76 25	76 25
1	"	90 00	90 00
4	"	100 00	400 00
1	"	110 00	110 00
1	"	117 00	117 00
1	"	120 00	120 00
1	"	130 00	130 00
1	"	160 00	160 00
1	"	180 00	180 00
60	"		240 60
<u>648</u>			<u>8,297 10</u>
1	Shop and Engine,	9 00	9 00
1	" "	10 20	10 20
6	" "	12 00	72 00
1	" "	13 56	13 56
1	" "	13 61	13 61
1	" "	14 00	14 00
1	" "	14 55	14 55
2	" "	15 00	30 00
1	" "	15 66	15 66
1	" "	16 20	16 20
<u>16</u>	<i>Amounts carried forward,</i>	\$208 78	\$218,150 10

16	<i>Amounts brought forward,</i>		\$208 78	\$218,150 10
1	Shop and Engine,	\$16 55	16 55	
1	"	" 18 60	18 60	
1	"	" 18 78	18 78	
1	"	" 19 68	19 68	
1	"	" 20 18	20 18	
1	"	" 20 88	20 88	
1	"	" 21 56	21 56	
1	"	" 23 34	23 34	
1	"	" 28 62	28 62	
1	"	" 28 96	28 96	
1	"	" 29 82	29 82	
1	"	" 30 00	30 00	
1	"	" 30 10	30 10	
1	"	" 31 08	31 08	
1	"	" 31 92	31 92	
1	"	" 32 22	32 22	
1	"	" 33 90	33 90	
1	"	" 34 74	34 74	
1	"	" 36 00	36 00	
1	"	" 42 84	42 84	
1	"	" 49 74	49 74	
1	"	" 49 86	49 86	
1	"	" 52 86	52 86	
1	"	" 53 04	53 04	
1	"	" 53 32	53 32	
1	"	" 56 04	56 04	
2	"	" 58 20	116 40	
1	"	" 59 22	59 22	
1	"	" 59 52	59 52	
1	"	" 60 54	60 54	
1	"	" 61 12	61 12	
1	"	" 61 49	61 49	
1	"	" 63 16	63 16	
<hr/>			<hr/>	
50	<i>Amounts carried forward,</i>		\$1,554 86	\$218,150 10

50	<i>Amounts brought forward,</i>		\$1,554 86	\$218,150 10
1	Shop and Engine,	\$64 38	64 38	
1	"	" 66 66	66 66	
1	"	" 66 78	66 78	
1	"	" 67 33	67 33	
1	"	" 68 44	68 44	
1	"	" 73 26	73 26	
1	"	" 74 88	74 88	
1	"	" 76 80	76 80	
1	"	" 80 52	80 52	
1	"	" 89 15	89 15	
1	"	" 91 10	91 10	
1	"	" 92 10	92 10	
1	"	" 95 34	95 34	
1	"	" 97 75	97 75	
1	"	" 97 78	97 78	
1	"	" 102 00	102 00	
1	"	" 103 50	103 50	
1	"	" 103 75	103 75	
1	"	" 105 90	105 90	
1	"	" 106 30	106 30	
1	"	" 106 74	106 74	
1	"	" 107 00	107 00	
1	"	" 111 00	111 00	
1	"	" 126 61	126 61	
1	"	" 129 78	129 78	
1	"	" 133 04	133 04	
1	"	" 135 00	135 00	
1	"	" 135 33	135 33	
1	"	" 139 38	139 38	
1	"	" 142 37	142 37	
1	"	" 149 94	149 94	
1	"	" 155 70	155 70	
1	"	" 169 50	169 50	
1	"	" 180 24	180 24	
84	<i>Amounts carried forward,</i>		\$5,200 21	\$218,150 10

84	<i>Amounts brought forward,</i>		\$5,200 21	\$218,150 10
1	Shop & Engine,	\$184 20	184 20	
1	"	" 190 20	190 20	
1	"	" 192 84	192 84	
1	"	" 211 88	211 88	
1	"	" 306 82	306 82	
1	"	" 326 00	326 00	
1	"	" 369 72	369 72	

