

ANNUAL REPORT

OF THE

TRUSTEES OF THE CITY WATER WORKS,

For the Year ending 31st December, 1851:

TOGETHER WITH THE

REPORTS OF THE SUPERINTENDENT

AND ENGINEER,

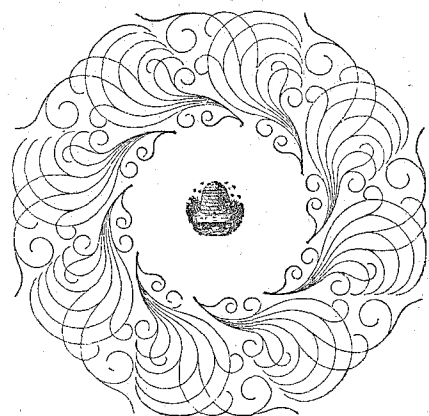
WITH STATEMENTS SHOWING THE INCOME, AND EXPENDITURES, AND CONDITION OF
THE WORKS.

PUBLISHED IN COMPLIANCE WITH THE ACT OF THE LEGISLATURE FOR THE GOVERNMENT OF THE
CITY WATER WORKS.

CINCINNATI:

PRINTED AT THE DAILY TIMES OFFICE.

1852.



REPORT
OF THE
TRUSTEES OF THE CITY WATER WORKS,
FOR THE YEAR ENDING 31ST DECEMBER, 1851.

To the Hon. President and Members of the City Council:

GENTLEMEN:—Since our last Annual Report, the necessary law, authorizing the issue of One Hundred Thousand Dollars of City Bonds for the further improvement and extension of the Water Works, passed the Legislature, and was subsequently ratified by the qualified voters of the city. Upon receiving these bonds from your honorable body, the various improvements in progress at the close of our last Report, were vigorously resumed, and have since been carried forward as rapidly as a due consideration for economy, and a proper regard for the character of the work, would admit.

The western division of the new reservoirs has progressed so far as to enable us to complete it very early in the spring.

The new engine, built by Messrs. A. Harkness & Son, has been completed and put in operation since our last Report. The very favorable opinion then entertained for this machinery, has been entirely confirmed by its subsequent performance. In its use, a very important saving of fuel, over that of our other machinery, has been realized.

This engine is placed above the extreme flood-line of the Ohio river. The reason for this will be obvious to all, and to carry out fully, and secure the important desideratum of having at least one set of machinery above the extreme flood-line, another set of boilers was found necessary. Independent of this consideration, this would, in the ordinary course of things, soon be found necessary. As the boilers now in use are old, and from long and constant use would

soon require to be replaced, ordinary consideration of safety and propriety would seem to require this. Accordingly, a new set of boilers, to be placed on the same elevation with the new engine, has been contracted for with Messrs. A. Harkness & Son. These boilers differ in plan from any hitherto in use in the West. They are termed the Cornish Boilers. Their superior qualities for safety and economy of fuel, and for the purposes of generating steam, have been thoroughly tested in England, where our Engineer had ample opportunity to investigate their merits while on his late European tour. We have entire confidence that his opinion of their merits, and their great applicability to our use, will be fully realized. They are now in a great state of forwardness, and will be ready for use early in the spring.

A new engine-house has been built and nearly completed, on a plan admirably adapted to the purposes for which it is designed, with ample room for all the necessary machinery, coal bins and work-shops that will be required for years to come. Entirely devoid of ornament, it however embraces all the architectural arrangement and effect that could be expected in a building designed for its purpose, and will arrest the attention of all by its dimensions, and its massive and substantial appearance.

In its construction, every attention has been paid, and no reasonable expense spared to secure strength and durability. The roof is placed on iron rafters of a novel plan, invented by H. B. Curtiss, and combines great strength, an airy, light appearance, as well as economy of cost, and is not liable to the serious objection of fire, common to those constructed of wood. The whole structure was erected under the superintendence of H. B. Curtiss, mainly from plans drawn by him, and is every way creditable to his skill and judgment as an architect and builder.

Since the last Annual Report, there has been laid 29,358 feet of pipe, of all sizes. This includes 4,779 feet of large mains. This has been laid, most generally, on populous lines, where a regular and steadily increase of revenue may be expected. Some of it, however, has been laid on lines sparsely populated, for the purpose of accommodating fire cisterns in new districts.

The receipts during the past year are as follows :

For cash on hand, January 1st, 1851,.....	\$8,931 81
“ Bonds sold,.....	89,568 90
“ Water rents,.....	80,448 37
“ Sundries,.....	1,493 45
	<hr/>
	\$180,442 53

EXPENDITURES.

Paid interest on Bonds,.....	\$43,730 38
Fuel, Repairs, and other expenses,.....	23,000 00
Improvements,.....	75,731 73
Bills payable and account for improvements in 1850,.....	31,044 51
January 1st, 1852, cash on hand,.....	6,935 91
	<hr/>
	\$180,442 53

The income for present year, available and applicable for expenses, and for completion of improvements now in progress and for extensions, are estimated as follows :

Water rent,.....	\$86,000
Bonds unsold,.....	30,000
	<hr/>
	\$116,000

EXPENDITURES.

Interest on Bonds,.....	48,000 00
Fuel, Repairs, and other expenses,.....	20,000 00
Finishing building,.....	3,000 00
Cornish Boilers and chimneys,.....	9,000 00
Outstanding accounts,.....	7,000 00
Finishing Reservoir,.....	12,000 00
	<hr/>
	\$99,000 00
Balance applicable to extensions,	17,000 00
	<hr/>
	\$116,000 00

The attention of the Council is respectfully directed to the unusually able Reports of the Superintendent and Engineer, and more particularly to suggestions in relation to a more efficient mode of collecting the revenue of the works, and a more equitable assessment of the burthens which this work should impose on all interested or benefited. At this time, these suggestions derive great additional force, from the fact that a further issue of credit for the extension of pipe, and the construction of a distributing reservoir, and for the arrangement to supply the already large and rapidly increasing population on the hill side, can not be expected. These important and vital improvements, the necessity for which is daily and hourly becoming more urgent and pressing, cannot be made, and a large body of our fellow-citizens must be deprived of any participation in the benefits of this work for years to come, unless some plan, similar to that suggested, is adopted.

All will readily admit that the water furnished so bountifully as is done by the Water Works, for domestic and manufacturing purposes, guarding also against the exigencies of fire, does and must add largely to the value and security of property along the line of pipe. If these benefits accrue to property, from its vicinity to the water pipes, it surely should contribute to the maintainance and extension of a work of such vital importance, and one whose benefits will be as continuous as time itself.

