

DEPARTMENT
FOR
SUPPLYING THE CITY WITH WATER.

ANNUAL REPORT

OF THE

Chief Engineer of the Water Department

OF THE

CITY OF PHILADELPHIA,

Presented to Councils, February 16,

1871.

PHILADELPHIA:

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OPPOSITE THE POST OFFICE.

1871.

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| | | |
|-----------------|-------------------|---------------------------------|
| First District, | E. B. Cobb, | Office, 807 Reed Street. |
| Second " | Samuel M. Fox, | " 918 Cherry Street. |
| Third " | John H. Jeffries, | " 1420 Frankford Road. |
| Fourth " | Jacob C. Apple, | " Corinthian Ave. and Brown St. |

ENGINEERS AT WORKS.

Fairmount Works—William Osborne, Joseph Moyer.

Schuylkill Works—William Hodges, Joshua Bartley.

Delaware Works—Benjamin F. Norman, Jos. Thompson.

Twenty-fourth Ward Works—Abraham Stott, Christian Betzold.

Germantown Works—William Wright, James Drinkwater.

Roxborough Works—Johnson Hughes, W. H. Saunders.

| | |
|--------------------|--|
| James M. Kreamer. | In charge of Belmont Reservoir and Engine House, and Delaware Reservoir. |
| John L. Ogden. | In charge of Schuylkill Works Extensions, Engine, Boilers, &c. |
| J. Harry Stewart. | In charge of Roxborough Reservoir, and Engine House. |
| Robert N. Bowers. | In charge of Fairmount Extensions, and General Superintendent. |
| David R. Griffith. | Superintendent of City Shop. |

REPORT.

To the Presidents and Members of the Select and
Common Councils of the City of Philadelphia.

GENTLEMEN:—The following annual report of the condition of the works, and the business of the Department for Supplying the City with Water, is respectfully submitted :

At Fairmount, the completion of the second large turbine wheel and pumps, and the extension of the building to contain it, have been accomplished. The wheel was started to regular work upon the 20th of June, 1870, and has been run almost continually since that time. It is of the same size and arrangement as the first wheel, but in some respects is more perfect, being arranged either to raise the water into the reservoirs at Fairmount or into that at Corinthian avenue, as may be required.

The coffer dam necessary for the excavation of the pit for the third wheel is in place ; the quarrying requisite for this is commenced, and progresses satisfactorily, almost all the stone for the foundations and the front of the house is dressed and ready for setting ; the cast-iron head gates upon the forebay side are in place, and the wall of the building on that side finished.

The old wooden breast wheels, No. 1 and No. 8, yet remain ; they have only sufficient outlay put upon them to keep them in proper running order, as it is proposed to substitute turbines for them as soon as the large wheel, upon which we are now engaged, shall be completed.

The rebuilding of the dam at an early day urges itself upon us. The proper way to do this work has occupied much of my attention, and caused some solicitude, as it presents considerable difficulty on account (more particularly) of the very imperfect manner in which certain cribs were constructed and sunk in the deep water in front of the old dam.

In 1864, my immediate predecessor fortunately detected dangerous weakness in the old superstructure upon which the dam is founded. An appropriation was made for the purpose of its protection, and cribs filled with stone were sunk immediately in front of the breast of the dam.

Upon my first consideration of the rebuilding of the dam, these cribs appeared to present a ready mode of building a new dam upon them, leaving the old one to remain intact, thereby offering perfect protection during and after the construction of the new work.

I much regret to say that further investigation of the subject, and reliable information obtained from competent persons, well acquainted with such work, who saw the cribs put down, develop the unwelcome fact that they are formed of small timber, insecurely put together and imperfectly sunk, and are therefore considered entirely unfit to form a safe and suitable foundation for any new work.

The cribs are sunk below the ordinary low tide, they cannot therefore be seen to any considerable extent, but a personal inspection, as far as is practicable, confirms me in the conclusion that they cannot be used as I had at first intended.

The following words, which occur on page 14 of the Annual Report of the Department for the year 1867, may account in a measure for the imperfect condition of the cribs: "During the progress of this work, which was much delayed by the contractors, who finally abandoned it, making it necessary for the department to finish it, *parts of the cribs were several times destroyed by freshets*, greatly increasing the expense and delaying the completion of the work."

There are two plans left for doing the work—one being the removal of the old dam to low water mark, and then rebuilding it upon the present location. The objections being that it involves the construction of and the reliance upon a temporary coffer dam whilst the work is being done, leaving it exposed to great danger should freshets occur during its progress; likewise would there be difficulty in getting a proper foundation upon the defective parts of the old work, to protect which the cribs above mentioned were sunk.

These cribs are of course in the way of building any new structure immediately in front of the old dam; it would be very difficult and expensive to remove them, as they are filled with stone and sunk in water in some places nineteen or twenty feet deep at low tide; besides, they could not be removed without exposing the old structure to danger.

There appears therefore to be but one other way open, that is, the building of an entirely new dam from the bed rock up, situated below the sunken cribs, at a point about thirty-eight feet lower down stream than the present front of the cribs. This involves the building of new and massive stone piers at the eastern end of the dam, and besides being much more costly, will, to a very considerable extent, impair the beauty of the works, as the front line or overfall of the dam will then be about sixty-eight feet lower down stream than it now is.

The estimate contained in my report to your honorable body, made Nov. 30, 1869, contemplated the use of the cribs, which I at that time supposed might be fit to build upon; of course, that estimate will be inadequate to construct a new dam, as proposed by the last plan.

When the subject of the loan asked for last year (but only partly granted) again occupies your attention, a revised estimate for this work will be presented.

In my judgment, the work should be prosecuted next season; and as much preparation of material, &c., &c., will be required, your early attention to the subject is solicited.

The supply of water for the water power works was ample until the month of August, when assistance had to be obtained

from the Schuylkill Works. This they were able to afford by the use of the new side-lever Cornish engine, and all the old engines, working almost continuously during the whole month.

The dock and inlet to the forebay was dredged out during the summer; a large quantity of mud had accumulated in it, reducing the area of the water-way very considerably.

The reservoirs, grounds and fixtures connected with the works at Fairmount are in excellent condition.

At the Schuylkill Works five new tubular boilers have been erected in the old boiler house, at the east end of the building.

An inlet of large size from the forebay into the building, to supply the double cylinder bucket and plunger engine, now being built, as well as another engine proposed to be hereafter constructed in place of Engine No. 3, has proved unexpectedly to be a difficult and expensive work; much of it was rock excavation, and required the use of a coffer dam and two steam pumps to keep it free of water. It is now finished, except that part immediately in connection with the inlet chambers of the pumps.

It was intended that Engine No. 2 should be taken out early in the summer, but owing to the demand for water this could not be safely done until the middle of November, and this circumstance may probably somewhat delay the erection of the new engine.

The main intended for this engine could not be laid until Master street, between Twenty-ninth and Thirty-third street, was graded. This required the excavation of the street to the depth of 12 to 15 feet through soft rock. The work is now done, and the main will be laid in the spring, in time, it is hoped, for the engine when it is completed.

The working of the side-lever engine has not been entirely satisfactory, owing to mechanical defects in the steam equilibrium and exhaust valves; but the demand for water was so great, that although these defects were early discovered, it was impossible to stop the engine long enough to repair them. They are now being completely overhauled by the contractors, and it is hoped that hereafter better results will be obtained.

The water here was originally carried from the river to the forebay (a distance of about two hundred and fifty feet) through a timber trunk of large size, under the ground and below low water. The bottom of a large part of the wood work failed during the summer, making it necessary to tear it out and make an open cut as rapidly as possible; this was done in the most temporary way, as the exigencies of the work did not admit of any delay.

It is proposed to make a permanent arrangement in the spring. This will be a somewhat difficult and expensive work, as a new position will have to be arranged for it in consequence of using the old defective inlet during the construction of the new.

As the Park Commission is about carrying its river road across the inlet, the new structure will require heavy brick arches, as it will not be proper to renew the work in wood.

The engine, boiler houses, grounds and reservoirs of these works are in good order.

At the Delaware Works the embankments for the new reservoirs have been carried up to their proposed level; they will stand for consolidation during the winter, and be lined and finished next season.

This work was commenced at a fortunate time, as much ground of suitable quality in the immediate neighborhood required grading to bring it into market. A year later, and this material would probably have taken other directions and have been lost to us. The embankments have been raised in the most careful manner, with the same precautions as were used at the Belmont Reservoir; they are exceedingly solid.

Contract was made during the year for a duplex pumping engine for these works, which will be completed early in the season. A thirty-six inch ascending main has been partly laid (over one-half) to the reservoir, and will be finished in time for the new engine.

With the new engine, reservoir and main, these works will be much improved, and will not require the great assistance they have been demanding from Fairmount Works, upon which they have been a serious tax during several years past.

A suction main, 36 inches diameter, was required to be put through the wharf for the supply of the duplex engine, and it was desirable to get this as low as possible below low tide; it was cast together on blocking above the tide, was suspended and then lowered into its position bodily, by the aid of powerful screws. It extends from the engine house to the end of the wharf, a distance of three hundred and thirty-six feet.

The new works on the west side of the river, built as a substitute for the old Twenty-fourth Ward Works, and designated Belmont Works, are now in operation. The engine house is a structure of pressed brick, with Ohio sand-stone window and door dressings; the engine room is calculated to contain three duplex engines, and is 72 feet by 56 feet, inside dimensions; the boiler house back of it is 100 feet by 53 feet. The stack is 100 feet high; the tower on the opposite side of the building is used for an office for the engine drivers, and for work shop and store rooms.

Engine No. 1, "Worthington Duplex," was started to regular work, September 19, 1870, and has, since that time, been in daily operation, supplying the 24th and 27th Wards.

The engine has given entire satisfaction, and is considered by all competent, unprejudiced mechanics as a very superior pumping engine, a well executed, creditable job, working without shock in a remarkably smooth and almost noiseless manner, reflecting great credit upon the inventor and contractor for ingenuity of design and perfection of workmanship.

The water is raised by this engine, through a thirty inch main 4,167 feet long, to a vertical height of two hundred and eight feet above the level of Fairmount Dam.

The boilers supplying the engines are cylinder boilers, 54 inches diameter, with two heaters 26 inches diameter each under them; they are safe and reliable, and can be run almost continuously without much attention, being for those reasons desirable boilers for use in water works, where it is essential that not any unnecessary delay should occur; they are however not as economical as the Cornish or some other forms; the duty of the engine will be somewhat reduced from this fact.

The engine was subjected to a trial for duty of twenty-five consecutive hours, and notwithstanding that the boilers are not as economical as is desirable, a duty nearly twenty per cent in excess of that guaranteed by the contract was readily obtained.

The old works have not been used since September 19, 1870, and will be abandoned as soon as the second engine is started at Belmont.

Photographs of the Engine House, and Engine No. 1, will be found in the front of this report.

The reservoir at George's Hill is only partly completed, the eastern section being finished so as to contain 16 feet in depth of water. The cost of this work has exceeded the estimate, on account, principally, of the unexpected large quantity of rock found in it, and an enlargement of its dimensions beyond what was originally intended. It will be remembered that when the work was commenced, it was bounded on all sides by public streets which limited its size; since then, the Park has been created, and the bounds could therefore be extended over what would have been streets; advantage was taken of this to enlarge the size of the work, even at the risk of exceeding the estimate.

The Reservoir is of the embankment variety, the earth for forming which was excavated from the centre of it; great care was used in making up the embankment, and in protecting the rock bottom from leakage, which latter work was (from the almost vertical and broken stratification of the rock) difficult and expensive.

I am happy to say that thus far the Reservoir has proved to be perfectly tight. The remaining part of this reservoir can be finished next summer, if the necessary appropriation be made early.

The Roxborough works have been a source of great annoyance and expense. As detailed in my last annual report, the Reservoir was so leaky that it was found necessary (after several ineffectual efforts at repair) to take out and reline the entire Reservoir; in doing so, it was found that in many places large heading stones forming the lining had been forced entirely through the clay puddle into the porous embankment; the whole lining, in other respects,

was found to have been put up in an exceedingly careless manner; the foundation under the stone walls of the outlet stop houses was also grossly defective, making the tearing down of the whole stop houses necessary.

Pumping was recommenced December 21, 1870.

As has been before detailed, an auxiliary engine will be required at this Reservoir, to raise water for the proper supply of Germantown. A small engine and boiler house has been erected for the purpose, with a stand pipe formed of the ordinary 30 inch mains; into this the water will be pumped from the Reservoir by means of two Knowles pumps; these were purchased during the drought of 1869, for use at Fairmount, and will now be made useful at Roxborough.

A contract has been made with Mr. Worthington, for a duplex engine for these works, capable of raising 5,000,000 gallons per day into the present Reservoir, and so arranged that it can hereafter be made to raise 8,000,000 into a low level Reservoir, should such be built, without any other alteration than the enlargement of the plungers.

The head of water is now so great upon the lower part of Manayunk, that much difficulty will be experienced in keeping the private pipes and fixtures in proper order; several of the main service pipes have already burst from the pressure.

It will doubtless be proper, as soon as practicable, to erect a Reservoir for the supply of Manayunk, at a level of at least 100 feet below the present one, as that will give an ample head to all parts of the place, and leave the present Reservoir for the supply of Germantown and Roxborough.

The main for the supply of Germantown, as well as the pipe aqueduct crossing the valley of the Wissahickon, were finished during the summer.

This structure consists of two lines of flange pipes 20 inches inside diameter, placed parallel to each other at a distance of 14 feet from centre to centre, forming the compression chord of the aqueduct; each line of pipe is supported by two lines of wrought iron links, 10 square inches in section, attached to lugs cast upon the end pipes of each span; from these, vertical wrought iron

phoenix columns 5½ inches diameter support the pipe, entering into bosses upon the under side of the same; the whole is placed upon three piers, formed of four phoenix columns, each 8½ inches diameter, stiffened by cross ties and horizontal wrought iron beams. The aqueduct consists of four spans, each one hundred and sixty-five feet nine inches in the clear. The piers are 7 by 14 feet, founded on stone bases.