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91 6,981 87

1	Foundry & Engine,	9 00	9 00	
1	"	" 10 00	10 00	
1	"	" 12 58	12 58	
1	"	" 15 00	15 00	
1	"	" 21 34	21 34	
1	"	" 28 20	28 20	
1	"	" 57 87	57 87	
1	"	" 58 92	58 92	
1	"	" 61 80	61 80	
1	"	" 74 70	74 70	
1	"	" 115 44	115 44	
1	"	" 133 16	133 16	
1	"	" 336 48	336 48	

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13 934 49

1	Printing Office and			
	Engine,	18 25	18 25	
1	"	" 24 96	24 96	
1	"	" 27 10	27 10	
1	"	" 32 28	32 28	
1	"	" 36 18	36 18	
1	"	" 39 50	39 50	
1	"	" 44 84	44 84	
1	"	" 45 96	45 96	
1	"	" 78 20	78 20	

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9 *Amounts carried forward,* \$347 27 \$226,066 46

9	<i>Amounts brought forward,</i>		\$347 27	\$226,066 46
1	Printing Office and			
	Engine, \$81 81		81 81	
1	" " " "	121 58	121 58	
1	" " " "	151 40	151 40	
<u>12</u>				702 06
1	Ship Yard & Engine, 90 84		90 84	
1	" " " "	178 86	178 86	
<u>2</u>				269 70
1	Factory & Engine, 8 83		8 83	
1	" " " "	22 50	22 50	
1	" " " "	22 68	22 68	
1	" " " "	25 29	25 29	
1	" " " "	28 20	28 20	
1	" " " "	43 76	43 76	
1	" " " "	49 50	49 50	
1	" " " "	56 36	56 36	
1	" " " "	66 31	66 31	
1	" " " "	70 92	70 92	
1	" " " "	88 98	88 98	
1	" " " "	91 50	91 50	
1	" " " "	114 12	114 12	
1	" " " "	115 90	115 90	
1	" " " "	116 80	116 80	
1	" " " "	119 50	119 50	
1	" " " "	150 70	150 70	
1	" " " "	215 40	215 40	
1	" " " "	364 62	364 62	
1	" " " "	568 24	568 24	
<u>20</u>				2,340 11
3	Factories,	10 00	30 00	
2	"	11 25	22 50	
2	"	12 00	24 00	
1	"	13 00	13 00	
<u>8</u>	<i>Amounts carried forward,</i>		\$89 50	\$229,378 33

8	<i>Amounts brought forward,</i>		\$89 50	\$229,378 33
5	Factories,	\$15 00	75 00	
1	"	21 00	21 00	
1	"	22 50	22 50	
1	"	25 00	25 00	
1	"	25 80	25 80	
5	"	30 00	150 00	
1	"	31 25	31 25	
1	"	38 53	38 53	
1	"	41 70	41 70	
1	"	50 00	50 00	
1	"	51 00	51 00	
1	"	51 45	51 45	
1	"	65 19	65 19	
1	"	66 95	66 95	
1	"	72 16	72 16	
1	"	124 35	124 35	
1	"	128 15	128 15	
1	"	170 00	170 00	
1	"	172 68	172 68	
1	"	230 94	230 94	
6	"		47 25	
<u>42</u>				1,750 40
1	Sugar Refinery,	2,367 15	2,367 15	
1	" "	3,442 26	3,442 26	
1	Rolling Mill,	793 92	793 92	
1	" "	1,716 36	1,716 36	
1	Grist Mill,	413 75	413 75	
1	Mill,	108 00	108 00	
1	"	132 60	132 60	
1	"	194 94	194 94	
1	"	315 98	315 98	
1	"	604 48	604 48	
1	"	680 76	680 76	
1	Forge,	596 04	596 04	
<u>12</u>				11,366 24
	<i>Amount carried forward,</i>			\$242,494 97