The Trustees have long since felt that there were a class of water renters, the tenants of small houses, who were taxed beyond their ability to pay, and who, under a more equitable assessment, such as is suggested, would have their rents reduced.

We commend this matter to the earnest consideration of the Council, and to our common constituency, as one which possesses a deep personal interest to every citizen and property holder.

Since the control and management of the Water Works has been transferred to a board of three Trustees, now nearly five years, a period sufficiently long to test the policy of this change, many important additions and changes have occurred, and a very brief review of the condition of the works, previous to this change in policy, compared with its present condition, will not only be found interesting but instructing, testing, as this experience does, the policy of managing public works by small bodies, and making them feel, directly and personally, their responsibility to the public.

From a report by the Water Committee, in Council, and the elaborate and able reports of the Superintendent and Engineer, made in February, 1847, we gather the following facts :

The current and floating debt of the Water Works was \$131,000. To keep this large amount afloat, resort was had to temporary loans of banks and individuals; oftentimes obtained and kept alive by the personal pledge of the credit of members of the Water Committee. The machinery was in a very unsatisfactory condition. One-half of the distributing pipe (13 miles) was composed of wooden logs of insufficient capacity, and generally in a very rotten and defective condition. The reservoirs were small, hardly containing 24 hours' supply, and leaking badly in very many places. Casualties incident to this state of things, interrupting the flow of water, were of frequent occurrence, and sometimes of long duration, while in all directions complaints of the scarcity of water were constant and numerous.

At that period, the number of hydrants in use was 3925; the amount of iron pipe 16 5-6 miles; wood do., 13 4-5 miles; and the revenue from water rents, \$48,155.

In this condition the works passed into the hands of the new Board

of Trustees, in April, 1847. Since that period, a vast amount of labor and improvement has been accomplished. Step by step, slowly but surely, has this work gone forward until now—complaints of any character are of rare occurrence, and the most entire confidence is felt in all quarters in a regular supply of water, amply sufficient to the wants of the city in cases of fire, and always reliable for domestic and manufacturing purposes. The machinery has been improved and increased by a reserve engine, and is now amply sufficient to cope with any unfavorable emergency. The engine-house has been rebuilt on an enlarged and improved plan, so arranged that one set of machinery is placed above the extreme flood-line of the Ohio river. The reservoirs have been rebuilt on a greatly extended scale, of a massive and durable character, and of four times the capacity of those formerly in use. Thirty-four miles of iron pipe, including extensive lines of large mains, have been laid.

During this period, except on one occasion, for a brief period, and during the flood, when our machinery was under water, no interruption to the regular and full supply of water has occurred.

The revenues have been increased in that period nearly 70 per cent., while the necessary and incidental expenses, not chargeable to any permanent fund, and such as are necessary to the perfect preservation and management of the works, have been reduced.

We point to these evidences of efficiency and good management, with confidence and pride, and claim them as the necessary and legitimate fruits of the change in the conduct of this important work, rather than from any personal merit resulting from the attention and labor of the Trustees. We may, however, add, that we have watched, with much solicitude, the development and result of the many changes and improvements introduced. We however find ample remuneration for our anxiety and labors, in the increased accommodation of our fellow-citizens, and the confidence which is everywhere felt in the efficiency and management of this important work. We confidently believe, if the present policy is steadily adhered to, and this important branch of the public service be conducted with an eye single to the great interests of the city, that, like similar works in our Atlantic cities, it will soon become the pride of the city. We feel that it is a work of such vital importance to the various interests of the city, that our fellow-citizens should take a deep personal interest in all that concerns it.

The ancients seemed to have had a more comprehensive and exalted idea of the value and uses of pure water, than we of the present day. The magnificence and grandeur of many of their reservoirs,

aqueducts, baths, and fountains, are almost beyond comprehension. Such is the skill and the labor bestowed in their construction, that many of these works are now as perfect as ever.

Of the architecture of the ancient cities, hardly one stone remains upon another. While the temple, the palace, and the more humble dwelling have crumbled into dust, the reservoirs and aqueducts, those massive creations of the genius and labors of those times, remain comparatively unchanged.

“The great temple of Jerusalem, with its gorgeous moldings and ornaments of cedar, of pearl, and of gold, hallowed by the visible glory of the Deity himself, is gone, while Solomon’s reservoirs remain as perfect as ever.”

Rome, in her glory, with one million of inhabitants, consumed daily nearly four hundred million gallons of water, brought into the city by twenty costly aqueducts, and distributed through 13,594 pipes. Her aqueducts and her baths are among the most perfect of her works of art, and indicate the elegance and splendor of her day.

Among the Pagan nations, the use of pure water was ever held as a religious rite. In contemplating their many works of this kind, the traveler is lost in wonder and amazement at their grandeur and extent.

In Ceylon, there is one reservoir so colossal in its dimensions, that the Croton works, the grandest achievement of modern times, dwindles beside it into a mere rill. This reservoir is 7 miles long, 300 feet broad, and 60 feet high. This is about four hundred times the capacity of our reservoirs, and would furnish an ample supply of water for this city for two years.

In Portugal, is a vast reservoir, built of such huge blocks of stone as to make it a matter of wonder and speculation by what kind of machinery they could have been elevated to their places. Neither history or tradition furnish any record of this grand work.

The ancients seemed to regard the value and uses of pure water above all considerations of cost, and were liberal and even profligate in its use. The luxury of the bath, and its beneficial effects on health, were held in the highest estimation. One of their bathing palaces, in Rome, would accommodate 2,400 persons at one time.

Our fellow-citizens should cherish and support, by their aid and interest, the Water Works of this city. Though but as the brook beside the river, compared with the works of ancient times, it is, nevertheless, a nucleus from which may arise a mighty work, possessing all the essential elements of those grand works of ancient times, and is one which now vitalizes, by its continuous and unceasing

ceasing flow of wholesome water, the manufacturing and domestic interests of the Western metropolis.

Our acknowledgments are again due, and are hereby cheerfully tendered to the officers and laborers of the works, for the fidelity, skill, and good judgment with which they have performed their respective duties.

All of which is respectfully submitted.

JAMES C. HALL,
N. W. THOMAS,
WM. McCAMERON, } Trustees.

SUPERINTENDENT'S REPORT.

To the Trustees of the City Water Works:

GENTLEMEN:—As early in the season as the weather would permit, the extension of the High street 20 inch pipe was resumed, continued along Symmes street, and connected with the supply pipes at the intersection of Pike and Symmes streets.

The arch of the bridge over the canal, at Symmes street, is so high, that, to obtain the passable depth of 12 inches below the surface of the street, it was necessary to cut a groove more than half through the depth of the arch stone.

