City Document.—No. 25.

CITY OF BOSTON.

SOFT WATER.

The Committee on the introduction of soft water into the City, ask leave respectfully to state to the City Council that they have given much attention to this important subject during the past summer, and notwithstanding there has been less public interest displayed in it than in some preceding years, and it has appeared almost forgotten by others, they are themselves more than ever impressed with the propriety, the expediency, and within a few years, the necessity of the measure. The arguments on which this opinion is founded have often been urged upon

the attention of the Council, in various forms. It is not therefore necessary to repeat them. The general principles, the facts, the reasonings on which the friends of the project rely are well understood, and all that remains is to meet, if possible, the objections urged by their opponents to the several schemes which have been suggested, and to correct some of those views and impressions, which though not openly brought forward, are nevertheless powerfully operative in producing a silent opposition to any and all of the plans which have hitherto been proposed.

One of the greatest practical obstacles to a union of all parties on the subject, was the unfortunate difference of opinion which arose between the engineers as to the best source for supplying the wants of the City. It is scarcely possible to imagine that if they had been united, others would have been so much divided as they have been, or to doubt that there would have been a concentration of action among the friends of the project which would not have been without its effect. A feeling of uncertainty and distrust was thrown over the whole business, and a hesitation was given to the movements of those who were in favor of action, which has thus far deprived them of success. It is not perhaps wise, though it is very natural, to hesitate in the choice between two things of almost equal excellence, either of which is sufficient for the desired object; and the first requisite to the attainment of the end, in this case, is that its friends should combine all their exertions upon some one scheme. It is not of so much importance as is often supposed, which of the plans should be adopted; for when arguments are so nicely balanced

that it is difficult to determine to which side the weight inclines, it is manifest that the decision cannot be of great moment. On either hand there are advantages enough. But if the reasons were strongly in favor of one proposition, it would be easier, and at the same time more important to secure the right decision. Let there be union, then, upon one plan, and there will be found strength to carry it through.

Another obstacle, as is believed by the Committee, to the immediate success of the enterprise, was that the engineers calculated the amount of water to be supplied, and the necessary means of furnishing it, on a scale to which the public mind was not accustomed, and for which it was not prepared; though not at all more, perhaps, than it was proper and desirable for the engineers to contemplate, when proposing a plan for the permanent use of a growing City. Few persons have ever estimated the quantity of water used in their families, and almost all would be greatly astonished probably, if they were actually to measure it. Still fewer have ever calculated the consumption of water, in a City like this, for the use of animals, steam engines, distilleries, and the thousand irregular and occasional wants that can neither be foreseen nor exactly appreciated. These ought all to be allowed for, however, and were allowed for in the plans suggested by the scientific men employed by the City, and the result was an aggregate so large as to create some surprise and alarm, as to the probable cost of such extensive works. The calculations made, also, as to the future growth of of the City, served to increase the extent and the expense of the preparations thought necessary, and

the Committee are of opinion that if the Commissioners had proposed a plan more nearly adapted to the actual and existing wants of the City, there would have been a better prospect of its having been speedily begun.

Another source of opposition to the scheme was the natural apprehension of those interested in the present aqueduct, of the injury to their property, by the competition of the city, with better means of supply than they possess. No one can blame the proprietors of Jamaica Pond for using all honorable means to preserve and augment the value of their franchise; and no one, certainly, can charge them with using any other than the most proper weapons of honorable and open warfare. But the very zeal which they display, and it has not relaxed a moment from its keen watchfulness, is a stronger argument in favor of the project than any which they have been able to urge against it. If the aqueduct, with its very limited supply, and imperfect construction is such valuable property, why should not a better one be proportionally valuable? What is there to prevent a general supply from being a general blessing, for the same reasons that the partial and inadequate supply furnished by Jamaica Pond is so highly prized by its consumers, the customers of the aqueduct corporation? With regard to the value attached to this supply, such as it is, some striking facts are well known to all who have interested themselves in the subject.

Although many persons living within reach of the aqueduct do not take the water, and it is natural enough that they should undervalue an advantage of which they have no experience, it is found to be al-

most universally the case, that those who have used it are extremely reluctant to give it up. If compelled to change their residence, the first question they ask of a new landlord is, "can I have the aqueduct?" It has become almost indispensable, and they are willing to pay a higher rent for a dwelling within its reach. A singular fact came out before the committee of the legislature, which it may be not amiss here to mention. An active and zealous opponent of the project of the city, one who extolled in the highest terms the softness and purity of the wells in his neighborhood, both common and Artesian, and who took pains to bring a large number of specimens for the examination of the committee, stated that within a few years he had discontinued the use of the fine well water near his house, which he could have for nothing, and had actually gone to the expense of having the aqueduct brought into his kitchen, and was contented to confine himself to the use of Jamaica Pond water, and pay the regular annual charge for it. It is impossible for the friends of the introduction of pure water to present a stronger illustration of the practical importance of the scheme. The inconvenience and expense of carrying a bucket across the street, are more than equal, in the opinion of an active opponent of the introduction of soft water, to the outlay for the log, and the annual tax on the water.