This plan of supporting pipes was originally designed by me, and put into operation in 1868, upon the pumping mains of 36 inch diameter, crossing the forebay at Fairmount. Finding it entirely successful there, I had not any hesitation in extending the principle to longer spans, particularly as a greater amount of deflection could be obtained for the chains in the Wissahickon aqueduct than was possible at Fairmount.

A contract for the erection of the work was made with John Murphy, C. E., and that he might be held responsible, the design for the details of construction were intrusted to him, subject to my approval. The work has been put up under his contract in a creditable and workmanlike manner, and forms a light, beautiful and stable structure.

An engraving showing its details will be found attached to this report.

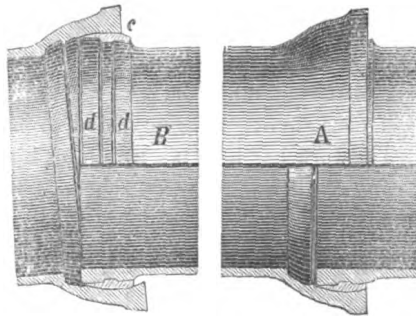
The Germantown works suffered seriously this summer from the low stage of water in the pool supplying it; this fell to a level fourteen feet below its normal condition, and caused great uneasiness for fear it would entirely fail; it was finally relieved by rain. The works will be abandoned as soon as possible, probably in a few weeks.

For reasons detailed in my special report, made to Councils November 30, 1869, it was decided to use the Belmont Reservoir for the supply of the high wards on the east side of the river, particularly the 20th and 28th Wards; to do this, it became necessary to cross the river with the main, and it was first proposed to do so somewhat in the same manner as at the Wissahickon. This plan was, however, abandoned in favor of that of a submerged pipe, designed and patented by Mr. John F. Ward

of Jersey City; a contract was accordingly made with that gentleman and the main has been successfully laid.

It is 36 inches diameter, has a movable joint of simple and peculiar construction which admits its being sunk length after length, from scows, by suitable skids and derricks.

The inside of the bell of the pipe is turned smooth to a spherical form, the small end of the pipe has grooves in it to retain the lead; when two pipes are put together, a lead joint is cast and caulked in the ordinary way. The smoothness and form of the inside of the bell permits the requisite motion, the lead joint slipping upon that, whilst it is retained firmly by the grooves in the small end of the pipe.



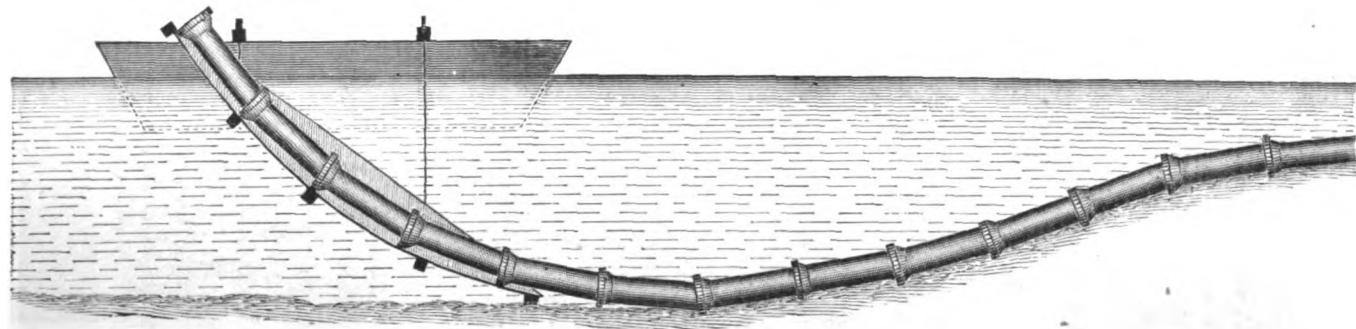
SECTION OF FLEXIBLE JOINTS.

- A shows Bell of Pipe.
 B " Small End.
 C " Lead Joint.

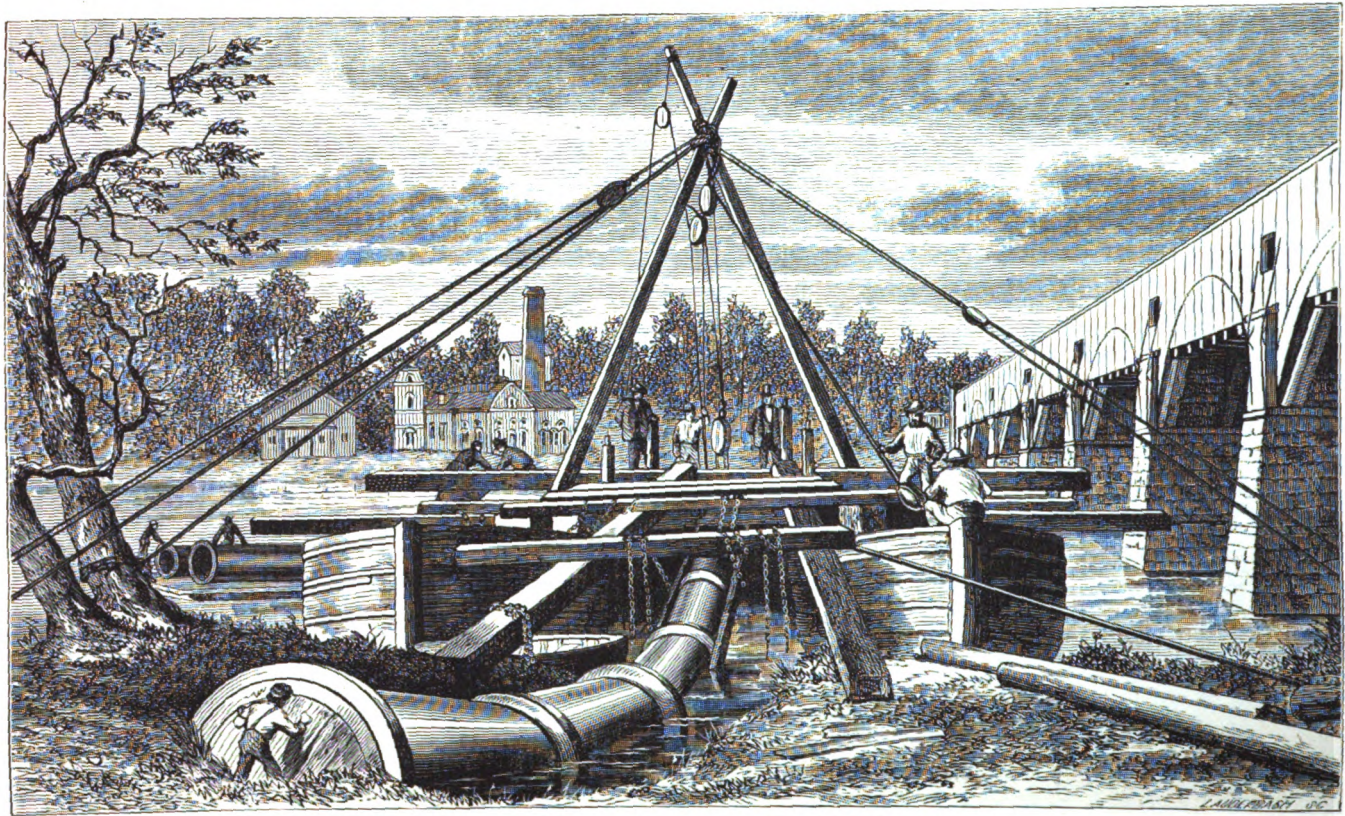
The total length of the pipe is 963 feet, and the deepest water 25 feet; at each side of the river, at the shore ends, a suitable channel was dredged to receive it; a cut of the joint and the skids for laying the pipes is attached hereto.

On the west side of the river a 36-inch main is now laid from the termination of the submerged pipe to the Reservoir; this will be used both as a supply and pumping main, Engines No. 2 and 3 being attached to it.

On the east side of the river, the main will be reduced to 30 inches diameter, and will be laid along Pennsylvania avenue to Thirty-



Showing method of sinking the pipe on the bed of the River.



Commencement of laying the main on the East side of the River.

third street, thence to Master street, thence to Twenty-sixth street, thence to Jefferson street, thence to Ridge avenue; about 3,800 feet of this main has been laid, and the rest will be put down early in the spring. At Twenty-second street, a 20-inch main will be connected and run to north College avenue, where it will be attached to the 16-inch main now in use. Other considerable additions to the distributing pipes of these wards will be necessary before the supply can be entirely satisfactory.

The supply of water distributed during the past year has been much greater than during any previous year. The average daily supply from all the works, for the whole year, has reached 37,149,385 gallons. The average supply for the month of July was 46,008,735 gallons per day—and the maximum supply of any one day was on July 20, 1870, when 54,654,509 gallons were delivered. This was equal to 81 gallons per day for each one of the population of the City per last census; but our citizens do not all get a supply from the works, many in the rural wards obtaining water from springs and wells. The water supplied on that day was equal to $92\frac{3}{10}$ gallons for each of the population who actually receive water from the works, and 540 gallons for each of the water tenants now upon our books; of course, no one can believe that each man, woman and child of the population supplied, consumed for their actual wants $92\frac{3}{10}$ gallons a day; therefore, the immense amount *wasted* must be evident.

The increase in the water supply is in much greater ratio than the increase of population, as will be more fully shown by the table below. This occurs, probably, on account of the multiplication of modern conveniences for using water; such as water closets, wash basins, stationary wash tubs, wash pavements, and the increased number of each now considered necessary or desirable in our dwellings; besides, the more lavish discharge of waste water into drains and sewers than formerly—whereby it can be wasted without fear of detection.

Whilst the supply of water delivered in our city is as copious as that of any other in the United States, the price charged for it is very much lower; a very trifling increase in some of our

charges, for what may be considered as the "luxuries of water supply," and which would scarcely be felt as onerous, would enable us to make a marked increase in our revenue, and a corresponding decrease in direct taxation.

Table showing the population of the City and the average daily supply of the year, at intervals of ten years, from 1810 to 1870.

| YEAR. | Population. | Gallons of water per day—average throughout the year. | Per cent of increase in population. | Per cent of increase in water supply. | Gallons per head per day. |
|-------|-------------|---|-------------------------------------|---------------------------------------|---------------------------|
| 1810 | 96,664 | 757,925 | | | 8. |
| 1820 | 119,325 | 1,537,200 | 23 | 103.8 | 12.8 |
| 1830 | 167,811 | 3,074,644 | 40 | 100. | 18.3 |
| 1840 | 225,359 | 4,922,257 | 34 | 60. | 21.8 |
| 1850 | 408,763 | 7,432,237 | 81 | 51. | 18.1 |
| 1860 | 565,592 | 27,345,176 | 38 | 267. | 48.1 |
| 1870 | 673,726 | 37,149,385 | 19 | 35. | 55.1 |

An unusual number of new permits have been granted, amounting to 12,430; this fact exhibits the rapid increase of new buildings, and is to some extent a measure of the increase of water supply.

Over 26 miles of distributing pipe have been laid, including mains of 30 and 36-inch diameter, making the aggregate amount of mains and pipes used in distributing the water 488½ miles, a greater amount by nearly one hundred and fifty miles more than any other city in the United States, and only exceeded in the world by the city of London.

An analysis of the Schuylkill water made in April, 1870, by Mr. Francis C. Phillips, shows that the quality of the water does not deteriorate; a comparative table given below exhibits the gratifying fact that the quality of the water has not materially changed since the first published analysis made by Professor Boye as far back as the year 1842.

The figures show the grains and decimals of a grain of solid matter contained in our United States standard gallon of 231 cubic inches in

| | Profes'r Doye 1842. | F. C. Phillips Ap'l, 1870. |
|------------------------------------|------------------------|-------------------------------|
| Choride of Sodium..... | 0.153 | 0.4870 |
| Sulphate of Soda..... | 0.560 | 0.4798 |
| Sulphate of Potassa..... | | 0.4315 |
| Carbonate of Soda..... | 0.185 | |
| Sulphate of Lime..... | | 0.2879 |
| Carbonate of Lime..... | 2.190 | 1.5623 |
| Carbonate of Magnesia..... | 0.484 | 0.6019 |
| Alumina and Oxide of Iron..... | 0.077 | 0.0934 |
| Silicic Acid..... | 0.395 | 0.2979 |
| Total grains inorganic matter..... | 4.044 | 4.2417 |
| “ “ organic matter..... | 0.036 | 0.2570 |
| Total grains of solid matter..... | 4.080 | 4.4987 |

The expenditures for new construction and maintenance have been unusually large, reaching the sum of \$1,144,053 50. The receipts for water-pipe and water rents have been \$928,035 95, as will be seen from the detailed tables attached to the report of the register.

The receipts from all sources have been \$935,370 96, being an increase of \$121,900 13 over the receipts of the previous year. The expenses for maintenance of all the works were \$448,604 83, the receipts have therefore been \$486,766 13 more than the expenses of maintaining all the works. The operations of the machine shop are very satisfactory; a new lathe large enough to face the valves of a cock thirty-six inches diameter has been added to our stock of tools, the cost of it has been fully paid by the saving effected in the fitting up of the 30 and 36-inch cocks alone.

It is confidently hoped that a loan will be authorized for the improvement of the works, as detailed in my report of Novem-

ber 30, 1869, and particularly for the construction of the large storage reservoir, proposed to be built upon the East Park, the necessity for which is becoming daily more apparent. Since the report referred to was made, new matter has pressed upon us, and a larger loan than was then proposed will now be required.