The pipes, firmly bedded on the stone work, lay so near the surface that they are subject to a jar from the passage of every dray or wagon that crosses the bridge. This, together with trembling and settling of the earth on each side of the arch, tends to loosen the pipe-joints, and cause a constant dripping of water. Although the waste is very inconsiderable, if permitted to continue, it is sufficient with the aid of frost, to injure the stone work of the bridge.

The City Engineer, whose attention was called to the difficulty, was of the opinion that it was provided for by the contemplated re-grade of the street; but, as Symmes street, between the bridge and Butler, has been re-paved within the last month, it is presumable that the grade will not be changed for some years. Therefore, to avoid digging up the street and recorking the joints, which has already several times been done, and will be to repeat so long as the pipes remain so near the surface, it becomes necessary to open a passage through the stone work below the arch. This opening can be made without injury to the bridge, and the pipes secured and protected by iron string pieces laid across the opening.

The 20 inch feeder has been extended on Eighth street, from Vine to Western Row, and the 8 inch feeder on Vine, from Fifteenth

to Hamilton Road. These timely extensions of the main feeder afforded an ample supply against the unprecedented demand for water, during the excessive drought of last summer.

Owing to the uncertainty that existed, early in the spring, concerning procuring funds sufficient to finish the improvements commenced, the excavation for the foundation of the walls of the west half of the reservoir was not begun until the last of April. It was the middle of June before the stone work could be resumed; but the weather being favorable, it progressed so rapidly that, by having the stone dressed this winter, the reservoir can be finished at an early day next spring.

Since the first of July the old walls of the Engine House have been removed, the foundation raised above the highest flood, and a good, substantial brick building erected. A detail description of this building, and of the improvements and condition of the machinery, will be presented in the report of the Engineer.

Since the last annual report, there has been laid 2,997 feet of 20 inch pipe, 1,782 feet of 8 inch, 22,779 feet of 4 inch, and 1,800 feet of 3 inch pipe; this, added to that previously laid, makes over fifty miles. See statement annexed:

New permits, issued in 1851,.....	727
Old number reissued,.....	32
	—
	695

Whole number of Hydrants on the 1st January, 1852,	
was	6,613
Hydrants off, no pay,....	121
Out of use and leak,.....	232
New Buildings,.....	82 435
	—
Hydrants now in use,.....	6,178

RECEIPTS.

Cash on hand, January, 1851,.....	\$8,931 81
For Bonds,.....	89,568 90
“ Water Rent,.....	80,448 37
Sale Little Engine,.....	700 00
Old brass, iron, barrels, ferules, &c.,	793 45
	—
	\$180,442 53

EXPENDITURES.

Interest on Bond for 1851,.....	\$43,730 38
Fuel, repairs, and other expenses,.....	23,000 00
Improvements,.....	75,731 73
Notes and accounts for improvements of 1850,....	31,044 51
Cash on hand, 1852,.....	6,935 91
	\$180,442 53

ESTIMATE OF RECEIPTS AND EXPENDITURES FOR 1852.

RECEIPTS.

From Water Rents,.....	\$86,000 00
From Bond on hand,.....	30,000 00
	\$116,000 00

EXPENDITURES.

To pay interest on Bonds,.....	\$48,000 00
Fuel, repairs, and other expenses,.....	20,000 00
To finishing the building,.....	3,000 00
To outstanding accounts,	7,000 00
To finish the reservoir,.....	12,000 00
For chimney and cornish boilers,.....	9,000 00
	\$99,000 00

The experience of the past season shows conclusively that the rules for the protection of the Water Works are not sufficiently comprehensive or stringent. During the excessive hot and dry weather, when springs and rainwater-cisterns failed, and the whole population resorted to the Water Works for their domestic supply, common prudence should have suggested the necessity of a reasonable economy in the use of water; but so far from that being the case, there was generally an unnecessary, and, in many cases, a reckless waste of water. Without thought for the result to others, every one seemed to seek relief from the oppressive dryness in the flowing of the water. Hose, attached to side-walk plugs, were left running into the gutters for hours. Children were permitted to use the street plugs to play jets and water-wheels, the street sprinklers deluged the street, converting a dusty nuisance into a muddy one. Fire-plugs, avowedly for fear of damage by axe, hammer, or other force, being left that they could be opened without the aid of spanners, were freely used, and the water taken for all and every legitimate or illegitimate purpose.

This goes to confirm the experience of other cities, that instead of the use of water being regulated to a judicious satisfaction of all necessary requirements, the consumption will, in all cases, be fully equal to the most abundant provision, and nothing short of stringent laws, rigidly enforced, will keep the waste of water within supplying limits. In the city of New York, the Croton Works, pouring 30,000,000 of gallons daily into the city, were found unequal to the waste.

The commissioners of the Croton Water Works, in their report, after enumerating various sources of abuse and waste of the Croton water, say: "The hundreds of hangers on about the engine houses, the volunteers, the runners with fire companies, these excrescences upon that department have each a wrench to open a fire hydrant, and the spirit to show their proneness for mischief by doing it at all times and in despite of every body." * * "It is in vain that this department essays to stop the evil last referred to without the aid and support of other departments of the city government. The subject is already beyond its reach." * * "This Board now warns the City Council, and through it every citizen, *that the last drop of water which the Works in their present state can supply, is now daily delivered.*" "It is, therefore, the duty of the city government, as it is surely the interest of every tax payer, to compel the use of present resources with some little regard to reasonable economy."

If Philadelphia, New York, and Boston, after expending their millions in turning the course of rivers to supply their city, find it necessary to apply rigid rules to restrain abuses and waste of water, how essential is it that this Board [should require at least a judicious economy in the use of water.

Before any considerable additional extensions are made to the distributing pipes in the western portion of the city, provision should be made for preserving a full head on the higher portion of the plain. The most efficient and economical mode of accomplishing this object, will be by erecting a reservoir on the side hill, north of Hamilton Road, at some point west of Elm street, on the same level with the present one, and supplied by opening a free communication between the two through a separate line of pipe. By connecting the main feeder and supply pipes with the new reservoir, the coursing distance of the water will be reduced one-half—an equal column will rest upon both ends of the pipes—a more direct and uniform flow of the water be afforded, and an equilibrium in the distributing and service pipe be insured, greater than can in any other way be obtained.

This reservoir should be capable of holding at least 15,000,000 gallons—three times the capacity of the present one—and located with reference to the erection of an engine and pump, that shall lift the water

from this reservoir to supply one that will ere long be built on the hill, for the thousands of inhabitants that, to make room for business and manufactures, will seek a residence there.