All other objections which have come to the knowledge of the committee, arise directly or indirectly from the fear, on the part of holders of real estate, that the taxes, especially on that species of property, will be greatly increased by the outlay necessary, and that the use of the water being made free

to all inhabitants, this increase of their burdens will become perpetual. The committee cannot affirm that this will not be the case; but neither do the objectors know that it will be. The argument assumes that a disreputable course of conduct will be pursued by our fellow citizens, of a disposition to do which they have never given any evidence; and also assumes that we are inferior in this respect to other cities where similar apprehensions have been felt but never realized. So far as the committee are informed, such a breach of faith has never been practised any where; while a great many cities in Europe and America are perfectly contented to pay a moderate rate for the use of what is at once a luxury and a necessity. The balance of probabilities, it seems to the Committee, is in favor of good faith. And none can estimate more highly the value of public as well as private integrity. They are firmly convinced that honesty is the truest policy for all corporations and bodies politic, as well as for all individuals. If the views they now are about to present are just, it will be apparent that all the expected advantages of the project can be obtained with only a temporary addition to the tax levied in this City, and that to no very great amount; so that the temptation to violate good faith will be small, while the advantage of a character for honesty is inestimable, as even the most worthless are ever ready to acknowledge.

It appears probable, from the best estimates the Committee are able to make, that in families in easy circumstances, where water is used as freely as it is desired, or as is customary at present in this City, the consumption is at the rate of eleven or

twelve gallons a day by each individual. This is nearly the rate at which it is furnished by the present aqueduct to its customers. That others may judge of this, however, the Committee will state that there are about 1,500 customers, which including stables and steam engines, are equal to 11,000 individuals, and that the amount delivered is known not to exceed 200,000 gallons per day, and making a proper deduction for leakage and waste in the logs it passes through, the Committee presume does not over run and perhaps falls short of 150,000 gallons, which is 13⅔ gallons, nearly, per head. In many other families, the rate of consumption is certainly not greater than has been stated; so that it may, in the opinion of the Committee, be considered as established that fourteen gallons a day to each individual would be a sufficient and liberal allowance, animals, steam engines and contingencies included, according to the habits of the place. If then provision were made for the supply of this quantity to the City, for as many inhabitants as will probably be found upon it within the next fifty years, the Committee are of the opinion that all will have been done which is incumbent on the present generation, and that such additions as may be then necessary can be made without difficulty by our successors.

In estimating the probable number of customers, something else must be taken into consideration besides the mere amount of population. As the well water is not so actively deleterious as to prevent people from drinking it for many years with apparent impunity, it is probable that many will continue to be found who, from habit or long cherished opinions,

will prefer to use well water. The proportion of persons who take water of the present aqueduct is about one in three of those by whose doors it passes; but as many are deterred from taking it by doubts of its regularity and certainty, which will not be entertained with regard to the City aqueduct, it will be fair to suppose that one half of those who have an opportunity to take it will avail themselves of the latter. All new comers, or rather all owners of new tenements will find it for their interest, and may therefore be presumed, to take the pure water when it is offered to them at much less than the interest on the cost and repairs of a well and cistern, which can only supply them with inferior water. If 40,000 persons, half the present population, be deducted from the probable number in the city, forty or fifty years hence, or say from double the present number of inhabitants, there will remain 120,000 persons to be supplied, according to the estimate just now made, with 14 gallons each, daily; making an aggregate of 1,680,000 gallons per diem. This estimate will be varied according to different judgments of the number who will decline taking the water. If the number be greater, the quantity of water to be supplied may be less; and if more be required, it will be seen that by the plan the Committee are prepared to suggest, there will be room for a much heavier draught on the resources.