At the last meeting of the State Legislature a bill was passed obliging the City to purchase the works of the Chestnut Hill Water Company, at a price to be awarded by a jury. Under this act an award was made, but as it was considered much too large an appeal was taken, and the matter is as yet undecided.

The very great increase in the receipts of the last year, the improved efficiency and enlarged capacity of all the works, are in the highest degree satisfactory.

The statistical tables accompanying this report will be found of interest to your honorable body, and to those connected with similar works in other cities.

The City Corporation commenced supplying Philadelphia with water from the Centre Square Works January 21, 1801. I have therefore the honor to make this the sixty-ninth annual report upon the condition of the works employed to distribute pure water to the citizens.

Very respectfully,

FREDERIC GRAFF,

Chief Engineer Water Department.

Operations of Fairmount Works for the year 1870.

| MONTHS. | Running time. | Number of strokes during the month. | Total number of gal- lons pumped during the month. | Average gallons per day. | Cubic feet of water pumped per month. | Coal consumed in heating mill house. | | | | Tallow consumed. | Oil consumed. | Average de- cimals of water passing over the dam. | Rain-fall during the month. | Average temperature. |
|----------------|---------------|-------------------------------------|--|-----------------------------|--|---|-------|-------|------|------------------|---------------|--|--------------------------------|----------------------|
| | Days. | | | | | Tons. | Cwts. | Qrts. | Lbs. | Pounds | Quarts. | Inches. | Inches. | |
| January..... | 31 | 2,184,192 | 467,697,704 | 15,087,023 | 62,526,431 | | | | | 22 | 177 | 19.56 | 4.07 | 41.07 |
| February..... | 28 | 2,049,482 | 498,533,700 | 17,804,775 | 66,648,890 | | | | | 5 | 246 | 17.16 | 2.53 | 34.93 |
| March..... | 31 | 1,970,456 | 478,765,029 | 15,444,033 | 64,006,019 | | | | | 33 | 167 | 15.6 | 4.06 | 37.87 |
| April..... | 30 | 2,928,684 | 697,158,126 | 23,238,604 | 93,202,957 | | | | | | 260 | 18.8 | 6.61 | 53.50 |
| May..... | 31 | 3,095,425 | 735,790,411 | 23,735,175 | 98,367,702 | | | | | 10 | 175 | 9.3 | 6.28 | 65.26 |
| June..... | 30 | 3,058,471 | 732,523,891 | 24,417,463 | 97,331,001 | | | | | 43 | 329 | 10.9 | 2.56 | 77.21 |
| July..... | 31 | 2,872,347 | 811,940,200 | 26,191,619 | 108,548,155 | | | | | 43 | 275 | 10.28 | 3.95 | 80.61 |
| August..... | 31 | 2,877,587 | 843,390,504 | 27,206,145 | 112,752,741 | | | | | 29 | 302 | 9.85 | 6.12 | 78.82 |
| September..... | 30 | 1,517,098 | 481,860,437 | 16,062,014 | 64,419,844 | | | | | 38 | 179 | 4.92 | 1.71 | 70.50 |
| October..... | 31 | 2,901,439 | 789,184,402 | 25,457,561 | 105,505,936 | | | | | 24 | 225 | 7.35 | 3.9 | 60.12 |
| November..... | 30 | 2,588,542 | 782,654,323 | 26,088,477 | 104,632,930 | | | | | 38 | 185 | 7.11 | 2.1 | 46.26 |
| December..... | 31 | 2,719,881 | 815,486,458 | 26,306,015 | 109,022,227 | 80 | | | | | 171 | 9.41 | 1.89 | 35.50 |
| Totals..... | 365 | 30,463,604 | 8,134,985,170 | 22,253,242 | 1,087,564,833 | 80 | | | | 285 | 2,691 | | 44.08 | |

Running Expenses of Fairmount Works.

| | | | | | |
|---|---|---|---|----------|----|
| Salaries of Engineers, and labor, | - | - | - | \$5,000 | 00 |
| Gas and Oil for Lighting Works, | - | - | - | 986 | 55 |
| 80 tons Coal for Heating Works, at \$7, | - | - | - | 560 | 00 |
| 673 gallons of Oil, at 81 cts., | - | - | - | 545 | 13 |
| 285 pounds of Tallow, at $18\frac{9}{10}$, | - | - | - | 53 | 58 |
| Packing and Small Stores, | - | - | - | 1,050 | 00 |
| Repairs, | - | - | - | 7,561 | 80 |
| | | | | | |
| | | | | \$15,757 | 06 |

| | |
|--|-----------------------|
| Cost of raising water into reservoir per million | |
| gallons, | \$1 93 $\frac{5}{10}$ |
| Cost of raising water per million gallons one foot | |
| high, | 01 $\frac{9}{10}$ |

Operations of the Schuylkill Water Works during the year 1870.

| MONTHS. | Running time. | Number of strokes during the month. | Total number of gal- lons pumped during the month. | Average gallons per day. | Cubic feet of water pumped per month. | Number of pounds of water raised one foot high per pound of coal. | Coal consumed. | | | | Tallow consumed. | | Oil consumed. |
|----------------|---------------|-------------------------------------|--|-----------------------------|--|--|----------------|-------|------|------|------------------|-------|---------------|
| | Days. | | | | | | Tons. | Cwts. | Qrs. | Lbs. | Lbs. | Qts. | |
| January..... | 31 | 416,317 | 201,105,120 | 6,487,230 | 26,885,711 | 370,707 | 232 | | | | 146 | 62 | |
| February..... | 28 | 414,035 | 177,926,100 | 6,354,504 | 23,786,912 | 278,562 | 273 | | | | 199 | 79 | |
| March..... | 25 | 445,308 | 196,944,180 | 7,877,767 | 26,320,436 | 335,943 | 250 | 13 | 2 | 24 | 215 | 68 | |
| April..... | 26 | 415,589 | 186,930,390 | 7,180,630 | 24,987,152 | 261,674 | 303 | 17 | | | 187 | 113 | |
| May..... | 29 | 961,977 | 261,586,818 | 9,020,235 | 34,971,499 | 365,664 | 305 | 17 | | | 155 | 87 | |
| June..... | 30 | 821,275 | 265,639,770 | 8,854,659 | 35,512,001 | 329,573 | 344 | 14 | | | 270 | 168 | |
| July..... | 31 | 807,403 | 323,468,370 | 10,434,431 | 43,244,434 | 360,247 | 384 | | | | 290 | 124 | |
| August..... | 31 | 635,450 | 250,298,700 | 8,074,151 | 33,462,393 | 295,738 | 361 | 19 | | | 184 | 189 | |
| September..... | 30 | 1,777,901 | 505,027,954 | 16,834,265 | 67,517,106 | 234,564 | 645 | 10 | | 13 | 386 | 159 | |
| October..... | 31 | 815,779 | 279,406,310 | 9,013,107 | 37,353,785 | 303,469 | 393 | 15 | | | 275 | 128 | |
| November..... | 29 | 653,703 | 240,136,454 | 8,280,567 | 32,103,804 | 341,069 | 301 | 2 | | | 262 | 63 | |
| December..... | 31 | 289,700 | 105,267,000 | 3,395,709 | 14,073,128 | 386,255 | 116 | 11 | | | 100 | 27 | |
| Totals..... | 352 | 8,454,437 | 3,003,737,166 | 8,484,688 | 400,227,361 | ..... | 3,912 | 18 | 2 | 37 | 2,669 | 1,267 | |

Running Expenses of Schuylkill Works.

| | | | | | |
|---|---|---|---|----------|----|
| Salaries of Engineers, Firemen, &c., | - | - | - | \$8,300 | 00 |
| Gas and Oil for Lighting Works, | - | - | - | 1,243 | 26 |
| 3,912 $\frac{1}{2}$ $\frac{8}{10}$ tons of Coal, at average price, \$5 48 $\frac{1}{2}$, | - | - | - | 21,457 | 32 |
| 316 $\frac{1}{4}$ gallons of Oil, " " 75 $\frac{1}{2}$, | - | - | - | 239 | 15 |
| 2,669 pounds of Tallow, " " 18 $\frac{7}{10}$, | - | - | - | 499 | 11 |
| Packing and Small Stores, | - | - | - | 703 | 00 |
| Repairs, | - | - | - | 4,183 | 99 |
| | | | | | |
| | | | | \$36,625 | 83 |

| | | | | | |
|---|---|---|---|------|-------------------|
| Cost of raising water into reservoir per million gal- | | | | | |
| lons, | - | - | - | \$12 | 19 $\frac{3}{10}$ |
| Cost of raising water per million gallons one foot | | | | | |
| high, | - | - | - | 10 | $\frac{6}{10}$ |

Operations of the Delaware Water Works during the year 1870.

| MONTHS. | Running time. | Number of strokes during the month. | Total number of gallons pumped during the month. | Average gallons per day. | Cubic feet of water pumped per month. | Number of pounds of water raised one foot high per pound of coal. | Coal Consumed. | | | | Tallow consumed. | Oil consumed. |
|----------------|---------------|-------------------------------------|--|--------------------------|---------------------------------------|---|----------------|-------|-------|-------|------------------|---------------|
| | Days. | | | | | | Tons. | Cwts. | Qrs. | Lbs. | Lbs. | Qts. |
| January..... | 30 | 478,636 | 81,846,756 | 2,704,892 | 10,942,080 | 201,080 | 169 | 16 | ..... | 95 | 32 | 21 |
| February..... | 26 | 458,851 | 75,069,152 | 2,887,275 | 10,935,953 | 219,218 | 142 | 13 | ..... | 50 | 34 | 15 |
| March..... | 26 | 454,408 | 76,868,417 | 2,956,493 | 10,276,520 | 233,393 | 135 | 21 | ..... | 45 | 26 | 16 |
| April..... | 27 | 521,580 | 83,452,800 | 3,091,215 | 11,156,791 | 241,226 | 137 | 10 | ..... | 20 | 22 | 19 |
| May..... | 31 | 622,642 | 99,622,720 | 3,213,636 | 13,318,545 | 260,259 | 163 | ..... | ..... | ..... | 26 | 19 |
| June..... | 30 | 628,048 | 101,032,158 | 3,367,733 | 13,506,973 | 258,495 | 162 | 15 | ..... | 75 | 32 | 26 |
| July..... | 25½ | 806,820 | 132,866,204 | 5,210,433 | 17,762,861 | 207,220 | 267 | 1 | ..... | 40 | 34 | 24 |
| August..... | 31 | 742,707 | 102,469,669 | 3,305,473 | 13,699,154 | 193,626 | 224 | ..... | ..... | 75 | 52 | 35 |
| September..... | 30 | 864,810 | 142,641,010 | 4,754,700 | 19,069,653 | 186,863 | 318 | 16 | ..... | 28 | 56 | 35 |
| October..... | 31 | 752,258 | 122,379,178 | 3,957,393 | 16,400,939 | 197,106 | 259 | 2 | ..... | 97 | 56 | 28 |
| November..... | 30 | 554,640 | 88,742,400 | 2,958,080 | 11,863,957 | 188,113 | 196 | 9 | ..... | 72 | 36 | 18 |
| December..... | 27 | 492,723 | 78,835,680 | 2,919,810 | 10,539,529 | 231,225 | 121 | ..... | ..... | ..... | 26 | 16 |
| Totals..... | 344½ | 7,378,123 | 1,186,131,144 | 3,443,932 | 138,573,011 | ..... | 2,298 | 8 | 1 | 9 | 432 | 272 |

Running Expenses of Delaware Works.

| | | | | | |
|--|----|------------------|---|----------|----|
| Salaries of Engineers, Firemen, &c., | - | - | - | \$6,533 | 60 |
| Gas and Oil for Lighting Works, | - | - | - | 486 | 55 |
| 2,298 $\frac{8}{20}$ tons Coal at average price, \$5 | 36 | $\frac{3}{10}$, | - | 12,326 | 31 |
| 68 gallons of Oil, “ “ | 80 | $\frac{7}{10}$, | - | 54 | 87 |
| 432 pounds of Tallow, “ | 18 | $\frac{5}{10}$, | - | 79 | 92 |
| Packing and Small Stores, | - | - | - | 550 | 00 |
| Repairs, | - | - | - | 3,387 | 90 |
| | | | | | |
| | | | | \$23,419 | 15 |

| | | | | | |
|---|---|---|---|------|-------------------|
| Cost of raising water into reservoir per million gal- | | | | | |
| lons, - - - - - | - | - | - | \$19 | 74 $\frac{1}{10}$ |
| Cost of raising water per million gallons one foot | | | | | |
| high, - - - - - | - | - | - | 17 | $\frac{6}{10}$ |

Operations of the Twenty-fourth Ward Water Works during the year 1870.

| MONTHS. | Running time. | Number of strokes during the month. | Total number of gallons pumped during the month. | Average gallons per day. | Cubic feet of water pumped per month. | Number of pounds of water raised one foot high per pound of coal. | Coal consumed. | | | | Tallow consumed. | Oil consumed. |
|--------------------|---------------|-------------------------------------|--|--------------------------|---------------------------------------|---|----------------|-----------|--------------|-----------|------------------|---------------|
| | Days. | | | | | | Tons. | Cwts. | Qrs. | Lbs. | Lbs. | Qrts. |
| January..... | 81 | 659,960 | 57,225,840 | 1,845,995 | 7,650,513 | 272,596 | 144 | 8 | 1 | 16 | 50 | 8 |
| February..... | 28 | 566,233 | 51,638,570 | 1,844,235 | 6,903,552 | 278,235 | 127 | 13 | 2 | 8 | 45 | 8 |
| March..... | 31 | 591,567 | 53,241,030 | 1,717,453 | 7,104,416 | 299,334 | 122 | 7 | 1 | 8 | 45 | 8 |
| April..... | 30 | 761,608 | 71,331,336 | 2,377,711 | 9,536,274 | 323,944 | 151 | 8 | 2 | 8 | 50 | 10 |
| May..... | 31 | 923,133 | 87,778,746 | 2,831,572 | 11,735,127 | 358,525 | 168 | 8 | 3 | ..... | 50 | 10 |
| June..... | 30 | 1,032,116 | 99,236,656 | 3,307,888 | 13,286,932 | 369,035 | 184 | 19 | ..... | 12 | 50 | 10 |
| July..... | 31 | 1,104,461 | 106,145,836 | 3,424,059 | 14,190,619 | 330,463 | 220 | 19 | 2 | 6 | 60 | 11 |
| August..... | 31 | 1,133,833 | 108,864,736 | 3,511,766 | 14,554,109 | 343,438 | 218 | 1 | 2 | 12 | 60 | 10 |
| September..... | 19 | 561,666 | 53,912,782 | 2,837,515 | 7,207,591 | 334,130 | 111 | 10 | 1 | 27 | 40 | 8 |
| October*..... | 30 | 173,752 | 58,863,120 | 1,795,437 | 7,200,952 | 431,063 | 96 | 6 | 3 | 4 | 30 | 10 |
| November*..... | 29 | 174,475 | 54,087,250 | 1,865,078 | 7,230,916 | 436,279 | 96 | 13 | ..... | 4 | 50 | 8 |
| December*..... | 30 | 169,959 | 52,687,290 | 1,756,243 | 7,043,755 | 410,462 | 100 | ..... | ..... | ..... | 50 | 9 |
| Totals..... | 351 | 7,852,940 | 850,011,192 | 2,426,246 | 113,624,756 | ..... | 1,742 | 17 | ..... | 21 | 580 | 110 |

*New Works at Belmont.