The radiating of railroads, and other circumstances, combine to give an impetus to the improvements, numbers, business and wealth of the city, beyond any former period; and this suggested expedient for a supply of water to the hill will, in a very few years, give way to works erected expressly and exclusively for their accommodation. But our sphere of action is on the plain below the hills, an area containing some 2,800 acres, which, in a short period, will require a supply of water for the business, or domestic use, of some 270,000 inhabitants, and in no other way can it be so effectually accomplished as by erecting auxiliary reservoirs.

The present system for sustaining the Water Works has had its day, performed its use, and has become as oppressive, and as little adapted to the present and advancing condition of the city, as the swaddling clothes of the infant to the youth.

At the time the works were purchased, the city numbered a little over 40,000 inhabitants, who obtained their supply from springs, wells, rainwater-cisterns, water-carts, and the "Cincinnati Water Works." A crisis in the affairs of the Company being such, that if not purchased by the city, the works were likely to pass into the hands of strangers having no affinity or sympathy with the citizen, the City Council were induced to apply to the Legislature for power to purchase, and authority to issue the bonds of the city for the amount. This was granted, conditioned that those agreeing to take the water should pay the interest on the bonds issued, the amount of repairs, extension, and all other expenses of conducting the works. Also, providing that, "if in any one year the rents should fall short of the necessary disbursements, the amount of such deficiency shall be levied and collected in the succeeding year, in addition to the usual rates."

This in effect was but loaning the credit of the city, as in the case of the Little Miami Railroad, and other companies, holding the property as security for the final payment of the bonds; exacting rather harder terms upon the renters, as they, for the privilege of furnishing themselves with water, furnish a supply for the protection of the property of the citizens generally, in addition to paying the interest.

That was the best that could be done at the time, as there were other sources of obtaining a supply. The surface of nature's reservoir, underlying the plain on which the city is built, was not so thoroughly contaminated, nor the atmosphere and roofs so impregnated with coal smoke, and other noxious gases; neither the bulk of

the population beyond carrying distance from the Ohio river. Now, to the mass, all these sources for obtaining a supply are cut off. Building for the accommodation of the increase of population and business, has covered a very considerable portion of the surface of the plain. The improvements, by cutting down, filling up, grading and paving, cause the rains that falls to pass off so rapidly, that springs and wells have, in a great measure, failed. And the precarious supply that can thus be obtained, must, from drainage of vaults, sinks, grave-yards, sewers, and noxious ingredients, mixed with the earth's surface, necessarily partake of rather an unpalatable mineral flavor, if not of an unwholesome quality. Rainwater, from the roof of buildings, cannot be either pleasant or salubrious. This is evident, from the continued application for a "bucket of water, cause mam says the cistern-water gives the tea a bad taste"—"cause our cistern-water spoils the dinner"—"cause father cannot drink cistern-water, —and the like, which is the daily testimony of hundreds of *children*, therefore must be true.

As to water-carts, every one that was ever so unfortunate as to be dependent upon them, under the most favorable circumstances, can testify that no scheme could be devised better calculated to divest a man's pocket of the supply of cash, or to insure him being out of a supply of water when it was most needed. Indeed, that source is out of the question; no one would think of using for domestic purposes, the water scooped up amidst filth and offal of every description, as it must be, if taken from the shores of the Ohio river, at any point between Mill and Deer Creeks.

It must be evident, that no reliable supply of water can at this time be obtained from any other source than the Water Works.

By a census lately taken, there are 21,620 families (118,000 inhabitants) residing within the city, below the level of the reservoir; 12,455 families (63,000 inhabitants) residing on the streets in which the pipes are laid, and only 5,828 families (33,000 inhabitants), less than one-half, pay for the use of the water. Citizens that have noticed the frequent and free use made of hydrants by whole neighborhoods, the throngs that resort after dark, with bucket, tub, and barrel, to the fire-plugs, the number of private cisterns nightly filled by means of hose, will readily admit, that at least three-fourths of the whole 21,620 families obtain their supply from the Water Works.

No police regulation can be so framed as to prevent the taking of water. House-keeping cannot be carried on without water, and it cannot be obtained from any other source. The effect of the present law works a wrong to those that do not pay for water, and imposes unreasonable burden upon that portion of the citizens that do.

It causes them to pay for nearly double the quantity of water that they use.

By an annexed estimate of the daily average quantity used by each family and business—which we presume each citizen will admit is sufficiently large in his individual case—the 5,828 paying families, and the various business purposes, use and waste 1,498,680 gallons daily ; and they pay for distributing 2,600,000 gallons. The difference being sufficient for 7,000 additional families. In addition to this supply to families, they furnish to the fire department, for the protection of property from fire, a daily average of 30,000 gallons.

All will, no doubt, admit the injustice of the present law ; but the grand question is to propose a modification that will generally be considered equitable.

A full and reliable supply of wholesome water is indispensable to the health and happiness of the inhabitants, and to the continued increase of the population, business, and wealth of the city, as the soil on which it is built. Without it, the safety of property would be so precarious as to render it comparatively valueless. The additional premium on fire insurance would amount, annually, to more than the interest on the Water Works bonds, together with the gross sum of repairs, fuel, and all expenses of conducting the works. The difference in the amount of property destroyed by fire, would build new Works every seven years.

Although water is provided in as great abundance as wood, stone, or food, still it, like them, becomes an article of value when men congregate in masses, creating a demand greater than the immediate supply.

Water, like any other article, has an intrinsic value. It matters not whether the source is spring, well, or aqueduct, time, or its equivalent, money, has to be expended before a supply can be obtained. The reliable supply, furnished by the Water Works, is invaluable to a dense population. To individuals it is as necessary as house, cooking-utensils, provisions, or fuel. It is essential to the successful conducting of various, manufactories and business. It conduces to enhance and equalize the value of real estate, by furnishing facilities for carrying on manufactories requiring quantities of water at any point on the line of the pipes, thus diffusing the competition for lots. It affords security to property from the ravages of fire. It confers special and general benefit, by promoting the health and happiness of every individual.

The city government tax property with the cost of filling up low grounds, improvement of the streets, building fire cisterns and engines ; all being for the general good, no injustice is thought to be

done to owners of property, as value and security are thereby increased. Surely the benefits to be derived from a reliable supply of wholesome water are not less general or important. Therefore, as the Water Works are at least as essential to the prosperity of the city, to the comfort and convenience of the citizens, as the grading and paving of the streets, building bridges, sewers, fire engines, and cisterns, or any other improvement, it must be as equitable to tax the real and personal property with the amount of the interest or cost of constructing suitable works. No one can offer any good reason why a reasonable charge should not be made for water furnished to steam works or other business, as much as for fuel or other necessary article for carrying on such business. And surely the cost of furnishing a supply of water to families is as legitimate charge upon housekeepers as cooking utensils or bread.

