

REPORT
OF THE
COMMITTEE ON SUPPLY
OF
WATER FOR THE CITY,
AND
EXTRACTS
FROM THE
REPORT OF THE HEALTH OFFICER.

PUBLISHED BY ORDER OF THE CITY COUNCIL.

Burlington :
FREE PRESS STEAM JOB PRINTING HOUSE,
1866.

Burlington, Vt. Committee on
Supply of Water for the City.

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EXTRACT

FROM THE

HEALTH OFFICER'S REPORT.

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An abundant supply of fresh running water and good sewerage are indispensable to the security, prosperity and health of a city.

WATER.

By referring to the report of the sanitary survey, it will be seen that in Burlington there are 650 persons who depend upon the lake alone for their supply of water, which is mostly hauled in casks at an expense which many of them cannot afford; consequently it is too sparingly used for comfort or health.

There are 1828 persons who are dependent entirely upon cisterns for water; these cisterns are many of them improperly constructed, and out of repair, and the water so low (if any in them) as to make it very disagreeable to the taste and injurious to health. The deficiency, if supplied at all, must be from the lake.

It is found on examination that the water which can be collected from the roofs of houses is wholly inadequate to the wants of any given population.

If there is allowed 60 square feet of roof surface to each person, and if the quantity of rain fall is full 30 inches per

annum, there would be afforded for each individual less than 3 gallons per day; the common allowance in all places for public and private uses should not be less than 32 gallons per day.

There are 1214 who depend upon wells and cisterns for their supply of water. The unusual drought which prevailed last summer and autumn not only diminished the supply from above, but it dried up and closed the places from which it was obtained in the earth.

In many localities several families depend upon a single well for their whole supply of water for drinking, and for culinary purposes, and upon the lake for all other uses.

At the lowest estimate, the Aqueduct Company furnishes an amount of water equal to supplying 4000 persons.

It has a reservoir of about 1200 hogsheads capacity, which is supplied with water from flowing springs and the lake. The average yield from the springs which flow into it from the hill above is about 250 hogsheads every 24 hours; from the effects of the drought, the yield now is only about 80 hogsheads per day. The pumps, which are worked by a steam engine will force from the lake into the reservoir about 1000 hogsheads in every 24 hours. Provided the engine is kept continually at work night and day, and the springs yield their maximum quantity, we can realize about 1200 hogsheads daily from that source, which falls far short of the quantity required to supply the demand of the consumers. The quantity of water should be more than twice as much as is possible for the Aqueduct Company to provide.

"Water" is said to be the "life blood of a city." If we were to estimate the degree of vitality, possessed by the City of Burlington, by the quantity of water circulating through it, we should be forced to consider it an almost bloodless, and a very feeble city.

That Burlington pre-eminently requires the early adoption of some plan to furnish the city with an abundant supply of fresh running water, is a fact undeniable, supported by the testimony of all our physicians, and all our practical and enterprising men, and amply proved by experience.

We cannot be made secure from the ravages of fire without it; it cannot be made clean and kept so; the health and comfort of her citizens cannot be promoted; protection from pestilence and disease cannot be secured, nor industrial arts and manufactures encouraged, nor can we invite or receive into our City strangers and travellers, and guarantee them immunity from exposure to the causes of pestilence, for which many of them journey hither; without a bountiful supply of pure running water.

The subject of first class hotels and boarding houses is frequently discussed by our citizens, and remarked upon by strangers, who express surprise that this city, possessed of so many attractions and natural advantages, should be so far behind many smaller towns in the interior of the State in such evidences of prosperity and enterprise. It is utterly useless to make any attempts to improve and increase hotel and boarding house accommodations in Burlington with the present supply of water.

I do believe, by adopting a proper plan and taking hold of the work immediately, and pressing it with energy, we should have water works complete before another autumn.

The value of such an accession to our City is beyond computation; it would provide us with the means of cleaning the City and making it one of the healthiest places in the world; it would furnish a supply for the constantly increasing demand for both public and private use; it would encourage the manufacturing industry of our people, and extend and increase our manufacturing establishments.

The great purity of the waters of Winooski River and Lake Champlain, if brought into general use, would prevent many distressing complaints and incurable diseases which afflict mankind, originating from the use of well and spring water.

The expense of the work should not be taken into account when we consider the blessings which would flow to us through its health and life giving channels; jets of water playing in the air from public and private fountains; flowing hydrants to wash our dirty streets and gutters, and to pour upon the "de-

vouring element," and sprinkle our public squares and private yards, to be used without stint or measure over the whole City.