Running Expenses of Twenty-fourth Ward Works (Old).

| | | | | | |
|--|---|---|-----|----------|----|
| Salaries of Engineers and Firemen, | - | - | - | \$3,299 | 84 |
| Coal Oil for Lighting Works, | - | - | - | 63 | 56 |
| 1,449 $\frac{17}{10}$ tons of Coal at average price, \$6 10, | - | - | - | 8,844 | 00 |
| 20 $\frac{1}{4}$ gallons Oil, | " | " | 80, | 16 | 60 |
| 450 pounds Tallow, | " | " | 19, | 85 | 50 |
| Packing and Small Stores, | - | - | - | 262 | 50 |
| Repairs, | - | - | - | 2,499 | 82 |
| | | | | | |
| | | | | \$15,071 | 82 |

| | |
|--|------------------------|
| Cost of raising water into stand-pipe per million | |
| gallons, | \$21 86 $\frac{3}{10}$ |
| Cost of raising water per million gallons one foot | |
| high, | 11 $\frac{8}{10}$ |

Belmont Works (New).

(Worthington Duplex Engine.)

| | |
|--|------------|
| Salaries of Engineers and Firemen, - - - | \$1,099 95 |
| Coal Oil for Lighting Works, - - - | 21 18 |
| 293 tons Coal, at average price, \$6 10, - - - | 1,787 30 |
| 6½ gallons Oil, " " 80, - - - | 5 40 |
| 130 pounds Tallow, " 19, - - - | 24 70 |
| Packing and Small Stores, - - - - - | 87 50 |

\$3,026 03

| | |
|---|--------------------------------------|
| Cost of raising water into reservoir per million gallons, - - - - - | \$18 83 ⁷ / ₁₀ |
| Cost of raising water per million gallons one foot high, - - - - - | 09 ⁰⁵ / ₁₀₀ |

| | |
|---|------------|
| Cost of running Belmont Works (new), as per statement above, - - - - - | \$3,026 03 |
| Less 52 ⁹ / ₂₆ tons coal, banking fires, at \$6 10, - - - | 319 95 |

\$2,706 08

| | |
|--|--------------------------------------|
| Cost of raising water into reservoir per million gallons (less banking fires), - - - - - | \$16 84 ⁵ / ₁₀ |
| Cost of raising water per million gallons one foot high (less banking fires), - - - - - | 08 ¹ / ₁₀ |

The old Twenty fourth Ward Works, having no reservoir, were kept running continuously to keep the stand-pipe full; therefore, there was no loss in banking fires.

Thus far the new Belmont Works have only run an average of nine (9) hours per day, the fires are then banked for the balance of the day. The amount of coal consumed in banking fires is therefore deducted from the last statement, but is included in the first.

Operations of the Germantown Water Works during the year 1870.

| MONTHS. | Running time. | Number of strokes during the month. | Total number of gallons pumped during the month. | Average gallons per day. | Cubic feet of water pumped per month. | Number of pounds of water raised one foot high per pound of coal. | Coal consumed. | | | | Tallow consumed. | | Oil consumed. |
|--------------------|---------------|-------------------------------------|--|--------------------------|---------------------------------------|---|----------------|--------------|--------------|--------------|------------------|------------|---------------|
| | Days. | | | | | | Tons. | Cwts. | Qrs. | Lbs. | Lbs. | Qrts. | |
| January..... | 31 | 1,681,000 | 15,625,600 | 504,052 | 2,088,984 | 215,558 | 62 | ..... | ..... | ..... | 21 | 9 | |
| February..... | 28 | 1,507,000 | 13,641,200 | 487,186 | 1,823,689 | 179,635 | 65 | ..... | ..... | ..... | 23 | 10 | |
| March..... | 23 | 1,726,000 | 15,657,600 | 680,765 | 2,093,262 | 191,322 | 70 | ..... | ..... | ..... | 26 | 10 | |
| April..... | 28 | 1,736,000 | 15,615,600 | 557,700 | 2,087,647 | 189,578 | 70 | ..... | ..... | ..... | 23 | 10 | |
| May..... | 31 | 2,212,000 | 19,987,200 | 644,750 | 2,672,086 | 213,699 | 80 | ..... | ..... | ..... | 30 | 12 | |
| June..... | 30 | 2,883,000 | 21,659,800 | 721,993 | 2,895,695 | 231,575 | 80 | ..... | ..... | ..... | 31 | 15 | |
| July..... | 31 | 2,553,000 | 23,193,800 | 748,187 | 3,100,775 | 241,384 | 82 | ..... | ..... | ..... | 35 | 15 | |
| August..... | 31 | 2,612,000 | 23,735,200 | 765,652 | 3,039,465 | 247,572 | 82 | ..... | ..... | ..... | 38 | 16 | |
| September..... | 30 | 2,059,000 | 18,504,400 | 616,813 | 2,473,850 | 239,794 | 66 | ..... | ..... | ..... | 40 | 15 | |
| October..... | 31 | 2,139,000 | 19,283,400 | 622,045 | 2,577,995 | 229,065 | 72 | ..... | ..... | ..... | 39 | 14 | |
| November..... | 30 | 2,276,000 | 20,663,600 | 688,787 | 2,762,513 | 229,525 | 77 | ..... | ..... | ..... | 32 | 14 | |
| December..... | 31 | 2,242,000 | 20,379,200 | 657,394 | 2,724,492 | 210,002 | 83 | ..... | ..... | ..... | 35 | 14 | |
| Totals..... | 355 | 25,626,000 | 227,946,600 | 641,277 | 30,340,453 | ..... | 889 | ..... | ..... | ..... | 373 | 154 | |

Running Expenses Germantown Works.

| | | |
|---|-----------|----------------------------------|
| Salaries of Engineers, Firemen, &c., | - - - | \$4,050 00 |
| Coal Oil for Lighting Works, | - - - | 10 35 |
| 889 tons Coal at average price \$6.55, | - - - | 5,822 95 |
| 373 pounds of Tallow, | - - - | 68 26 |
| 38½ gallons of Oil, | - - - | 52 94 |
| Packing and Small Stores, | - - - | 52 27 |
| Repairs, | - - - | 1,114 64 |
| | | <hr/> |
| | | \$11,171 41 |
| Cost of raising water into reservoir per million gallons, | - - - - - | \$49 00 |
| Cost of raising water per million gallons one foot high, | - - - - - | 21, ³ / ₁₀ |

Running Expenses of Roxborough Water Works.

| | | |
|------------------------------------|-------|-------------|
| Salaries of Engineers and Firemen, | - - - | \$3,400 00 |
| Oil for Lighting Works, | - - - | 35 27 |
| 895 tons of Coal, | - - - | 5,368 25 |
| 46 gallons Oil, | - - - | 62 60 |
| 556 pounds of Tallow, | - - - | 103 88 |
| Packing and Small Stores, | - - - | 175 12 |
| Repairs, | - - - | 947 58 |
| | | <hr/> |
| | | \$10,092 70 |

Amount of Water Pumped by all the Works during the year 1870.

| MONTHS. | Gallons of water pumped During the month. | Average number of Gallons Pumped per day. |
|---------------|---|---|
| January, . . | 823,501,020 | 26,629,192 |
| February, . . | 816,808,722 | 29,377,975 |
| March, . . | 821,476,247 | 28,676,516 |
| April, . . | 1,054,488,246 | 36,454,860 |
| May, . . | 1,204,765,895 | 37,445,368 |
| June, . . | 1,220,092,275 | 40,669,741 |
| July, . . | 1,397,614,410 | 46,008,735 |
| August, . . | 1,328,758,809 | 43,663,187 |
| September, . | 1,201,946,583 | 41,105,307 |
| October, . . | 1,264,416,410 | 40,845,543 |
| November, . | 1,186,284,027 | 39,880,989 |
| December, . | 1,072,655,628 | 35,035,201 |
| Totals, . . | 13,392,808,272 | 37,249,385 |

Maximum Supply July 20th, 1870.

| | |
|--------------------------|-------------------|
| Fairmount Works, - - - - | 29,921,539 |
| Schuylkill " - - - - | 14,856,940 |
| Delaware " - - - - | 5,135,750 |
| 24th Ward, " - - - - | 3,958,680 |
| Germantown, " - - - - | 781,600 |
| Total gallons, - - - - | <u>54,654,509</u> |

Amount of Water pumped by all the Works during the years 1867, 1868, 1869 and 1870.

| MONTHS. | 1867. | | 1868. | | 1869. | | 1870. | |
|--------------------|---|---|---|---|---|---|---|---|
| | Gallons of water pumped during the month. | Average number of gallons pumped per day. | Gallons of water pumped during the month. | Average number of gallons pumped per day. | Gallons of water pumped during the month. | Average number of gallons pumped per day. | Gallons of water pumped during the month. | Average number of gallons pumped per day. |
| January..... | 618,287,074 | 20,005,379 | 730,464,667 | 24,851,786 | 877,264,223 | 28,507,994 | 823,501,020 | 26,629,192 |
| February..... | 711,152,228 | 28,187,718 | 825,584,566 | 30,914,237 | 857,235,551 | 31,850,761 | 816,007,722 | 29,377,975 |
| March..... | 716,694,210 | 24,058,725 | 849,225,424 | 28,142,180 | 804,817,745 | 26,219,793 | 821,476,247 | 28,676,516 |
| April..... | 875,050,766 | 29,259,530 | 850,197,073 | 29,632,897 | 1,044,170,483 | 35,074,275 | 1,054,488,246 | 36,454,860 |
| May..... | 886,321,354 | 29,384,172 | 968,861,910 | 31,719,122 | 1,120,558,740 | 36,530,528 | 1,204,765,895 | 37,445,368 |
| June..... | 1,028,294,108 | 34,706,857 | 1,124,258,325 | 37,916,924 | 1,197,573,103 | 39,935,103 | 1,220,092,275 | 40,669,741 |
| July..... | 1,115,559,299 | 37,639,532 | 1,225,456,237 | 39,573,452 | 1,294,468,963 | 41,757,063 | 1,397,614,410 | 46,008,735 |
| August..... | 1,065,853,766 | 36,446,543 | 1,257,133,188 | 40,555,908 | 1,139,394,772 | 36,754,670 | 1,328,758,509 | 43,663,187 |
| September..... | 1,043,957,549 | 39,041,156 | 1,113,985,190 | 37,186,021 | 1,111,435,089 | 37,047,836 | 1,201,948,583 | 41,105,307 |
| October..... | 1,071,726,037 | 35,396,907 | 1,169,605,506 | 37,907,082 | 1,098,648,339 | 35,440,337 | 1,264,416,410 | 40,845,543 |
| November..... | 880,945,353 | 30,976,368 | 973,190,979 | 32,833,488 | 970,776,989 | 32,359,234 | 1,186,284,027 | 39,880,989 |
| December..... | 854,579,754 | 28,615,310 | 888,116,518 | 29,310,439 | 898,388,339 | 29,151,189 | 1,072,655,928 | 35,035,201 |
| Totals..... | 10,863,421,498 | 29,771,018 | 11,985,178,863 | 33,378,628 | 12,414,752,336 | 34,040,409 | 13,392,808,272 | 37,249,385 |

Statement of the Operations of the Shop from January 1st to December 31st, 1870.