If the above position is correct, and the assessments of water rates are made in accordance therewith, the following statement will show the result, viz :

The real and personal property taxed for the amount of the interest on the Water Works' Bonds.....	\$48,000 00
Business to be charged at the present rates.....	22,000 00
Each dwelling on the line of the water pipes to pay an annual water rent of \$5, which entitles the premises to a supply of water for the domestic use of one family; 10,033 houses on the line of pipe at this time, \$5....	50,000 00
Private stables, baths, window plugs, street watering, gardens, and other luxurious use of waters, to be charged extra, say.....	5,000 00
	125,000 00

ESTIMATED EXPENSES FOR SAME TIME.

Interest on Bonds.....	\$48,000 00
Fuel, repairs, and other expenses.....	20,000 00
	68,000 00
Difference.....	57,000 00
	\$125,000 00

Although this statement shows an increase in the amount of the revenue, no individual use of water will pay more than at present, and a very large proportion will be charged nearly one-half less.

The surplus, after paying interest and expenses, being 57,000 dollars, there may be 30,000 dollars applied to extend and improve the works, and 25,000 dollars annually appropriated to a sinking fund,

which can be increased yearly as the works are extended, paying off the water debt in comparatively few years, when the property would be relieved from this tax.

If the foregoing suggestions should be adopted, or any other change be contemplated, application should be made to the Legislature for the necessary power.

All of which is respectfully submitted,

E. HINMAN, Sup't.

JANUARY 1, 1852.

ENGINEER'S REPORT.

To the Trustees of Water Works.

GENTLEMEN:—In view of the present prosperous condition of the Water Works, it is gratifying to announce to your Board that no measures will be proposed as necessary, nor call for appropriation of any importance, be recommended by the Engineer in the following report for the improvements of the Works in the coming year.

The reservoir, as the chief source and fountain head of water supply, ranks first in importance of any other on the list of unfinished works. To this subject your attention has already been called in the preceding report of the Superintendent, together with a project proposed for the enlargement of the Works, mainly, and as a first step, by an additional and very capacious reservoir, to be located on an eminence in the northern boundaries of the city, to afford a water supply to residents on all the surrounding heights above the present reservoir elevation. The object being now to secure the adoption of a system of supply on such an extensive scale, as to answer as the basis for all future operations and reference. The generals and details of the scheme appear feasible and practical in every particular, and the manifold advantages resulting from its adoption are ably presented by its advocate. The question whether the interests and necessities of a large portion of the city population call for some provision for water supply, and that just claims are every day urged for the extension of its benefits, cannot be denied. The luxuries and comforts of this desired boon are too manifestly evident, and too easily obtained, to defeat the success of such an enterprise (if set on foot) for any protracted length of time. These views, however, are offered as merely suggestive, for adhering strictly to the position taken in the outset; no opinion is offered approving or disapproving

the measure for your action, as, no doubt, your minds will readily comprehend the objects and advantages set forth in their proper and true light, and that in your deliberations you will give the whole subject the weighty consideration due to the importance and magnitude of the project proposed. In the event of carrying such a project into practice at any time in future, proper means should be devised in the arranging of plans for thorough and effectual filtration of water in the reservoir. The process for its accomplishment is simple and effective, perfectly purifying the water of all noxious matter held in suspension, and imparting to it a salutary and palatable flavor by this method of restoring water to its natural, pure, and limpid state. This is a matter so important to cleanliness, comfort, and health, attended with so little trouble and expense, that it should not be overlooked upon any account.

A very commendable proposition is also laid before you from the same source, having for its object the immediate relief of water payers, the features of which appear equally as plausible and practicable as the first. The bias of public sentiment is strongly set in favor of a more judicious and equal assessment of water rents than those now in force, calling for a different and efficient system of taxation, which shall be more uniform and just in its provisions. True policy suggests the lightening of this heavy burden (tax) on water consumers, especially upon the industrial classes, to whom any relief afforded by extending so essential a comfort of life to them as that of a bountiful supply of water, and at the same time mitigate the oppressive cost, would be an act of humanity and duty, which would be responded to by general demonstrations of joy and approbation. Next in importance to the foregoing is the subject of the new condensing engine, in course of construction by Messrs. Harkness & Son, when making out the last annual report, and which was subsequently finished and put in operation on the 17th of February following. To supercede the necessity of new boilers, a water and steam connection was effected with the old high pressure boilers in use, for a steam supply to the new engine, which expedient was resorted to rather as a temporary substitute than as any thing permanent, merely to answer for the time being. When the engine was set in motion, at the time of trial, having sufficient power applied to force water into the reservoir, it was immediately discovered, from its action (by working water), that the boilers employed were sadly deficient in steam room, and otherwise inadapated, owing to the necessary high head of steam required to be kept up to prevent priming (foaming), which acting on a piston of great area, tended to jar and injure the engine. These pernicious results led to the recommendation and approval of a suita-

ble plan of boilers for low steam purposes, which were contracted for with the makers of the engine. This work is being pressed forward with no lack of perseverance to get the boilers in use, if possible, sometime in the month of February next. When the present high pressure boilers in use are thrown out as unfit for service, it was contemplated to place a similar set of boilers to those being made on the West side of the house, where preparation has been made in the partition wall to receive them. Out of a cross steam-pipe to connect these two sets of boilers, the supply of steam for each high or low pressure engine, will be taken at pleasure. With due allowance for a misapplication of boiler, under which disadvantage the condensing engine has necessarily been used from time to time, it has continued from the first to give a series of successful and satisfactory results, with unmistakable evidence of great economy of fuel in raising water, as the records at the engine house will show. As a test, to decide the relative advantages of the high and low pressure system of working steam, placing the merits of the engine makers upon a just and equal footing, we have in the Water Works, which will be freely admitted, a high and low pressure engine unsurpassed for mechanical construction. When the boilers in progress are brought into requisition, and the pumping engines put in good working repair, ample opportunities will be afforded by the results of practical experiment in the course of another year, for deriving information necessary to calculate the advantages sought. These experimental operations will furnish important results, which will elicit much public interest with regard to the issue, as it will be looked upon as the final settling of an undecided and vexed question in the West, by a satisfactory and practical solution.