It has been stated that something like 150,000 gallons a day are delivered by the aqueduct corporation; and it is known that Jamaica Pond supplies to the pipes about 200,000 gallons, besides a wastage equal, as far as can be judged without actual measurement, to at least as much. If all the produce of

the pond were secured, therefore, there would be 400,000 gallons at command: but as it is possible that there would be some leakage after all efforts to stop it, the Committee will only estimate the available product at 300,000 gallons. This, it will be observed, falls, still far short of what the pond has been supposed capable of yielding by men of distinguished science, and the Committee cannot but feel themselves on the safe side in this calculation. It appears from the last report of a majority of the Board of Commissioners, that from their measurement they have satisfied themselves that Spot pond, in its present state, may be relied upon for 1,700,000 gallons daily, and no doubt its yield may be increased. If these two sources were combined, then, there would be at least 2,000,000 gallons a day at the command of the City, which would be enough for the probable wants of the probable population for many years to come, with a surplus of 320,000 gallons a day, to make up for any errors in the calculations of the Committee. This surplus might doubtless be increased 100,000 gallons a day by proper management of both ponds, making enough to supply an additional population of 30,000 persons with 14 gallons a day.

The Committee will now offer some suggestions as to the probable cost of the combination of these two ponds. There is good reason to believe that the Jamaica pond corporation might be induced to sell all their rights to the City for less than $100,000. The works, though they may have cost more than this sum, are not worth so much to any purchaser, considering the imperfection and decay of the whole structure. The Committee are willing to estimate it

at $75,000. The Commissioners in their last report state the cost of Spot pond, with damages for all land taken, for all water rights, pipes, &c. necessary to bring water to the City, at $636,898, of which nearly $58,000 are charged for contingencies; but as this includes a reservoir on Walnut Tree Hill, which will not be wanted, and pipes of very large dimensions, 22 inches in diameter, the Committee are persuaded that a very considerable reduction may safely be made in the estimate. The Commissioners very properly estimated every thing on a liberal scale, and determined that enough for every purpose should be made sure; so that the Committee think it not unreasonable to believe that a work sufficient for all practical purposes can be constructed for a sum not exceeding $550,000, or at the outside $575,000. The two ponds, with the pipes all laid as far as the City, and one of them actually distributing water, would cost $650,000, on which the interest at 5 per cent. is $32,500. The whole cost of distribution throughout the City is put by the Commissioners at $565,000, or, with 10 per cent. for contingencies at $622,000.* It will perhaps be accurate enough to call it in round numbers $600,000, the interest on which is $30,000. $62,500 then is the whole sum which need be provided for by taxation, and that will be reduced to $50,000, at once by the income derived from the present tenants of the aqueduct corporation. Five thousand tenants at $10 each, are all that is requisite to meet this amount, and an aggregate of 6,500 tenants, is surely not too much to ex-

*It is the opinion of some practical men that the whole work of introduction and distribution may be done for a sum not exceeding $900,000.

pect in a City of over 80,000 inhabitants, or 13,500 families. It falls short of the half of the population, which was just now stated to be a reasonable expectation. But a large portion of the expense of distribution need not be incurred, till there is a certainty of remuneration being obtained. No pipe need be laid, till it is ascertained that customers enough will draw from it to make the expenditure proper. So that nearly one half of the whole interest may be saved to the City. If only the same ratio of customers should continue hereafter, there would still be the means of paying all charges of attendance, and leaving something to reduce the debt, from the probable growth of the City; and if the expectations of the Committee are just, this accumulating fund would be found to grow by the contributions of all, instead of half of the proprietors of new buildings, and if the City should see fit to charge at the rate of $12 instead of $10 for every tenant, as is done by the aqueduct, till the debt should be liquidated, the accumulation might very probably begin immediately at such a rate as would pay off the debt in 25 or perhaps 20 years.

In looking at the increase of the City in the last thirty years, and observing that it has more than doubled in that period, it seems a natural thought which is entertained by many persons, that the prospects of increasing business render it probable that the growth of the population for the next thirty years will be at least equal. The Committee have no doubt that so far as the business population of the City is concerned, the calculation is not without foundation, and that thirty years hence there may very probably be a population of more than 160,000, the centre of whose

business will be the centre of the City. But the inconvenience of putting so large a population within the municipal territory will be so great, that a very considerable proportion of it will probably be induced to plant themselves in the adjoining towns, and real estate in Chelsea, Charlestown, Cambridge, Brighton, Brookline, Roxbury and Dorchester will come in for a share of the business growth of the capital. It is not therefore an irrational supposition that the process of doubling will go on rather more slowly; and that the attractions of the neighboring towns in the forms of pure air, pure water, ample room and moderate rents, will retard the accumulation of 80,000 more inhabitants in the City itself, till a few years later. If the growth is to be more rapid, it is only an additional reason for beginning an enterprise which will become absolutely necessary, before a fifth part of the present number of inhabitants shall be added.