DR.

| | | | | |
|-------------------------------------|---|---|---|------------|
| To Stock on hand January 1st, 1870, | - | - | - | \$4,352 21 |
| 337,228 lbs. iron castings, | - | - | - | 10,825 06 |
| 33,756 " wrought iron, | - | - | - | 1,473 00 |
| 2,140 " cast steel, | - | - | - | 437 54 |
| 14,666 " brass castings, | - | - | - | 4,003 23 |
| 17,600 " lead, | - | - | - | 1,496 00 |
| 8,883 " bolts, nuts and washers, | - | - | - | 1,369 59 |
| 594 " leather, | - | - | - | 266 43 |
| 422 " gasket, | - | - | - | 73 85 |
| 18 " listing, | - | - | - | 3 60 |
| 20 " tallow, | - | - | - | 3 60 |
| 38,686 feet of lumber, | - | - | - | 1,482 73 |
| 99 tons of coal, | - | - | - | 692 75 |
| Galvanizing spindles for stops, | - | - | - | 192 21 |
| Machine work, | - | - | - | 134 71 |
| Hardware, | - | - | - | 2,240 23 |
| Wrought iron tubing, &c., | - | - | - | 419 65 |
| Paints, oils, &c., | - | - | - | 283 96 |
| Scrap iron from districts, | - | - | - | 256 10 |
| Wages paid hands, and incidentals, | - | - | - | 16,040 17 |
| | | | | <hr/> |
| | | | | 46,046 62 |

CR.

| | | |
|-------------------------------------|-------------|-------------|
| By 7 stop-cocks 3-inch, at \$44 00, | \$308 00 | |
| 93 " 4-inch, at 48 00, | 4,464 00 | |
| 113 " 6-inch, at 62 00, | 7,006 00 | |
| 95 " 6-inch, at 42 00, | 3,990 00 | |
| 4 " 8-inch, at 89 00, | 356 00 | |
| 4 " 10-inch, at 90 00, | 360 00 | |
| | <hr/> | <hr/> |
| Amounts carried forward, | \$16,484 00 | \$46,046 62 |

| | | |
|--|-------------|-------------|
| Amounts brought forward, | \$16,484 00 | \$46,046 62 |
| 10 stop-cocks 12-inch, at 120 00, | 1,200 00 | |
| 5 " 20-inch, at 220 00, | 1,100 00 | |
| 6 " 30-inch, at 520 00, | 3,120 00 | |
| 6 " 36-inch, at 750 00, | 4,500 00 | |
| 600 stop-cock boxes, at 3 50, | 2,100 00 | |
| 317 frames and covers, at 7 00, | 2,219 00 | |
| 223 fire-plugs, at 36 00, | 8,028 00 | |
| 307 " cases, at 18 00, | 5,526 00 | |
| 4,200 ferrules, ½-inch, at 50, | 2,100 00 | |
| 450 " ¾-inch, at 50, | 225 00 | |
| 100 " ¾ inch, at 50, | 50 00 | |
| 100 " 1-inch, at 50, | 50 00 | |
| Repairs for First District, | 1,258 29 | |
| " Second " | 2,389 60 | |
| " Third " | 1,776 83 | |
| " Fourth " | 1,160 37 | |
| " 30 inch main, | 347 28 | |
| " Germantown, | 667 11 | |
| " 20-inch main, | 533 10 | |
| " Engine House, Germant'n, | 76 85 | |
| " West Phila. Engine House, | 498 90 | |
| " " Reservoir, | 1,178 45 | |
| " Belmont Engine House, | 1,797 41 | |
| " Schuylkill Works, | 1,679 18 | |
| " " extension, | 464 00 | |
| " Delaware Works, | 85 43 | |
| " Fairmount " | 1,310 92 | |
| " " " extens'n, | 1,910 98 | |
| " Roxboro' Engine House, | 190 95 | |
| " " new " " | | |
| " and foundations, | 50 96 | |
| " Roxborough new Engine House at Reservoir, | 130 01 | |
| Amounts carried forward, | \$64,208 62 | \$46,046 62 |

| | | |
|--|-------------|-------------|
| Amounts brought forward, | \$64,208 62 | \$46,046 62 |
| Repairs for Manayunk District, | 153 28 | |
| “ Buildings and grounds, | 890 51 | |
| “ Shop fixtures, &c., | 945 88 | |
| “ New engine Schuylkill Works, | 724 88 | |
| “ Belmont 36-inch main, | 544 10 | |
| “ Delaware 36-inch main, | 1,094 74 | |
| “ Reservoir Del. extension, | 1,856 40 | |
| “ New boilers Schuylkill Works, | 155 20 | |
| New patterns made and repaired, | 627 56 | |
| 31 sharp thread screws at \$2 50, | 77 50 | |
| 5 square “ 3-inch, at \$5 00, | 25 00 | |
| 12 “ “ 4 inch, at 5 00, | 60 00 | |
| 28 “ “ 6 inch, at 5 00, | 140 00 | |
| 7 “ “ 8-inch, at 6 00, | 42 00 | |
| 3 “ “ 10 inch, at 8 00, | 24 00 | |
| 4 “ “ 16-inch, at 12 00, | 48 00 | |
| 5 old style screws 20-inch, at 14 00, | 70 00 | |
| 1 new “ 30-inch, at 20 00, | 20 00 | |
| 12 spindles 3-inch, at 5 00, | 60 00 | |
| 33 “ 5-inch, at 5 00, | 165 00 | |
| 90 “ 6-inch, at 5 00, | 450 00 | |
| 9 “ 8-inch, at 6 00, | 54 00 | |
| 10 “ 10-inch, at 8 00, | 80 00 | |
| 11 “ 12-inch, at 10 00, | 110 00 | |
| 1,148 lbs. bolts and washers, at 15, | 172 00 | |
| 344 “ wrought iron forgings, at 13, | 44 72 | |
| 15,100 “ “ “ at 4½, | 679 50 | |
| 800 “ cast steel, at 22, | 176 00 | |
| 13,802 “ iron castings, at 4, | 452 08 | |
| 570 “ finished brasses, at 30, | 171 00 | |
| 1,160 “ unfinished brass castings at 25, | 290 00 | |
| Amounts carried forward, | \$74,611 97 | \$46,046 62 |

| | | |
|--|--------------------|--------------------|
| Amounts brought forward, | \$74,611 97 | \$46,046 62 |
| 3,752 feet assorted lumber, | 187 57 | |
| 94 wooden plugs assorted at 50, | 47 00 | |
| 4 kegs nails, at 5 00, | 20 00 | |
| 13 quires emery and flint paper, assorted, | 4 80 | |
| 102 handles, assorted, | 19 00 | |
| 172½ lbs. leather, at 45, | 77 74 | |
| 20 plug monkeys, finished, at 8 00, | 160 00 | |
| Hardware, shovels, &c., | 180 00 | |
| Paints, oils, &c., | 114 00 | |
| 2 tons coal, at 7 00, | 14 00 | |
| To Balance, nominal profit of shop, | | 29,389 46 |
| | <u>\$75,436 08</u> | <u>\$75,436 08</u> |

DISTRIBUTION.

Service mains have been laid in the following streets in 1870.

FIRST DISTRICT.

Account of Iron Pipes laid in the First, Second, Third, Fourth, and Twenty-sixth Wards.

| Street. | Location. | Size. | |
|------------------|--|---------|-------|
| | | Inches. | Feet. |
| Pierce, | From Passyunk road to Thirteenth, | 4 | 327 |
| Wharton, | " Seventeenth to Mount Holly, | 6 | 228 |
| Morris, | " Front to Otsego, | 6 | 295 |
| Dutton, | " Morris to Mifflin, | 4 | 906 |
| Washington ave., | " Twenty-third to Twenty-fourth (south side), | 6 | 516 |
| Delaware ave., | " South to Davis' Landing, | 6 | 1,280 |
| Dudley, | " Ninth (west), | 4 | 365 |
| Pierce, | " Ninth to Tenth, | 4 | 450 |
| Catharine, | " Twenty-third to Twenty-fourth, | 6 | 470 |

| Street. | Location. | Size. | |
|--|--------------------------------------|---------|-------|
| | | Inches. | Feet. |
| Fitzwater, | From Twenty-third to Gray's F'y R'd, | 6 | 476 |
| Twenty-third, | " Pemberton to Catharine, | 6 | 558 |
| Twenty-fourth, | " Gray's Ferry road to Catharine, | 6 | 335 |
| Moore, | " Ninth to Tenth, | 6 | 450 |
| A certain twelve-feet street, north of St. Albans' place between Twenty-third and Twenty-fourth, | | 4 | 472 |
| A certain twelve-feet street, south of St. Albans' place, between Twenty-third and Twenty-fourth, | | 4 | 472 |
| McClellan, | from Ninth to Tenth, | 4 | 450 |
| Washington avenue (south side), from Third to Jeffer- son avenue, | | 4 | 300 |
| Ellsworth, | From Seventeenth to Eighteenth, | 6 | 356 |
| Afton, | " " " " | 4 | 450 |
| Eighteenth, | " Federal to Washington avenue, | 6 | 675 |
| Davis' Landing, | " Delaware avenue to Swanson, | 6 | 151 |
| Twenty-third, | " Christian to Washington ave., | 6 | 784 |
| Manton, | " Seventeenth to Eighteenth, | 4 | 450 |
| Grays Ferry r'd | " Terminus of pipe to Patton, | 6 | 186 |
| Patton, | " Grays Ferry road (south), | 4 | 266 |
| Mount Holly, | " Wharton to Reed, | 4 | 450 |
| League, | " Nineteenth (west), | 4 | 245 |
| Sixteenth, | " Reed to Buck road, | 6 | 545 |
| Dickerson, | " Sixteenth to Bancroft, | 6 | 161 |
| Bancroft, | " Reed to Dickerson, | 4 | 460 |
| Pierce, | " Seventh (west), | 4 | 330 |
| Anthony, | " Terminus of pipe to Tasker, | 4 | 265 |
| Twenty-fourth, | " Washington avenue to Alter, | 6 | 224 |
| Manton, | " Eighteenth to Nineteenth, | 4 | 450 |
| McClellan, | " Ninth to Tenth (relaid), | 4 | 450 |
| Bainbridge, | " Penn to Swanson, | 4 | 175 |
| Swanson, | " South to Almond (relaid), | 6 | 588 |
| Reed | " Sixteenth to Bancroft, | 6 | 161 |
| Alter, | " Twenty-third to Twenty-fourth, | 4 | 450 |
| Mountain | " Terminus to Eleventh, | 4 | 117 |
| Ellsworth, | " Twenty-third to Twenty-fourth, | 6 | 450 |

| Street. | Location. | Size. | |
|--|-------------------------------|---------|--------|
| | | Inches. | Feet. |
| Carpenter, | From Twentieth (west), | 6 | 420 |
| Fifth, | " Snyder to Moyamensing ave., | 6 | 466 |
| Twenty-third, | " Catharine to Christian, | 6 | 360 |
| Starr, | " McKean to Snyder avenue, | 4 | 450 |
| Reed, | " Bancroft to Mount Holly, | 6 | 504 |
| Snyder avenue, | " Ninth (east) north side, | 6 | 255 |
| " | " " " south side, | 6 | 253 |
| Pharo, | " Fitzwater to Catharine, | 4 | 400 |
| | | <hr/> | |
| Plug connections, | | | 20,297 |
| " | " | 4 | 316 |
| | | 6 | 75 |
| | | <hr/> | |
| Total number of feet of pipe laid, | | | 20,688 |
| | | <hr/> | |
| Number of feet of new pipe laid, 4-inch, | | | 9,466 |
| " | " " " " 6-inch, | | 11,222 |
| | | <hr/> | |
| Total number of feet, | | | 20,688 |
| Or 3 miles 4,848 feet. | | | |

SECOND DISTRICT.

Account of Iron Pipes laid in the Fifth, Sixth, Seventh, Eighth, Ninth, Tenth, Twenty-fourth and Twenty-seventh Wards.

| Street. | Location. | Size. | |
|-----------------|---------------------------------------|---------|-------|
| | | Inches. | Feet. |
| Thirty-fourth, | From Race to Lancaster avenue, | 6 | 611 |
| " | Connections, | 6 | 71 |
| Thirty-seventh, | From Centre to Lancaster avenue, | 6 | 620 |
| Story, | " Thirty-eighth to Thirty-ninth, | 6 | 568 |
| Thirty-eighth, | " Haverford road to Lancaster avenue, | 6 | 440 |

| Street. | Location. | Size. | |
|---------------------|---|---------|-------|
| | | Inches. | Feet. |
| Thirty-eighth, From | Lancaster avenue to Elm, | 6 | 1,574 |
| Woodland, | “ Chestnut to Forty-first, | 8 | 1,596 |
| Mary, | “ Eadline to Forty-second, | 6 | 1,044 |
| Seneca, | “ Lancaster ave. to Forty-fourth, | 6 | 315 |
| “ | “ Mica to Forty-eighth, | 6 | 1,338 |
| Forty-fourth, | “ Haverford to Seneca, | 6 | 1,961 |
| Manning | “ Twenty-fourth (east), | 4 | 90 |
| Budd, | “ Haverford to Allen, | 4 | 333 |
| Eighteenth, | “ Race to Vine, | 12 | 680 |
| Clayton, | “ Race to Cherry, | 4 | 332 |
| Thirty-seventh, | “ Elm to Grape, | 6 | 212 |
| Grape, | “ Thirty-seventh (west), | 4 | 208 |
| Centre, | “ Thirty-eighth to Thirty-ninth, | 6 | 345 |
| Ludlow, | “ Thirty-seventh to Thirty-eighth, | 4 | 524 |
| Thirty-ninth, | “ Centre to rear line church on Powelton avenue, | 6 | 170 |
| Story, | “ Thirty-sixth to Thirty-seventh, | 6 | 408 |
| Elm, | “ Thirty-fourth to Thirty-sixth, | 6 | 820 |
| Haverford road, | “ Forty-third (west), | 6 | 364 |
| Huron, | “ Brooklyn (west), | 6 | 775 |
| Aspen, | “ Chestnut to Barker, | 4 | 380 |
| Thirty-third, | “ Bridge to Haverford, | 6 | 408 |
| Story, | “ Thirty-ninth to Union, | 6 | 380 |
| Thirty-sixth, | “ Powelton avenue to Filbert, | 6 | 1,098 |
| Belmont ave., | “ Lancaster pike (north), | 20 | 1,214 |
| “ | “ Connections with main, | 12 | 379 |
| “ | “ “ “ | 6 | 66 |
| “ | “ “ “ | 6 | 36 |
| Thirty-fourth, From | Elm (south), | 6 | 140 |
| Allen, | “ Mary to Budd, | 6 | 775 |
| Race, | “ Thirty-sixth to Thirty-fourth, | 6 | 394 |
| Baltimore ave., | “ Forty-first to Forty-second, | 8 | 406 |
| Thirty-seventh, | “ Grape (north), | 6 | 1,470 |
| Rockdale, | “ Thirty-sixth to Thirty-ninth, | 6 | 44 |
| Connecting with | Haverford road, | 4 | |

| Street. | Location. | Size. | |
|---|-----------|---------|--------|
| | | Inches. | Feet. |
| Connecting with 20-inch main, Lancaster avenue, | | 6 | 144 |
| " Somerset with Mary, | | 6 | 48 |
| Belmont Engine House, | | 30 | 190 |
| | | <hr/> | |
| Plug connections, | | | 22,971 |
| | | 4 | 511 |
| | | <hr/> | |
| Total number of feet of pipe laid, | | | 23,482 |
| | | <hr/> | |
| Number of feet of new pipe laid, 30-inch, | | | 190 |
| " " " " | 20-inch, | | 1,214 |
| " " " " | 12-inch, | | 1,059 |
| " " " " | 8-inch, | | 1,990 |
| " " " " | 6-inch, | | 16,607 |
| " " " " | 4-inch, | | 2,422 |
| | | <hr/> | |
| Total number of feet, | | | 23,482 |
| Or 4 miles 2,362 feet. | | | |
| Lowered pipe on Thirty-seventh, from Elm to Pennsylvania R. R., | | | 1,130 |
| Lowered pipe on Thirty-seventh, from Filbert street (north), | | | 150 |

THIRD DISTRICT.