		<i>Amount brought forward,</i>	\$242,494 97
2	Engines,	\$7 68	\$15 36
4	“	7 83	31 32
1	“	12 00	12 00
1	“	14 28	14 28
1	“	15 00	15 00
1	“	22 08	22 08
1	“	48 00	48 00
1	“	75 24	75 24
1	“	102 30	102 30
1	“	108 06	108 06
1	“	114 50	114 50
1	“	126 66	126 66
1	“	135 12	135 12
1	“	117 24	117 24
1	“	175 56	175 56
1	“	188 04	188 04
1	“	1,904 82	1,904 82
<hr/>			
21			3,205 58
18	Printing Offices,	6 00	108 00
14	“ “	9 00	126 00
2	“ “	12 00	24 00
3	“ “	13 00	39 00
2	“ “	17 00	34 00
1	“ “	20 00	20 00
3	“ “	21 00	63 00
1	“ “	25 00	25 00
1	“ “	28 00	28 00
2	“ “		7 00
<hr/>			
47			474 00
1	Distillery,	51 90	51 90
1	“	144 80	144 80
1	“	175 84	175 84
1	“	204 24	204 24
<hr/>			
4	<i>Amounts carried forward,</i>	\$576 78	\$246,174 55



4	<i>Amounts brought forward,</i>		\$576 78	\$246,174 55
1	Distillery,	\$278 76	278 76	
1	"	417 20	417 20	
1	"	436 24	436 24	
1	"	514 00	514 00	
1	"	721 50	721 50	
1	Brewery,	11 00	11 00	
1	"	12 00	12 00	
5	"	15 00	75 00	
1	"	25 00	25 00	
1	"	31 30	31 30	
1	"	903 73	903 73	
<u>19</u>				4,002 51
2	Bacon Works,	15 00	30 00	
1	" "	25 00	25 00	
<u>3</u>				55 00
2	Bleacherics,	9 00	18 00	
1	"	10 00	10 00	
1	"	19 00	19 00	
1	"		6 75	
1	Laundry,	26 25	26 25	
1	Pottery,	30 00	30 00	
<u>7</u>				110 00
54	Bakeries,	6 00	324 00	
6	"	9 00	54 00	
3	"		12 33	
<u>63</u>				390 33
1	Bakery and Engine,	15 00	15 00	
1	" "	43 64	43 64	
1	" "	55 00	55 00	
<u>3</u>				113 64
7	Ship Yards,	15 00	105 00	
1	" "	11 25	11 25	
<u>8</u>	<i>Amounts carried forward,</i>		\$116 25	\$250,846 03

8	<i>Amounts brought forward,</i>	\$116 25	\$250,846 03
2	Dry Docks,	\$15 00	30 00
1	" "	53 18	53 18
1	" "	80 57	80 57
<u>12</u>			280 00
714	Hose,	3 00	2,142 00
2	" "	5 00	10 00
4	" "	10 00	40 00
<u>720</u>			2,192 00
13	Fountains,	3 00	39 00
6	" "	5 00	30 00
7	" "	6 00	42 00
2	" "	7 81	15 62
1	" "	8 00	8 00
2	" "	9 00	18 00
1	" "	12 00	12 00
1	" "	15 00	15 00
<u>33</u>			179 62
1	Packing House,	9 00	9 00
1	" "	10 00	10 00
1	" "	30 00	30 00
1	" "	35 00	35 00
<u>4</u>			84 00
1	Railroad Co.,	195 00	195 00
1	" "	504 02	504 02
1	" "	844 46	844 46
1	" "	876 66	876 66
1	" "	1,039 68	1,039 68
1	" "	1,120 26	1,120 26
1	" "	1,663 38	1,663 38
1	" "	2,438 22	2,438 22
<u>8</u>			8,681 68
	<i>Amount carried forward,</i>		\$262,263 33