One of the objections which have been urged against the introduction of water from any of the ponds or streams in the vicinity is that a sufficient supply may be obtained within the territory of the City from Artesian wells; and it is said to be a proof of the facility with which this can be done, that several such wells have been dug with great success; and one has recently been made by the City, with a bore of 12 inches, which is capable of supplying a hundred gallons per minute, or 144,000 gallons every 24 hours. At this rate 14 such wells would supply 2,000,000, gallons a day, and why should the city spend a million of dollars, when $20,000 or 30,000 will answer the same purpose? The proper reply to

this question is that the water from these wells is found, by experience, not to answer the same purpose. There are in fact some purposes for which the water found on the South Cove and neck lands is not suitable; and there are no purposes for which it is so suitable as water from several, or almost any, of the ponds in the neighboring towns. It is not so pure, and therefore not so desirable for any use to which water can be applied. In seeking a supply for great numbers of people, it would surely not be wise to resort to a confessedly inferior source, when the very best which the world affords is within reach.* But there is another reason which is even stronger than this, why the attempt should not be made to supply the city from Artesian wells, viz: the great uncertainty of the supply. It is very doubtful, in the first place whether water can be found in certain locations; and in the next, if the experiment should be made successfully, and an apparent abundance of water obtained, it is quite as doubtful whether that supply will continue. The extent of the subterranean reservoir is altogether unknown, and the means by which it is supplied are equally so; and it is by no means sure that a large number of wells can be furnished from the source which is sufficient for a smaller number. A danger of another kind, but equally fatal to the utility of Artesian wells, threatens those which are in the vicinity of the sea coast, viz: that though the water may continue to rise with each stroke of the pump, it may be salt water instead of fresh. The connexion between these subterranean streams and the ocean is not denied nor doubted by

*The extraordinary purity of the water of Jamaica and Spot Ponds is well known.

geologists, and if this be true it follows that if the supply of fresh water be drawn down, the water of the ocean will rush in to supply its place. It seems scarcely reasonable to encounter all these risks, and this uncertainty, when sources of sure supply can be had at a moderate rate.

A pond which has been known ever since the continent was known, and which has continued through all the causes of depression which have operated upon it for the last two hundred years, is not very likely to fail from those which are to operate on it during the two next centuries. Especially is a pond which, like Spot Pond, is at such an elevation as to preclude the necessity of pumping, and is of so pure a quality as to be almost unequalled in that respect, preferable to any source of supply which is neither pure nor elevated.

The only other objection of which the Committee are aware, which has been urged against the plan of executing this great work is, that it could be done with more economy by a private company; and that if the City perform it, it will be at a loss of all the outlay which would be saved by individual prudence. But it must be recollected that a private company would not undertake a work of this kind without a pretty sure prospect of profit, and that consequently it must be guaranteed against competition for a term of years. It would, therefore, be for its interest to construct the works of such size and strength only as would be sufficient for that period, and when the public came into possession of them, they might require almost entire renewal. But supposing they were constructed in the best manner, it is clear that there must be a profit secured to the company, or at

least they must calculate on it with some confidence; whereas, if the City do the work, they may reap all the benefit, or save the charges which are to make the profit of individuals. Then the work is of such a character, and involves so many interests connected with the streets, the fire department, and various other branches of the public service, that if entrusted to private hands, there would be constant danger of unpleasant collisions, and injurious controversies with the City authorities. It ought, therefore, in the opinion of the Committee, to be confided to the care of the same persons who are entrusted with the other public interests.

If the plan now suggested should be found generally to meet the views of those who are in favor of introducing water, so that they will unite their exertions to effect it, and if it should be found also to meet the objections of all whose property would be affected by the operation, and provide sufficiently for the wants of those who are to be supplied for a reasonable period of time, the Committee can add nothing to the arguments by which they have heretofore attempted to show the expediency of the movement, and will only express their wish, their hope, their earnest prayer that some decisive action may at length be had upon this long delayed subject, and that they may live to see a sufficient quantity of water provided for every family and individual in the City. The following order is offered, as the only step now in their power towards this desirable end.

By order of the Committee,

SAMUEL A. ELIOT.

Ordered, That the Mayor be instructed to apply at the earliest practicable period, to the Legislature of the Commonwealth, at their next session, for leave to introduce the water of Spot Pond into the City, at its own expense; and that he be also instructed to open a negociation with the proprietors of the Jamaica Pond Aqueduct for the purchase of their property.