Account of Iron Pipes laid in the Eleventh, Twelfth, Sixteenth, Seventeenth, Eighteenth, Nineteenth, Twenty-third and Twenty-fifth Wards.

| Street. | Location. | Size. | |
|----------------|--------------------------------|---------|-------|
| | | Inches. | Feet. |
| Philip, | From Diamond (north), | 4 | 450 |
| Laurel, | " Delaware avenue to Beach, | 6 | 252 |
| Bodine, | " Norris to Diamond, | 4 | 567 |
| Norris square, | " Diamond to the Fountain, | 4 | 270 |

| Street. | Location. | Size. | |
|------------------|---|---------|-------|
| | | Inches. | Feet. |
| Hope, | From Norris to Susquehanna ave., | 4 | 1,233 |
| Third, | “ Berks to Norris, | 6 | 564 |
| York, | “ Fifth to east side America, | 6 | 1,260 |
| Lehigh ave., | “ Fifth to Second, north side, | 6 | 1,572 |
| “ | “ “ south side, | 6 | 1,512 |
| Kensington ave., | “ York to Indiana ave., west side, | 6 | 4,848 |
| “ | “ “ “ east side, | 6 | 4,752 |
| Eyre, | “ Girard ave. to Wildey, | 4 | 459 |
| Adams, | “ Emerald to Kensington ave., | 6 | 888 |
| Philip, | “ 450 north of Diamond to York, | 4 | 1,413 |
| Bodine, | “ Diamond to Susquehanna, | 4 | 594 |
| Orianna, | “ Norris to Berks, | 4 | 558 |
| Philip, | “ Montgomery (south), | 4 | 360 |
| Almond, | “ 208 south of York to Norris, | 6 | 468 |
| Anthracite, | “ Salmond to Almond, | 4 | 1,008 |
| Dickinson, | “ Cedar to Gaul, | 6 | 432 |
| Almenda, | “ Huntingdon to Lehigh, | 6 | 828 |
| Edgemont, | “ William to Allegheny ave., | 6 | 2,412 |
| Clearfield, | “ Amber to Frankford road, | 6 | 456 |
| Sepviva, | “ Huntingdon to Jackson, | 6 | 672 |
| Leithgow, | “ Hackley to Norris, | 4 | 297 |
| Montgomery ave., | “ Germantown ave. to Sixth, | 6 | 504 |
| Randolph, | “ Montgomery to Oxford, | 6 | 996 |
| Somerset, | “ Kensington ave. to C, | 6 | 576 |
| Franklin, | “ Unity to Sellers, | 6 | 600 |
| Green, | “ Paul to Main, | 6 | 516 |
| Lehigh ave., | “ Blaney to Kensington ave., | 6 | 87 |
| C, | “ Somerset to Cambria, | 6 | 564 |
| Keyser, | “ Hanover (north), | 4 | 243 |
| Firth, | “ Amber to Coral, | 4 | 432 |
| Melcher, | “ Susquehanna to Coulston, | 4 | 450 |
| Mannakin, | “ “ Diamond, | 4 | 639 |
| Fox, | “ 189 north of Cumberland to Huntingdon, | 4 | 396 |
| Mutter, | “ Norris to Berks, | 6 | 528 |

| Street. | Location. | Size. | |
|--|--|---------|-------|
| | | Inches. | Feet. |
| Mutter, | From Dauphin to Davis, | 6 | 456 |
| " | " Dauphin to Cumberland, | 6 | 1,152 |
| Huntingdon, | " Front to Kensington ave., | 6 | 1,104 |
| Somerset, | " C to Ormes, | 6 | 420 |
| Rosehill, | " Somerset to Cambria, | 6 | 528 |
| Orkney, | " York (south), | 4 | 261 |
| Montgomery ave., | " Bodine to Cadwalader, | 6 | 540 |
| Memphis, | " Vienna to Montgomery, | 6 | 364 |
| Bath, | " William to Sorrell, | 4 | 279 |
| Buckius, | " Frankford road to Kensington avenue, | 6 | 1,056 |
| Buckius street connection, | | 10 | 9 |
| Boudinot, | From Kensington ave. to Somerset, | 6 | 276 |
| Mulberry, | " Orthodox to Oxford, | 6 | 744 |
| Leithgow, | " Susquehanna to Dauphin, | 4 | 630 |
| Lawrence, | " Dauphin to York, | 6 | 618 |
| Adams, | " Frankford road and Kensing- ton avenue. | 6 | 420 |
| Connection at Beach and Laurel (relaid), | | 10 | 63 |
| " Delaware ave. and Laurel, | | 6 | 84 |
| " Isaac Sted's Mill, N. W. cor. Coral and Taylor, | | 4 | 18 |
| " Frankford Arsenal, N. E. cor. Tacony and Bridge sts., 23d Ward, | | 6 | 60 |
| " Bromley & Bros.' Mills, N. E. cor. Emerald and York streets, | | 6 | 3 |
| " H. Disston's saw works, Haydock, east of Front, | | 4 | 27 |
| Intersections, | | 4 | 54 |
| " | | 4 | 261 |
| Plug connections, | | 6 | 156 |
| " | | 4 | 694 |
| " | | 6 | 162 |
| Pumping main on Otis street to connect with Delaware Reservoir, | | 36 | 6,570 |

| Street. | Location. | Size. | |
|------------------------------------|-----------|--------------------|--------|
| | | Inches. | Feet. |
| Drain at Delaware Reservoir, | | 10 | 72 |
| Total number of feet of pipe laid, | | <hr/> 51,737 <hr/> | |
| Number of feet of new pipe laid, | | 4 | 11,593 |
| “ | “ | 6 | 33,430 |
| “ | “ | 10 | 144 |
| “ | “ | 36 | 6,570 |
| Total number of feet, | | <hr/> 51,737 <hr/> | |
| Or 9 miles 4,217 feet. | | | |

FOURTH DISTRICT.

Account of Iron Pipes laid in the Thirteenth, Fourteenth, Fifteenth, Twentieth, Twenty-first and Twenty-eighth Wards.

| Street. | Location. | Size. | |
|---|--|---------|-------|
| | | Inches. | Feet. |
| Lehigh ave., | From Germantown avenue to Broad (both sides), | 6 | 3,720 |
| Twenty-sixth, | “ Brown to Poplar, | 6 | 600 |
| Tioga, | “ Seventeenth to Twenty-second, | 6 | 2,364 |
| Hutchinson, | “ Jefferson to Oxford, | 4 | 549 |
| Dauphin, | “ Eighth to Tenth, | 6 | 780 |
| Gratz, | “ Montgomery avenue to Berks, | 6 | 540 |
| Twenty-eighth, | “ Poplar to Girard avenue, | 6 | 492 |
| N'th College ave., | “ Twenty-first (west), | 6 | 540 |
| Wellington, | “ Columbia avenue to Oxford, | 6 | 240 |
| Twenty-sixth, | “ Poplar to Girard avenue, | 6 | 492 |
| Ninth, | “ Germantown ave., to Dauphin, | 6 | 828 |
| Nassau, to connect with Twenty-first and Twenty-second, | | 6 | 24 |
| Barclay, to connect with Hedding, | | 4 | 108 |

| Street. | Location. | Size. | |
|--|---------------------------------|---------|--------|
| | | Inches. | Feet. |
| Seventeenth, | From Jefferson to Oxford, | 6 | 540 |
| Poplar, | “ Vineyard to Geary. | 6 | 240 |
| Jefferson, | “ Seventeenth to Eighteenth, | 6 | 480 |
| Bouvier, | “ Master to Jefferson, | 6 | 504 |
| Darien, | “ Jefferson to Columbia avenue, | 4 | 1,080 |
| Uber, | “ Norris to Berks, | 6 | 504 |
| Ninth, | “ Jefferson to Oxford, | 6 | 552 |
| Nicholas, | “ Nineteenth to Twentieth, | 6 | 444 |
| Nineteenth, | “ Oxford to Montgomery, | 6 | 1,128 |
| Chauncey, | “ Girard avenue to Stiles, | 4 | 369 |
| Croskey, | “ Columbia to Montgomery, | 6 | 564 |
| Berks, | “ Twentieth to Twenty-first, | 6 | 528 |
| Woodstock, | “ Montgomery ave. to Norris, | 6 | 1,128 |
| Franklin, | “ Susquehanna avenue (north), | 6 | 204 |
| “ | “ Montgomery avenue to Berks, | 6 | 552 |
| Sixteenth, | “ Poplar to Cambridge, | 6 | 228 |
| Nineteenth, | “ Master to Jefferson, | 6 | 540 |
| West College ave., | “ Girard avenue (north), | 6 | 456 |
| Carlton, | “ Eighteenth to Nineteenth, | 4 | 459 |
| Arizona, | “ Dauphin to York, | 6 | 468 |
| Darien, | “ Montgomery ave., to Berks, | 4 | 549 |
| Township line, | “ Tioga to Venango, | 6 | 756 |
| Plug connections, | | 4 | 216 |
| Pumping main, from Twenty-ninth and Master to Twenty-first and Jefferson, | | 30 | 3,800 |
| Repairing main at Fairmount, | | 36 | 158 |
| “ “ “ | | 23 | 16 |
| Shifting pipe, North College avenue, | | 16 | 12 |
| “ “ “ “ | | 10 | 12 |
| Pumping main, Thompson street (omitted in report of 1869), | | 36 | 1,272 |
| Submerged main, below Columbia bridge, | | 36 | 963 |
| Total number of feet of pipe laid, | | | 29,999 |

| Number of feet of new pipe laid, | Size. | |
|----------------------------------|---------|--------|
| | Inches. | Feet. |
| " " " " | 36 | 2,393 |
| " " " " | 30 | 3,800 |
| " " " " | 23 | 16 |
| " " " " | 16 | 12 |
| " " " " | 10 | 12 |
| " " " " | 6 | 20,436 |
| " " " " | 4 | 3,330 |

Total number of feet of new pipe laid, 29,999
Or 5 miles 3,599 feet.

GERMANTOWN.

Account of Iron Pipes laid in Germantown, Twenty-second Ward.

| Street. | Location. | Size. | |
|---------------------|--|---------|-------|
| | | Inches. | Feet. |
| Germantown ave., | From terminus of pipe, S. E. to Cayuga, | 6 | 785 |
| Cayuga, | " Germantown avenue to Seventeenth, | 6 | 1,074 |
| Wister, | " End of pipe east, | 3 | 566 |
| East Walnut lane, | " Germ'town ave. to Morton, | 4 | 742 |
| Linden, | " Greene to Wayne, | 4 | 1,014 |
| Rittenhouse, | " Former terminus to Wayne, | 6 | 686 |
| Wayne, | " Former terminus to Rittenhouse, | 6 | 300 |
| Seymour, | " Germantown ave. to west line of Green, | 6 | 968 |
| Knox, | " Queen to Linden, | 4 | 384 |
| West Wash'ton lane, | " Adams (east), | 4 | 183 |
| Adams, | " Terminus to Tulpehocken, | 6 | 305 |
| Winona avenue, | " Wayne (west), | 4 | 295 |
| Wayne, | " Coulter to School, | 4 | 745 |
| Greene, | " School (south), | 6 | 253 |
| " | " Chelton ave. (south), | 6 | 84 |

| Street. | Location. | Size. | |
|--|---------------------|--------------|-------|
| | | Inches. | Feet. |
| Chelton ave., | From Greene (east), | 4 | 200 |
| " | " " (west), | 4 | 580 |
| Mechanic, | " Humes to Morton, | 4 | 1,020 |
| East side Wissahickon, from former terminus to abutment of bridge, | | 20 | 298 |
| West side Wissahickon, | | 20 | 695 |
| Waste for Wissahickon pipe bridge, | | 4 | 114 |
| Intersections, | | 4 | 66 |
| Connections, | | 3 | 21 |
| " | | 4 | 305 |
| Total number of feet of pipe laid, | | <hr/> 11,683 | |
| Number of feet of new pipe laid, | | 20 | 993 |
| " | " " | 6 | 4,455 |
| " | " " | 4 | 5,648 |
| " | " " | 3 | 587 |
| Total number of feet of pipe laid, Or 2 miles 1,123 feet. | | <hr/> 11,683 | |