	<i>Amount brought forward,</i>		\$262,263 33
1	Chelsea Ferry		
	Co.,	\$1,239 74	\$1,239 74
1	East Boston		
	Ferry Co.,	691 94	691 94
1	People's Ferry		
	Co.,	780 48	780 48
	<hr/>		
3			2,712 16
1	Cunard Steamship		
	Co.,	700 00	700 00
1	Steamboat,	26 25	26 25
1	"	30 00	30 00
1	"	31 64	31 64
1	"	41 80	41 80
1	"	42 42	42 42
1	"	54 60	54 60
1	"	66 18	66 18
1	"	67 50	67 50
1	"	72 21	72 21
1	"	92 56	92 56
1	"	108 60	108 60
1	"	110 00	110 00
1	"	112 80	112 80
1	"	113 97	113 97
1	"	127 75	127 75
1	"	128 80	128 80
1	"	130 52	130 52
1	"	131 04	131 04
1	"	133 54	133 54
1	"	160 00	160 00
1	"	165 00	165 00
2	"	168 70	337 40
1	"	192 56	192 56
1	"	202 50	202 50
	<hr/>		
26	<i>Amounts carried forward,</i>	\$3,379 64	\$264,975 49

26	<i>Amounts brought forward,</i>	\$3,379 64	\$264,975 49
1	Steamboat,	\$212 44	212 44
1	“	227 80	227 80
1	“	416 74	416 74
1	“	629 09	629 09
<u>30</u>			4,865 71
1	Latin School,	16 00	16 00
1	English High School,	16 00	16 00
1	Normal School,	16 00	16 00
19	Grammar Schools,	16 00	304 00
190	Primary Schools,	6 00	1,140 00
3	“ “	11 00	33 00
13	Engine Houses,	16 00	208 00
5	Hose Carriage Houses,	16 00	80 00
3	Hook and Ladder Houses,	16 00	48 00
6	Police Station Houses,	11 00	66 00
2	“ “ “	16 00	32 00
1	City Stable, (Harrison Avenue,)	77 50	77 50
1	City Stable, (Commer- cial street,)	27 50	27 50
5	Fire Alarm Moters,	6 00	30 00
1	“ “ “	15 00	15 00
1	Court House,	95 00	95 00
1	City Hall,	50 00	50 00
1	Faneuil Hall,	46 00	46 00
1	City Building,	37 50	37 50
1	Probate Office,	10 00	10 00
1	Office at City Scales,	9 00	9 00
1	Dead House,	9 00	9 00
1	Public Library,	6 00	6 00
1	House of Correction,	436 22	436 22
<u>261</u>	<i>Amounts carried forward,</i>	\$2,807 72	\$269,841 20

261	<i>Amounts brought forward,</i>	\$2,807 72	\$269,841 20
	1 Lunatic Hospital, \$225 00	225 00	
	1 House of Reformation, 50 00	50 00	
	1 Faneuil Hall Market (for Urinals, &c.,) 70 00	70 00	
	1 Street Sprinkling, 400 00	400 00	
	1 Offal Station, 150 00	150 00	
	1 Common Sewer (for making Mortar, &c.,) 75 00	75 00	
<hr/>	267		3,777 72
	Proprietors of Boston		
	Traveller, 516 23	516 23	
	Mass. State Prison, 349 26	349 26	
	Mill Dam Co., 300 00	300 00	
	Boston Gas Light Co., 374 62	374 62	
	South Boston Gas Co., 122 60	122 60	
	East Boston Gas Co., 94 00	94 00	
	Brookline Gas Co., 30 00	30 00	
	Contractors for sup- plying shipping, 4,387 30	4,387 30	
	Street Waterers (in Roxbury,) 100 00	100 00	
	Building Purposes, 1,085 05	1,085 05	
	Proving Pipes, 31 95	31 95	
	Mechanics' Fair, 24 51	24 51	
			7,415 52
			<u>\$281,034 44</u>

Respectfully submitted,

WILLIAM F. DAVIS,

*Water Registrar.*













**PUBLIC LIBRARY**  
OF THE  
**CITY OF BOSTON.**

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