The erection of the new engine house on the site of the old one, proved to be a very vexatious and difficult task, in consequence of the many pipe connections which had to be cut off and alterations made about the engines to suit the new construction. At the same time the usual supply of water was maintained, and this in the heat of summer, gave rise to heavy complaints by the hands (who made the alterations mostly at night), for the overtask of duty it imposed. In other respects this work has progressed under many unfavorable circumstances, without any serious difficulties to cause complaint. The house measures 152 feet in length, 91 feet in width, and 45 feet in height, to the top of the parapet walls. The internal arrangements for work shops, coal-bins and separate apartments, for furnace and engine rooms, conform to plans proposed in the last annual report. These embody all the requisites of safety and comfort desired. The materials gone into the construction of the

house, have been carefully selected for first quality, and the workmanship by the contracting parties, Mr. P. N. Taylor, carpenter, and Mr. F. Vatchette, brick mason, is esteemed highly creditable for superior and faithful execution. There is one feature of novelty about the building, which cannot well be passed unnoticed. This consists in the iron truss roof, designed by Mr. H. G. Curtiss, and was made by the firm of Horion & Co. It is a cheap, simple, and durable structure—presenting an air of extreme lightness, combined with great strength. Its perfect adaptation to the purpose applied, becomes the more apparent, when viewing the great width of the house, the roof having but 5 feet rise in 91 feet span, and as iron was the preferable material to any other for the purpose, it was a happy circumstance for the necessities of the case that brought this simple and ingenious device into existence. The original intention of erecting a lasting and commodious edifice, devoid of superfluity and unnecessary expense, as far as practicable, has been fully carried out. The house, in its architectural appearance, is appropriate and imposing, and, for the purpose of water works, is second to none in the Union.

The broken and impaired state of the wharf for the past two or three years, owing to the constant deposit of earth and offal, has unfitted it for the purpose of a public landing, merely serving for the convenience of mooring and unloading boats of coal for the supply of the works. The softness of the surface has been a great detriment to traffic, making it almost impassible for loaded carts. In consequence of these difficulties, and the wrecks of steamboats and railroad iron, obstructing the landing, the wharf receipts have been very low. The extension and grading being now complete, when permanent improvement for the facilities of traffic, by macadamizing or paving, is made to induce the landing of boats, the wharf must, necessarily, become a source of considerable revenue to the water works.

A ledge of rocks projecting out of that bottom of the river, which was an obstruction to the passage of water into the aqueduct pipes leading to the pumps, was removed during the low water of the past summer. The laying down of under water connecting pipes to the different pumps, will complete the aqueduct work. Before this job can be accomplished with security to a constant supply of water, a new pump had in readiness for more than two years, to occupy the place of the one in use for the old engine, should first be got in action. To perform this work with necessary dispatch—to force it through during the short period of low water, a small portable engine,

to clear the underground vaults of water while the work progresses, will be absolutely indispensable.

The old stone archway was extended out fifty feet into the river, and the wharf graded over it to afford a channel for the passage of water to the pumps until the aqueduct connection can be made.

It is satisfactory to report, that the Water Works machinery was never in better condition than at present, including all the apparatus throughout the whole system of supply. The pumping efficiency, by a simultaneous action of power, would force upwards of 10,000,000 gallons of water into the reservoir, in 24 hours, which is, in quantity, 7,400,000 gallons more than the average daily supply to consumers; which quantity could be applied in case of fire, or for any other great emergency that may arise. The source from which springs such superabundance of good, in its effects so bountifully and equally diffused for public comfort and protection, commends itself to the people for their earnest consideration and support; as upon it depends one of the essential elements of life and health, and one of the main promoters of prosperity and happiness, that society enjoys.

Respectfully submitted,

THEO. R. SCOWDEN, *Engineer.*

JANUARY 1, 1852.

STATEMENT

Of the cost of Material and Labor; the Pipe laid; the purposes for which Water is used; the rates charged, and estimate quantity used for the different purposes.

EXPENDITURES.

Oil and tallow.....	764 30
Copper work and stove fixtures.....	331 26
Sheet-iron work, chimneys and furnaces.....	471 19
Brushes, broom, soap, &c.....	142 33
Rubber packing.....	57 23
Rope, packing yarn, &c.....	198 42
Cotton waste.....	33 15
Fire-brick and clay.....	83 10
Mason work on furnaces and boilers.....	154 16
Gas fixtures and lights.....	386 90
Hose sloshing, &c.....	75 91
Stone for reservoir.....	5,960 00
Sand.....	1,003 17

Lime and cement.....	2,982 90
Dayton stone.....	110 00
Labor, stone masons.....	7,510 28
Labor, clearing off at reservoir.....	330 15
Dressing stone for ".....	2,619 52
Lumber, scaffolding, reservoir.....	195 70
Labor laying pipe.....	2,883 25
Packing yarn.....	178 80
Lead.....	1,929 39
Wood plugs, shovels and pick.....	87 50
Paving, sand, stone and labor.....	2,064 82
Drayage.....	374 16
Casting, pipe and branches.....	19,655 26
Labor on wharf.....	120 00
Labor fixing hydrants.....	1,388 55
Office expenses, printing, rent..... 954 00 }	
Fuel, stationery and salary of office..... 3,300 00 }	4,254 00
Excavation.....	2,876 50
Castings, columns, gutters for building.....	1,001 58
Lumber for building.....	1,386 57
Horton & Co., iron work for building.....	2,754 98
Repair to clock and regisier.....	27 50
" " to boilers.....	621 70
Casting, grates and furnaces.....	400 34
" Brass.....	195 50
" Slim pipe.....	138 75
Castings, columns, and valve seats.....	1,071 36
Labor.....	4,110 85
Coal.....	7,844 12
Brass casting for valves.....	632 22
" " " ferules.....	124 13
Iron Casting.....	1,361 70
Labor finishing and smith shops.....	2,764 82
Patterns.....	733 65
Lumber.....	228 57
Lead.....	942 00
Smith work.....	107 25
Files and other tools.....	145 37
Glue, sand-paper and spirits turpentine.....	125 64
Iron and steel.....	586 20
Beiting.....	33 25
Labor, removing old building and jobbing.....	1,420 10
Lumber, scaffolding, &c.....	328 27
Shovels, pick, powder and wheelbarrow.....	75 75
Stone for building and chimney.....	2,403 16
Stone mason work to ".....	2,731 95
Carpenter work, glass and paints.....	2,100 00
Dayton stone.....	1,075 90
Free stone.....	1,345 75
Lime and sand.....	1,905 87
Brick and hauling.....	3,163 50
Brick work.....	2,380 00
Iron for stairs, and engraving plate.....	39 85
Plating latch, scroll, &c.....	31 50
Paints and oil.....	187 16
Removing pipe.....	19 00
Castings, railings, columns and throttle valves.....	153 90
Brass castings.....	205 61
Screws, swivels, roads and arches.....	54 35

Mason work on arch and chimney.....	768 42
" " " ".....	396 07
Excavation.....	964 55
Carpenters—jobbing.....	158 53
Hauling, breaking up flatboat.....	479 37
Paving Front and Morton streets.....	794 57
Lumber, jobbing.....	899 37
Return rents.....	81 20
Nails, screws and hardware.....	43,730 00
Interest on water works' Bonds.....	\$154,453 55

STATEMENT

Of the Pipe laid during the year ending December 31, 1851.