MANAYUNK.

| Street. | Location. | Size. | |
|--|---------------------|-------------|-------|
| | | Inches. | Feet. |
| Cresson, | From Cedar to East, | 6 | 924 |
| East, | " Cresson to Wood, | 4 | 648 |
| Connection, Cresson and Shurs lane, | | 6 | 72 |
| Total number of feet of pipe laid, | | <hr/> 1,644 | |
| Number of feet of new pipe laid, | | 6 | 996 |
| " | " " | 4 | 648 |
| Total number of feet of new pipe laid, | | <hr/> 1,644 | |

Recapitulation of Pipe laid in the several Districts during the year 1870.

| WARDS. | 3-inch. | 4-inch. | 6-inch. | 8-inch. | 10-inch. | 12-inch. | 16-inch. | 20-inch. | 23-inch. | 30-inch. | 36-inch. | TOTAL |
|---|------------|---------------|---------------|--------------|------------|--------------|-----------|--------------|-----------|--------------|--------------|----------------|
| 1st District, 1, 2, 3, 4, 26..... | | 9,466 | 11,222 | | | | | | | | | 20,688 |
| 2d " 5, 6, 7, 8, 9, 10, 21, 27..... | | 2,422 | 16,607 | 1,990 | | 1,059 | | 1,214 | | 190 | | 23,482 |
| 3d " 11, 12, 16, 17, 18, 19, 23, 25.... | | 11,593 | 33,430 | | 144 | | | | | | 6,570 | 51,737 |
| 4th " 13, 14, 15, 20, 21, 28..... | | 3,330 | 20,436 | | 12 | | 12 | | 16 | 3,800 | 2,393 | 29,999 |
| Germantown, 22..... | 587 | 5,648 | 4,455 | | | | | 993 | | | | 11,683 |
| Manayunk..... | | 648 | 996 | | | | | | | | | 1,644 |
| Total..... | 587 | 33,107 | 87,146 | 1,990 | 156 | 1,059 | 12 | 2,207 | 16 | 3,990 | 8,963 | 139,233 |

Being a total of 26 miles 1,953 feet.

Total number of feet of pipe, as per last report..... 2,439,914

" " " " laid during the year..... 139,233

Feet 2,579,147

Or 488 miles 2,507 feet.

*Iron Mains laid in different cities of the United States up to
December 31, 1869.*

| | | | | | |
|---------------|---|---|---|---|------------|
| Philadelphia, | - | - | - | - | 462 Miles. |
| New York, | - | - | - | - | 321 " |
| Brooklyn, | - | - | - | - | 237 " |
| Chicago, | - | - | - | - | 208 " |
| Baltimore, | - | - | - | - | 193 " |
| Boston, | - | - | - | - | 170 " |
| Cincinnati, | - | - | - | - | 121 " |
| Jersey City, | - | - | - | - | 71 " |
| Louisville, | - | - | - | - | 53 " |

SERVICE MAINS ORDERED.

Councils have ordered pipe laid in the following streets.

FIRST DISTRICT.

Pipe ordered to be laid in the First District.

| Streets. | From | Location. |
|----------------|------|-----------------------------------|
| Tenth, | From | Winton to Jackson. |
| Moore, | " | Tenth to Broad. |
| Twentieth, | " | Federal to Wharton. |
| Dickerson, | " | Bancroft to Seventeenth. |
| Twenty-fourth, | " | Alter to Federal. |
| Fitzwater, | " | Twenty-second to Twenty-third. |
| Hummell, | " | Grays Ferry Road to Twenty-ninth. |
| Otsego, | " | Mifflin to McKean. |

SECOND DISTRICT

Pipe ordered to be laid in the Second District.

| Street. | From | Location. |
|-------------------|------|------------------------------|
| Thirty-seventh, | From | Garden to Aspen. |
| Baltimore avenue, | " | Forty-first to Forty-second. |
| Thirty-seventh, | " | Lancaster avenue to Warren. |
| " | " | Darby road to Sycamore. |

| Street. | From | Location. |
|---------------------|------|-----------------------------------|
| Sycamore, | | Thirty-fifth to Thirty-seventh. |
| Westminster avenue, | " | Lancaster avenue to Forty-eighth. |
| Thirty-third, | " | Haverford to Bridge. |
| Forty-fifth, | " | Huron to Transcript. |
| Lex, | " | " " |
| Forty-first, | " | Elm to Pennsylvania R. R. Bridge. |
| Pine, | " | Thirty-ninth to Fortieth. |
| Forty-fifth, | " | Oregon to Transcript. |
| Rockland, | " | Thirty-third to Thirty-fourth. |

THIRD DISTRICT.

Pipe ordered to be laid in the Third District.

| Street. | From | Location. |
|--------------------|------|--------------------------------|
| Toronto, | | Melvale, South 806 feet. |
| Berks, | " | Front to Germantown avenue. |
| Ann, | " | Emerald to Kensington avenue. |
| Wellington, | " | Richmond to Cedar. |
| Thompson, | " | Lehigh avenue to Reading R. R. |
| Ormes, | " | Somerset to Cambria. |
| Edgemont, | " | York to Cumberland. |
| Thompson, | " | William to Clearfield. |
| Bodine, | " | Dauphin to Susquehanna. |
| Montgomery avenue, | " | Second to Bodine. |
| Lawrence, | " | Norris to Hackley. |
| Almendo, | " | Somerset to Ann. |
| Emerald, | " | Cemetery avenue to Clearfield. |
| Mutter, | " | Lehigh avenue to Cumberland. |
| Waln, | " | Mulberry to Unity. |
| Bath, | " | Sorrell to Ann. |

FOURTH DISTRICT.

Pipe ordered to be laid in the Fourth District.

| Street. | Location. |
|-------------------------|---------------------------------------|
| Master, | From Twenty-seventh to Twenty-eighth. |
| Lehigh ave., | " Sydenham to Eighteenth. |
| Thirteenth, | " Berks to Susquehanna avenue. |
| Cadbury (or Park) ave., | From Montgomery to Berks. |
| Twenty-fifth, | From Brown to Hare. |
| Tioga, | " Seventeenth to Broad. |
| Berks, | " Nineteenth to Twentieth. |
| " | " Twenty-first to Ridge avenue. |
| Tahassa, | " Ninth to Tenth. |
| Taney, | " Brown to Poplar. |
| Eighth, | " Berks to Dauphin. |
| Seventeenth, | " Columbia to Montgomery. |
| Nassau, | " Twenty-second to Twenty-third. |
| Seventeenth, | " Allegheny to Tioga. |
| Stewart, | " Twenty-first to Twenty-third. |
| Diamond, | " Broad to Tenth. |
| Jefferson, | " Eighteenth to Twenty-sixth. |
| Institute, | " Columbia to Berks. |

GERMANTOWN.

Pipe ordered to be laid in Germantown, Twenty-second Ward.

| Street. | Location. |
|---------------------|--|
| Township Line road, | to connect with pipe now laid in the Twenty-eighth Ward. |
| Stenton avenue, | From terminus of pipe to Germantown avenue. |
| School lane, | “ End of pipe along School lane to Ridge avenue, and along Ridge avenue to Falls bridge, as soon as the connection shall have been made between the Roxborough Water Works and the Mount Airy Reservoir. |

MANAYUNK.

Pipe ordered to be laid in Manayunk.

| Street. | Location. |
|----------------|----------------------------|
| Wood, | From Green lane to Cotton. |
| Church street. | |

Length of Pipe laid since Consolidation.

| YEARS. | MILES. | FEET. |
|--------------|--------|-------|
| 1855 | 6 | 44 |
| 1856 | 10 | 2,079 |
| 1857 . | 12 | 324 |
| 1858 | 13 | 3,484 |
| 1859 | 22 | 784 |
| 1860 | 19 | 224 |
| 1861 | 11 | 2,368 |
| 1862 | 9 | 954 |
| 1863 | 10 | 4,161 |
| 1864 | 6 | 4,287 |
| 1865 | 8 | 4,754 |
| 1866 | 12 | 2,964 |
| 1867 | 15 | 4,971 |
| 1868 | 15 | 148 |
| 1869 | 22 | 1,884 |
| 1870 | 26 | 1,953 |
| Total, - - - | 222 | 3,703 |

Account of the number of Holes drilled for making new Attachments to Public Mains during the year 1870.

| MONTHS. | $\frac{1}{2}$ -inch diameter. | $\frac{3}{4}$ -inch diameter. | $\frac{1}{2}$ -inch diameter. | 1-inch diameter. | Total holes drilled and attachments made. | Shut off for repairs to private pipes. | Shut off for repairs to public pipes. |
|------------------|-------------------------------|-------------------------------|-------------------------------|------------------|---|--|---------------------------------------|
| January..... | 177 | 7 | 3 | 1 | 188 | 16 | 13 |
| February..... | 99 | 16 | 2 | 1 | 118 | 16 | 22 |
| March..... | 225 | 13 | 3 | 2 | 243 | 21 | 23 |
| April..... | 318 | 28 | 4 | 5 | 355 | 36 | 29 |
| May..... | 462 | 20 | 5 | 1 | 488 | 41 | 30 |
| June..... | 390 | 20 | 5 | 4 | 419 | 29 | 35 |
| July..... | 440 | 14 | 4 | ..... | 458 | 17 | 33 |
| August..... | 429 | 24 | 10 | 2 | 465 | 23 | 20 |
| September, | 482 | 24 | 11 | 5 | 522 | 24 | 37 |
| October..... | 460 | 39 | 7 | 1 | 507 | 33 | 30 |
| November..... | 598 | 10 | 10 | 6 | 624 | 38 | 28 |
| December..... | 294 | 10 | 6 | 4 | 314 | 34 | 34 |
| Total..... | 4,374 | 225 | 70 | 32 | 4,701 | 328 | 334 |

The following Attachments were made in the Wards :

| WARDS. | $\frac{1}{2}$ -inch diameter. | $\frac{3}{4}$ -inch diameter. | $\frac{1}{2}$ -inch diameter. | 1-inch diameter. | Total holes drilled and attachments made. | Shut off for repairs to private pipes. | Shut off for repairs to public pipes. |
|---|-------------------------------|-------------------------------|-------------------------------|------------------|---|--|---------------------------------------|
| First District, 1, 2, 3, 4, 26..... | 1,129 | 12 | 1 | ..... | 1,142 | 38 | 56 |
| Second District, 5, 6, 7, 8, 9, 10, 24, 27... | 580 | 91 | 28 | 11 | 710 | 110 | 8 |
| Third District, 11, 12, 16, 17, 18, 19, 23, 25, | 1,403 | 19 | 14 | 6 | 1,442 | 85 | 143 |
| Fourth District, 13, 14, 15, 20, 21, 28. | 1,128 | 97 | 25 | 14 | 1,264 | 91 | 112 |
| Germantown..... | 97 | 5 | 2 | 1 | 105 | 4 | 15 |
| Manayunk..... | 37 | 1 | ..... | ..... | 38 | ..... | ..... |
| Total..... | 4,374 | 225 | 70 | 32 | 4,701 | 328 | 334 |

The following Table exhibits the number of repairs to Mains, Stops, Plugs, by different Districts, during the year 1870.

| DISTRICTS. | Repairs to mains. | Repairs to stops. | Repairs to plugs. |
|-----------------------|-------------------|-------------------|-------------------|
| First District, - - - | 56 | 228 | 345 |
| Second " - - - | 8 | 230 | 135 |
| Third " - - - | 133 | 403 | 511 |
| Fourth " - - - | 112 | 340 | 453 |
| Germantown, - - - | 12 | 38 | 29 |
| Manayunk, - - - - | 1 | 13 | |
| Total, - - - - | 322 | 1,252 | 1,473 |

Account of New Stops and Fire-plugs for 1870.

| DISTRICTS. | No. of stops. | No. of fire-plugs. |
|---------------------------|---------------|--------------------|
| First District, - - - - - | 43 | 30 |
| Second " - - - - - | 67 | 45 |
| Third " - - - - - | 118 | 72 |
| Fourth " - - - - - | 46 | 21 |
| Germantown, - - - - - | 19 | 18 |
| Manayunk, - - - - - | 2 | 3 |
| Total, - - - - - | 295 | 189 |

Statement of the number of Fire Plugs in the different Wards.

| FIRST DISTRICT. | | | | | |
|----------------------------|-------|---|---|---|-------|
| First | Ward, | - | - | - | 186 |
| Second | " | - | - | - | 151 |
| Third | " | - | - | - | 87 |
| Fourth | " | - | - | - | 86 |
| Twenty-sixth | " | - | - | - | 232 |
| | | | | | <hr/> |
| | | | | | 742 |
| SECOND DISTRICT. | | | | | |
| Fifth | Ward, | - | - | - | 133 |
| Sixth | " | - | - | - | 113 |
| Seventh | " | - | - | - | 147 |
| Eighth | " | - | - | - | 149 |
| Ninth | " | - | - | - | 149 |
| Tenth | " | - | - | - | 114 |
| Twenty-fourth | " | - | - | - | 193 |
| Twenty-seventh | " | - | - | - | 121 |
| | | | | | <hr/> |
| | | | | | 1,119 |
| THIRD DISTRICT. | | | | | |
| Eleventh | Ward, | - | - | - | 86 |
| Twelfth | " | - | - | - | 100 |
| Sixteenth | " | - | - | - | 112 |
| Seventeenth | " | - | - | - | 98 |
| Eighteenth | " | - | - | - | 205 |
| Nineteenth | " | - | - | - | 433 |
| Twenty-third | " | - | - | - | 106 |
| Twenty-fifth | " | - | - | - | 109 |
| | | | | | <hr/> |
| | | | | | 1,249 |
| FOURTH DISTRICT. | | | | | |
| Thirteenth | Ward, | - | - | - | 104 |
| Fourteenth | " | - | - | - | 90 |
| | | | | | <hr/> |
| | | | | | <hr/> |
| Amounts carried forward, - | | | | - | 194 |
| | | | | | <hr/> |
| | | | | | 3,118 |

| | | | | | |
|------------------------------------|---|---|---|-------|-------|
| Amounts brought forward, | - | - | - | 194 | 3,118 |
| Fifteenth Ward, | - | - | - | 225 | |
| Twentieth " " | - | - | - | 320 | |
| Twenty-eighth " " | - | - | - | 31 | |
| | | | | <hr/> | 770 |
| Manayunk, Twenty-first Ward, | - | - | - | 54 | |
| Germantown, Twenty-second " " | - | - | - | 165 | |
| | | | | <hr/> | 4,099 |
| Total fire plugs in all the wards, | - | - | - | | |

The following shows the number of attachments made in the different districts, for fire purposes only, in places of public amusement, hotels, manufactories, &c. :

| | | | | |
|-----------------|---|---|---|-------|
| First District, | - | - | - | 42 |
| Second " " | - | - | - | 11 |
| Third " " | - | - | - | 21 |
| Fourth " " | - | - | - | 23 |
| Germantown, | - | - | - | 1 |
| | | | | <hr/> |
| Total, | - | - | - | 98 |

There are now 38 public drinking fountains supplied by the department free of charge; 32 erected by the Fountain Society; 6 erected by the Society for Prevention of Cruelty to Animals.