A greater charity could not be bestowed upon the poor than a liberal supply of water placed within their reach. To many of us who have living wells and a plenty of water in our cisterns, the idea of suffering and want from scarcity of water cannot be realized; but there are many mothers in this City who have realized it by painful experience, when they have hesitated between the baker and water carrier, as to which of the two should have the last shilling, when their children were crying for bread and suffering from the want of water.

The reduction in rates of insurance ought to be equal to the extra cost of the works, and the money expended in conveying water in casks from the Lake to the City, and otherwise incidentally expended to provide even a scanty supply, would more than keep them in repair.

That this work must be done sometime, none will deny, but that it will be done in this generation, few believe.

It is unnecessary to present to intelligent men, such as I have the honor to address, any argument to prove that an abundant supply of fresh running water within the reach of all, is indispensable to the health, happiness, and safety of a people in a place so compactly settled as Burlington.

This is not the place or occasion to suggest a plan for supplying the City with water, but I do feel it a duty I owe to this and to succeeding generations, to urge upon you and our fellow-citizens generally, the importance of early inaugurating a work in the accomplishment of which more profitable results will follow than have been realized from any enterprise in which our citizens have ever engaged.

Action is ever wise which looks forward to coming events and shapes its policy to meet them. We should act not only from the experience of the past but in anticipation of the future, when that anticipation is fully justified by events such as have transpired in rapid succession in connection with the growth of Burlington, and the development of her natural resources and advantages for trade, manufactures and com-

merce; for the cultivation of the arts and sciences, and the promotion of learning, virtue and refinement.

There is neither reason or justice why this or any one succeeding generation should shoulder the whole expense of water works for this City. It is reasonable, it is practicable and just, that a work of such magnitude and perpetual benefit to mankind should be shared by this and the generations that shall follow after

If all sanitary measures should fail to prevent the occurrence of cholera and its wide spread and fatal course thro' our midst, it might secure to those who escape its deadly shaft all the blessings to be realized from the admission of cool and refreshing currents of lake or river water into their houses and through every bed chamber in the city.

But for the cholera in New York and Boston, in 1832, the Croton and Cochituate waters might have remained undisturbed in their ancient basins to this day.

* * * * *

S. W. THAYER, *Health Officer.*

REPORT OF COMMITTEE.

The Committee appointed to consider the subject of obtaining a supply of pure water for the City of Burlington respectfully submit the following report :

There can be no question that an abundant supply of good water is a great and pressing want in our City. The quality of the water furnished by the Burlington Aqueduct Company is very inferior, and the quantity supplied entirely inadequate to our growing necessities. So universally is this conceded, that it is only necessary to state the fact.

The works of the present Company were constructed many years since, and were designed to receive their supply from the numerous springs scattered along the western slope of the ridge upon which the University stands.

At that time these springs were deemed amply sufficient to meet all the prospective wants of the town ; but the water is hard, and unfit for very many purposes for which it is used. From various causes, which it is unnecessary to allude to here, the flow of these springs has steadily, and of late years rapidly, decreased, while the demand for the water has far exceeded the most sanguine expectations of the enterprising men who constructed the present works.

To meet this increasing demand the Aqueduct Company have from time to time sunk wells and connected them by pipes with the main reservoir, and have also laid down sub-soil drains until the supply of water to be derived from these sources was thoroughly exhausted. The supply thus obtained from all sources proving insufficient, a small steam engine was placed upon the dock, and an additional amount of water obtained by pumping from the Lake. The amount of water now

furnished by the Aqueduct Company is probably not more than one-tenth of the quantity needed by the City.

The present Company have not the requisite means to enable them to make the necessary extension of their works.

There appears to your Committee to be but two practical modes of proceeding.

First. Attempt to prevail upon the present Company to make the necessary enlargement of their works, the City loaning the money to enable them to do so.

Second. Endeavor to purchase the works and franchise of the Burlington Aqueduct Company and build new, using the present works as far as they may be available.

For many cogent reasons your Committee believe it is most desirable that the water works should be owned by the City.

To ascertain if the Burlington Aqueduct Company would sell their works, and if so, to learn their terms, we addressed them a letter making the necessary enquiries, and suggesting that a proposal to receive payment in the bonds of the city might be desirable. To this they replied that they would sell all their fixed property, (except their real estate,) together with their franchise, for the sum of \$25,000, and receive in payment the bonds of the City at par. Without entering into a detailed estimate of the value of the property the sum named does not seem to us extravagant. The water rents for the current year amount to over \$3,000.

Winooski River and Lake Champlain are the only sources from which a sufficient supply of water can be obtained.

The advantages of Winooski River consist mainly in the greater facility with which the water can be raised to the reservoir, as the elevation of the water in the river above the upper dam is some fifty feet above the level of the Lake, and in the opportunity the river affords of using water power instead of steam to drive the pumps, the current expenses of the water power being but about three-fifths that of steam.