TWENTY INCH PIPE.	
On Symmes, from Lock to Pike.....	1053 feet.
" Eighth, from Vine to Western Row.....	1944 "
EIGHT INCH PIPE.	
On Vine, from Fifteenth to Hamilton Road.....	1782 feet.
FOUR INCH PIPE.	
On John, north of Seventh street.....	407 feet.
" George, from Baymiller and Freeman.....	738 "
" Baymiller, north of George.....	765 "
" L'Hommedieu's alley.....	824 "
" Wood, at Whitewater canal.....	226 "
" Fifth, west of Stone.....	945 "
" Accommodation, east of Eighth street.....	279 "
" Linn, north of Van Horn.....	1558 "
" Clark.....	675 "
" Hamilton Road, west of Vine.....	2756 "
" Seventh, from Linn to Baymiller.....	504 "
" Eighth, from Mound to Baymiller.....	1645 "
" Augusta, from Smith to Western Row.....	819 "
" Longworth, west of Park.....	387 "
" High, Lock and Pike.....	1089 "
" Smith, from Third to Fourth street.....	468 "
" Woodward, east of Broadway.....	477 "
" Spring, north of Woodward.....	639 "
" Plum, north of Twelfth.....	462 "
" Ann, from Western Row to Plum.....	297 "
" Barr, west of Mound.....	1863 "
" Mound, from Sixth and Seventh.....	279 "
" Cutter, north of George.....	765 "
" Abigail, east of Broadway.....	432 "
" Ninth, east to Western Row.....	176 "
" Richmond, from Cutter to Linn.....	675 "
" Elizabeth, west of Western Row.....	469 "
" Western Row, west to Poplar.....	972 "
" Liberty, from Main to Sycamore.....	495 "
" Hopkins, from Linn to Cutter.....	693 "
22,779 feet.	

THREE INCH PIPE.

On Commerce, from Vine to Race.....	464 feet.
" Alley west of Pendleton street.....	640 "
" " from Walnut to Lodge.....	184 "
" " Vine to Race, Front and Water.....	48 "
" " east Broadway, Front and Columbia.....	224 "
" " from Arch to Fourth street.....	240 "
	1,800 feet.

STATEMENT

Of the Water Rents, Purposes for which used, and the Rates.

FAMILIES.

1575 families, at \$12 per annum.....	\$18,900 00
2752 do 10 do	27,520 00
1118 2 families to a house averaging \$7 50	8,385 00
447 3 to 5 families in a house do 6 50	2,906 00
331 private baths at \$3,	993 00
151 do stables \$3,	453 00
92 water closets \$2,	184 00
61 window plugs 2,	122 00

ENGINES.

Including use of water for shop, foundery, &c.

7 establishments at \$20, per annum,	140 00
16 do 25 do	400 00
30 do 30 do	900 00
20 do 35 do	700 00
15 do 40 do	600 00
22 do 50 do	1,100 00
12 do 70 do	840 00
11 do 100 do	1,100 00
2 do 125 do	250 00
2 do 150 do	300 00
2 do 250 do	500 00

PUBLIC BATHS.

2 establishments, averaging \$50, each.....	100 00
2 do do 60 do	120 00
1 do do 65 do	65 00
2 do do 100 do	200 00
1 do do 125 do	125 00

RECTIFIERS AND DISTILLERS.

4 establishments at \$15.....	60 00
10 do 20	200 00
7 do 25	175 00
2 do 40	80 00
3 do 50	150 00
2 do 125	250 00
2 do 150	300 00
1 do 200	200 00

STABLES.

8 stables averaging \$20 each.....	160 00
7 do do 25 do	175 00
30 do do 30 do	900 00
9 do do 40 do	360 00
6 do do 50 do	300 00
4 do do 75 do	300 00
3 do do 100 do	300 00
2 do do 125 do	250 00
1 do	180 00

HOTELS AND TAVERNS.

2 establishments averaging \$350 each.....	700 00
2 do do 250 do	500 00
2 do do 150 do	300 00
2 do do 125 do	250 00
5 do do 100 do	500 00
2 do do 75 do	150 00
2 do do 60 do	120 00
3 do do 50 do	150 00
2 do do 35 do	70 00
9 do do 30 do	270 00
10 do do 25 do	250 00
17 do do 20 do	340 00

PORK HOUSES.

3 establishments averaging \$15 each	45 00
24 do do 20 do	480 00
3 do do 25 do	75 00
2 do do 30 do	60 00

BREWERIES AND MALT HOUSES.

2 establishments averaging \$20 each.....	40 00
2 do do 30 do	60 00
2 do do 40 do	80 00
6 do do 50 do	300 00
5 do do 100 do	500 00
4 do do 150 do	600 00

SLAUGHTER HOUSES.

1 establishment at \$150.....	150 00
1 do do 125.....	125 00
3 do do 100	300 00
3 do do 40	120 00

VINEGAR AND MINERAL WATER FACTORIES, STONE YARDS, PRINTING OFFICES, SMITHSHOPS, ETC.

16 establishments averaging \$5 each	80 00
20 do do 7 do	140 00
10 do do 11 do	110 00
4 do do 20 do	80 00
8 do do 30 do	240 90
605 stores, shops and confectionaries, averaging \$4,	2420 00

SKIN DRESSERS AND CURRIERS.

2 establishments at \$25 each.....	50 00
1 do	40 00
1 do	50 00

3	Rolling mills.....	650 00
2	Railroads	350 00
1	Gas Company.....	400 00
2	Laboratories.....	250 00
STREET WATERING.		
30	blocks at \$50.....	1500 00
	Gross amount.....	\$84,037 00

STATEMENT

Of the quantity of Water used daily.

1595 }	families, each 175 gallons daily.....	760,725
2752 }	“ “ “ “ “ “	
1565	“ “ “ “ 125 “ “	195,625
331	baths, }	
151	water closets, }	57,000
61	window plugs, }	
7	Engines and shops, each 400 gallons daily.....	2,800
16	“ “ “ “ 500 “ “	8,000
30	“ “ “ “ 700 “ “	21,000
20	“ “ “ “ 800 “ “	16,000
15	“ “ “ “ 900 “ “	13,500
22	“ “ “ “ 1100 “ “	24,200
12	“ “ “ “ 1300 “ “	14,600
11	“ “ “ “ 2000 “ “	22,000
2	“ “ “ “ 2600 “ “	5,200
2	“ “ “ “ 3000 “ “	6,000
2	“ “ “ “ 5000 “ “	10,000
2	Public Baths, each 1000 gallons daily.....	2,000
2	“ “ “ “ 1200 “ “	2,400
1	“ “ “ “ 1300 “ “	1,300
2	“ “ “ “ 2000 “ “	4,000
2	“ “ “ “ 2500 “ “	5,000
4	Rectifiers and Distilleries, each 300 gallons daily.....	1,200
10	“ “ “ “ 400 “ “	4,000
7	“ “ “ “ 500 “ “	3,500
2	“ “ “ “ 800 “ “	1,600
3	“ “ “ “ 1000 “ “	3,000
2	“ “ “ “ 2300 “ “	4,600
2	“ “ “ “ 3000 “ “	6,000
1	“ “ “ “ 4000 “ “	4,000
605	Stores and Offices.....	10,000
8	Stables each 400 gallons daily.....	32,00
7	“ “ “ “ 500 “ “	35,00
30	“ “ “ “ 600 “ “	18,000
9	“ “ “ “ 800 “ “	7,200
6	“ “ “ “ 1000 “ “	6,000
4	“ “ “ “ 1600 “ “	6,400
3	“ “ “ “ 2000 “ “	6,000
2	“ “ “ “ 2500 “ “	5,000
1	“ “ “ “ 3800 “ “	3,800
2	Hotels and Taverns 7000 gallons daily.....	14,000
2	“ “ “ “ 5000 “ “	10,000
2	“ “ “ “ 3000 “ “	6,000

2	Hotels and Taverns 2500 gallons daily.....	10,000
5	“ “ “ “ 2000 “ “	3,400
2	“ “ “ “ 1700 “ “	3,200
2	“ “ “ “ 1600 “ “	3,000
3	“ “ “ “ 1000 “ “	1,600
2	“ “ “ “ 800 “ “	5,400
9	“ “ “ “ 600 “ “	5,000
10	“ “ “ “ 500 “ “	6,800
17	“ “ “ “ 400 “ “	900
3	Pork Houses each 300 gallons daily.....	9,600
24	“ “ “ “ 400 “ “	1,500
3	“ “ “ “ 500 “ “	1,400
2	“ “ “ “ 700 “ “	800
2	Breweries, &c., each 400 gallons daily.....	1,200
2	“ “ “ “ 600 “ “	1,600
2	“ “ “ “ 800 “ “	6,000
6	“ “ “ “ 1000 “ “	10,000
5	“ “ “ “ 2000 “ “	12,000
4	“ “ “ “ 3000 “ “	3,000
1	Slaughter House 3000 gallons daily.....	2,500
1	“ “ “ “ 2500 “ “	6,000
3	“ “ “ “ 2000 “ “	2,400
3	“ “ “ “ 800 “ “	1,600
16	Vinegar Factories, Smith Shop, &c., 100 gallons daily...	3,000
20	Stone Yards, Printing Offices and Schools, 150 gals. daily	2,500
10	“ “ “ “ “ “ 250 “ “	1,600
4	“ “ “ “ “ “ 400 “ “	4,000
8	“ “ “ “ “ “ 500 “ “	1,000
2	Skin dressing, &c., 500 gallons daily.....	800
1	“ “ “ “ 800 “ “	1,500
1	“ “ “ “ 1500 “ “	11,000
	Rolling Mills.....	7,000
	Railroads	8,000
	Gas Company.....	5,000
	Laboratory.....	30,000
	30 Blocks Street Watering, each 1000 gallons daily	30,000
	Fire Department }	
	Market Houses }	
	Gallons daily.....	1,507,650

E. HINMAN, Superintendent.

ANNUAL REPORT
OF THE
CITY WATER WORKS,
FOR 1851.

Balance in the City Treasury, Dec. 31, 1850,	\$8,931 81
Amount deposited by Collectors, in 1851,	80,448 37
Am't deposited by Trustees from sales of Bonds,	99,568 90
Am't deposited by Sec'y for engine and old slate,	800 00
	<u>\$189,749 08</u>
Amount drawn to pay Bills, Notes and Interest,	182,813 17
Balance in the City Treasury on the 31st Dec., 1851,	<u>6,935 91</u>
Balance in the Office at last Report,	20 30
Am't drawn to pay Bills, Notes, and Int'st, 1851,	182,813 17
Received for Ferules sold in 1850 and 1851,	526 00
Received for old iron, copper, iron safe, rent, &c.,	147 15
	<u>\$183,506 62</u>

DISBURSEMENTS AS PER MONTHLY REPORTS.

January,	\$6,940 29
February,	3,019 95
March,	4,612 00
April,	15,256 85
May,	12,762 97
June,	23,724 85
July,	14,585 15
August,	23,713 31
September,	19,634 88
October,	27,837 51
November,	12,394 56
December,	19,024 30
	<u>\$183,506 62</u>

J. R. BALDRIDGE, *Sec'y.*

INVENTORY OF MATERIALS AND WORK ON HAND.

JANUARY 1st, 1852.

200—4 inch Pipe.....	\$828 09
100—3 " "	342 00
10—8 " "	97 20
44—8 and 10 inch old pipe.....	396 00
93—20 " pipe.....	3,022 50
25—4 " branch pipe.....	63 00
10—8 and 10 inch branch pipe.....	65 00
5—20 " " "	270 00
7—20 inch curve socket pipe.....	315 00
6—4, 8, 10, and 20 inch sleeves and elbows.....	20 00
21—4 inch valves, box and covers.....	33 30
5—short socket pipe.....	60 00
Sleeves, Clamp, and Valve castings ² 11,500 lbs.....	345 00
50—4 inch valves, at \$17.....	850 00
4—8 " " 50.....	200 00
3—10 " " 65.....	195 00
9—Large frames for Valve boxes.....	184 00
New pump to replace the one now used at old engine, and Water boxes for suction to pumps.....	8,973 00
Iron and tools in blacksmith shop.....	400 00
Hose, handpumps, blocks, lathes, boring machine, and other tools at Finishing shop.....	1,500 00
Patterns, estimated value.....	700 00
40,000 bushels coal.....	4,000 00
	<u>\$22,859 00</u>

E. HINMAN, *Superintendent.*