The objections are, first, that the water, excellent as it unquestionably is at a medium stage, is hard and inferior when

the river is very low, and when the river is at a maximum stage the water is so filled with foul and earthy matter as to render it quite unfit for use without filtering or settling. Second. It would require an additional outlay of from \$15,000 to \$25,000 for main pipe, as the pumping main could not then be used as a distributing main. Lastly: it is very doubtful if there is sufficient surplus water in the Winooski in extreme dry seasons to drive the pumps to their full capacity, and it is at just such times the water is most needed. It has also been said that should water be taken from the river, owners of water powers at points lower on the stream would be entitled to damages for diverting the water from its natural channel. At the Lake the supply is of course unlimited, and if taken at the proper point, and at a proper distance from the shore, the quality is excellent and unvarying. As we deem these considerations of paramount importance, we have in the plan proposed and estimate herewith submitted assumed that the water be taken from Lake Champlain.

The plan we would recommend is briefly this: Purchase the franchise and property of the Burlington Aqueduct Company. At some point on the Lake shore, north of Pearl St., construct the necessary buildings and machinery, to force the water through a main pipe along Lake Street, to the foot of Main Street, thence up Main Street to a reservoir located upon the ridge east of Tuttle Street, and from thence distributed about the City.

Should the work be undertaken by the City it is but equitable that the water should be distributed as equally as possible to all portions of the City. In the estimate submitted provision is made for laying pipes in all the Streets from Spruce Street on the south to North Street on the North, and from the Lake on the west to the bridge over the Winooski on the east. Additions can be easily laid in the few Streets beyond these limits as may from time to time be required.

With a capacious reservoir "on the hill," and proper provision for fire hydrants, the strong head of water (about 230 feet on the square) would render the City almost absolutely

safe from any sweeping and destructive fire. The estimates provide for a reservoir holding eight millions of gallons, and for seventy-five hydrants of the best kind, located at each and every streetcrossing in the City, within the above described limits of the water pipe. We have also provided for five watering troughs for horses, and for two drinking fountains, in all of which the water shall be kept constantly running for the free use of the public.

In preparing the following estimate the Committee take pleasure in acknowledging their indebtedness to Mr. D. C. Linsley for much valuable assistance.

ESTIMATE.

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| Purchase of Burlington Aqueduct Company, | \$25,000 00 |
| Buildings at the Lake and Pumping Machinery, complete, including pier extended 300 feet into the Lake, | 23,500 00 |
| Pipes and Laying, | 68,000 00 |
| Reservoir, | 9,000 00 |
| Hydrants, and setting the same, | 3,500 00 |
| Valves, Gates, and Bibbs, or Stop Cocks, | 2,500 00 |
| Superintendence, &c., | 2,500 00 |
| Unestimated items and Sundries, | 2,500 00 |
| Watering Troughs and Fountains, | 1,000 00 |
| Meters, | 2,000 00 |
| | <hr/> |
| | \$139,500 00 |

From a careful examination with Mr. Linsley of the details of the foregoing estimate, we are confident it can be safely relied upon as a close approximation to the final cost; but in order to provide for all possible contingencies we would recommend that the citizens be asked to authorize the issue of six per cent. bonds of the City, payable in twenty years, to such an amount as may be required, not exceeding \$150,000. We cannot doubt that upon such security the money can be easily raised.

Before dismissing the subject we desire respectfully to urge the importance of prompt and energetic action upon it,

confident that it needs to be but carefully considered to secure the approval of almost every intelligent citizen who has the welfare of Burlington at heart.

We are assured by Insurance Agents that in case an abundant supply of water be generally distributed about the City, as contemplated, the amount of premiums would be decreased not less than from eight to twelve thousand dollars, which would alone be equal to six per cent. on the entire cost of the works.

Merely as a matter of convenience an abundant supply of pure water is certainly desirable; as a sanitary measure the need of it is most forcibly set forth in the recent able report of our Health Officer; as a security against any sweeping and destructive fire which in the space of a few hours might strike a fearful blow at the manufacturing and commercial interests of the place, it is of *vital importance*; to the healthy increase and development of our manufacturing interests it is an *imperative necessity*.

Let us then unite in an earnest and hearty endeavor to secure at an early day an abundant supply of pure water. Let the works be constructed with prudence and with rigid economy; but let them be upon a scale sufficiently liberal to meet all our wants at the present and in the immediate future.

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| P. D. BALLOU, | } | <i>Committee.</i> |
| W. H. BRINK, | | |
| G. S. APPLETON, | | |
| LAWRENCE BARNES, | | |