RECEIPTS AND EXPENDITURES.

RECEIPTS.

The gross receipts for the year have been \$935,370 96. The sources from which this amount has been received will be exhibited by the statement of the Register, George F. Keyser, Esq.

Of the above sum, \$7,335 01 has been received at the Engineer's office.

The following amounts have been received at the Chief Engineer's office, and paid to the City Treasurer :

| | |
|--|------------|
| For Rents, - - - - - | \$1,010 00 |
| Old iron, &c., - - - - - | 1,315 70 |
| Stone, - - - - - | 2,359 42 |
| Repairs to private fire plugs, - - - - - | 99 35 |
| Grass, - - - - - | 126 57 |
| Cement and oil barrels, - - - - - | 104 00 |
| Sand, - - - - - | 25 00 |
| Wharfage, - - - - - | 120 00 |
| Old Engine, - - - - - | 50 00 |
| Lead dross, - - - - - | 20 00 |
| From Oakdale Park, for 3-inch attachment, - | 112 00 |
| Philadelphia and Trenton R. R., for 4-inch attachment, - - - - - | 201 97 |
| H. Winsor & Co., for 4-inch attachment, - | 214 35 |
| Vezin, Hall & Vezin, for 4-inch attachment, - | 155 00 |
| Green and Coates Streets Passenger Railway Company, for 4-inch attachment, - | 241 39 |
| Frazier & Rogers (2), for 3-inch attachment, - | 235 72 |
| Frankford Arsenal, for 4-inch attachment, - | 166 54 |
| Isaac Stead, " " - | 127 90 |
| H. Disston & Son, " " - | 216 44 |
| Garsed & Winpenny, " " - | 110 22 |
| W. C. Allison, for removing fire plug, - | 83 60 |
| C. T. Parry, " " " - | 37 68 |
| I. Lang, for damages to water-pipes, - | 92 16 |
| Nixon & Stokes, for use of fire plug, - | 75 00 |
| T. A. Andrews, for old balustrade railing, - | 25 00 |
| For Goose Neck, - - - - - | 10 00 |
| | <hr/> |
| | \$7,335 01 |

PERMITS ISSUED FOR THE YEAR 1870.

| WARDS. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 & 28 | 22 | 23 | 24 & 24 | 25 | 26 | Total. | |
|--------------------------------|-----|-----|----|----|-----|-----|-----|-----|-----|-----|----|----|-----|-----|-----|----|----|-----|------|------|---------------|-----|-----|---------------|-----|-----|--------|-----|
| Dwellings..... | 465 | 55 | 29 | 10 | 4 | 7 | 47 | 31 | 17 | 55 | 3 | 6 | 5 | 13 | 241 | 10 | 24 | 137 | 869 | 739 | 198 | 89 | 76 | 332 | 100 | 499 | 4,061 | |
| " ½ and ¼..... | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 31 | |
| Baths..... | 126 | 30 | 20 | 6 | 2 | 9 | 59 | 48 | 18 | 81 | 9 | 8 | 10 | 24 | 182 | 15 | 21 | 4 | 388 | 472 | 99 | 68 | 24 | 267 | 17 | 221 | 2,218 | |
| Wash-paves..... | 68 | 28 | 18 | 7 | 3 | 12 | 45 | 32 | 24 | 65 | 6 | 8 | 19 | 29 | 153 | 19 | 9 | 32 | 139 | 559 | 74 | 25 | 41 | 124 | 13 | 110 | 1,644 | |
| Water closets and urinals..... | 14 | 4 | 12 | 2 | 31 | 120 | 60 | 120 | 39 | 162 | 1 | 7 | 36 | 52 | 124 | 11 | 2 | 2 | 17 | 230 | 50 | 42 | 5 | 137 | | 14 | 1,285 | |
| Basins, sinks and tubs..... | 5 | 1 | 3 | 1 | 15 | 60 | 127 | 126 | 34 | 182 | 4 | 4 | 30 | 30 | 167 | 13 | 3 | 9 | 7 | 294 | 27 | 32 | 2 | 167 | | 4 | 1,347 | |
| Steam engines..... | 2 | 2 | 1 | | 7 | 8 | | 3 | 3 | 5 | 3 | 2 | | 1 | 7 | 1 | | | | 17 | 7 | | 3 | 1 | 6 | | 78 | |
| Horse-power..... | 11 | 11 | 6 | | 45 | 107 | | 8 | 25 | 30 | 47 | 13 | | 15 | 72 | 12 | | | 298 | 75 | | 16 | 1 | 80 | | | 872 | |
| Stores, shops and offices..... | 3 | 3 | 1 | 1 | 3 | 10 | 1 | 2 | 7 | 2 | 6 | | 2 | 5 | 6 | 2 | 1 | | 7 | 14 | | 1 | | | | 2 | 62 | |
| Building permits..... | 16 | 6 | 3 | 1 | 1 | 3 | 6 | 10 | 5 | 16 | 3 | 2 | 2 | 7 | 5 | 4 | 2 | | 11 | 84 | 57 | 14 | 22 | 13 | 76 | 15 | 20 | 404 |
| Stables..... | 5 | 3 | 1 | | 1 | 2 | 3 | 11 | 1 | 6 | 1 | 1 | 1 | 3 | 12 | 2 | 2 | 2 | 3 | 12 | 26 | | 7 | 3 | 6 | 1 | 7 | 114 |
| Hotel bars..... | 2 | 2 | | 1 | 1 | 8 | 2 | 6 | 6 | 5 | 1 | 3 | 4 | 2 | 4 | 3 | 2 | 2 | 21 | 13 | | 1 | 1 | | 6 | 3 | 7 | 105 |
| Barber shops..... | 1 | | | | 2 | 1 | | | 2 | 1 | | | | | 1 | | | 1 | | | | | | | 3 | | 12 | |
| Watering horses..... | 3 | | | | 2 | 1 | 1 | | 1 | | 3 | | | | 1 | 1 | | | 1 | 4 | 2 | | | | 2 | 1 | 1 | 25 |
| Factories..... | 3 | 1 | | | 2 | 4 | 1 | | 1 | 3 | | 1 | 1 | 2 | 1 | | | 2 | 9 | | | 1 | 1 | 1 | 4 | | 1 | 39 |
| Fountains..... | 1 | | | | 1 | | | 3 | | 2 | | | 2 | 1 | 1 | | | | | 5 | | 1 | | | 4 | | 4 | 27 |
| Bakeries..... | | 1 | | | 1 | | | 2 | | | | | | | 1 | | | 1 | 2 | 1 | | | | 2 | 1 | | 12 | |
| Distilleries..... | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Rectifiers..... | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | 2 | |
| Schools and churches..... | | | | | | | | 1 | | | | | | | | | | | | | | | | | 2 | | 4 | |
| Hot-houses..... | | | | | | | | | | 1 | | | | | | | | | | | 1 | | | | | 1 | 5 | |
| Dye houses..... | | | | | | | | | | | | | | 1 | | | | | | 3 | | | 1 | 3 | | | 6 | |
| Foundries..... | | | | | | | | | | | | | | | 3 | | | | | | | | | | | | 9 | |
| Market-houses..... | | | | | | | | | | | | | | | 1 | 1 | 1 | | | | | | | | | | 3 | |
| Slaughter-houses..... | | | | | | | | | | | | | | | | | 2 | | | | 1 | | | | | | 3 | |
| Breweries..... | | | | | | | | | | | | | | | | | 1 | | | | 1 | | | | | | 2 | |
| Hospital..... | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | |
| Brick yards..... | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | 2 | |
| Marble yard..... | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | 1 | |
| Boath-house..... | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | 1 | |
| Malt house..... | | | | | | | | | | 1 | | | | | | | | | | | | 1 | | | | | 1 | |
| Skating parks..... | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | |
| Watering streets..... | | | | | 4 | 4 | | 4 | 4 | 4 | 2 | | 3 | 4 | 4 | | | | | | | | | | | | 3 | |
| Total..... | 726 | 148 | 95 | 30 | 126 | 358 | 352 | 406 | 179 | 629 | 89 | 56 | 114 | 184 | 994 | 99 | 74 | 260 | 1879 | 2191 | 469 | 311 | 170 | 1160 | 151 | 889 | 12,430 | |

DEPARTMENT FOR SUPPLYING THE CITY WITH WATER,

Register's Office, No. 104 S. Fifth street.

PHILADELPHIA, *January, 1871.*

FREDERIC GRAFF, Esq.,

Chief Engineer Water Department.

DEAR SIR:—I respectfully submit the following statements of the operation of this office for the year 1870.

The tabular statement presents to you in detail a full report of the financial operation, together with estimated receipts from all sources for 1870, which was \$911,000 00.

By reference to the statement, you will find they amount in the aggregate to \$928,035 95; an excess over the total receipts for the years 1869, of \$119,527 72.

Annexed are the amounts of duplicates, arranged by wards, for the years 1870 and 1871, also, a list of permits granted during the year, together with a tabular statement of dwellings, &c., as charged in the Registers, for 1871.

The total amount of delinquent pipe bills returned to the Survey Department for lien, during the year (1870), was \$61,640 99.

Yours, very respectfully,

GEORGE F. KEYSER,

Register.

First,
Second
Third
Fourth
Fifth,
Sixth,
Seven
Eight
Ninth
Tenth
Eleven
Twelve
Thirteen
Fourteen
Fifteen
Sixteen
Seventeen
Eighteen
Nineteen
Twenty
Twenty
Twenty
Twenty
Twenty
Twenty
Twenty
Twenty
Twenty
Twenty

Tc

List of Dwellings, Factories, &c., &c., as charged on Registers of 1870.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 & 23 | 22 | 23 | 24 & 27 | 25 | 26 | Total. | |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---------------|------|------|---------------|------|------|--------|----|
| Dwellings..... | 5500 | 3681 | 1883 | 1824 | 2740 | 2767 | 3486 | 2702 | 2459 | 2773 | 2356 | 1906 | 2564 | 3001 | 5690 | 1997 | 2108 | 3309 | 6738 | 8398 | 817 | 1013 | 360 | 2436 | 829 | 5428 | 78,867 | |
| Three quarter dwellings... | 84 | 224 | 116 | 105 | 28 | 32 | 125 | 41 | 76 | 74 | 232 | 42 | 61 | 170 | 980 | 150 | 150 | 480 | 471 | 284 | 3 | .... | 2 | 55 | 72 | 60 | 4,111 | |
| Half dwellings..... | 397 | 1350 | 1282 | 1471 | 515 | 293 | 1229 | 534 | 433 | 991 | 735 | 711 | 558 | 639 | 393 | 1225 | 529 | 593 | 628 | 497 | 11 | 7 | 3 | 74 | 239 | 490 | 15,829 | |
| Baths..... | 1215 | 874 | 579 | 388 | 806 | 9 | 1884 | 1913 | 1198 | 1611 | 407 | 781 | 1641 | 1561 | 3259 | 401 | 279 | 527 | 898 | 4335 | 579 | 806 | 97 | 1162 | 114 | 1471 | 18,039 | |
| Wash-paves..... | 342 | 329 | 262 | 113 | 534 | 315 | 984 | 1055 | 886 | 1020 | 176 | 425 | 902 | 1032 | 2393 | 277 | 212 | 345 | 676 | 3907 | 521 | 330 | 155 | 626 | 105 | 713 | 29,395 | |
| Water-closets, biddets & urinals..... | 42 | 41 | 57 | 62 | 1270 | 1495 | 998 | 1824 | 1351 | 876 | 135 | 117 | 321 | 230 | 1436 | 49 | 19 | 13 | 134 | 1190 | 333 | 536 | 12 | 665 | 11 | 157 | 13,380 | |
| Basins, sinks & wash-tubs. | 15 | 41 | 62 | 67 | 1246 | 1349 | 127 | 2059 | 1829 | 1045 | 143 | 224 | 428 | 284 | 3201 | 109 | 28 | 37 | 137 | 1900 | 137 | 458 | 47 | 602 | 12 | 119 | 15,536 | |
| Horse power..... | 553 | 578 | 87 | 190 | 593 | 1033 | 324 | 133 | 842 | 267 | 408 | 244 | 227 | 516 | 1927 | 1141 | 394 | 520 | 1591 | 536 | 27 | 333 | 139 | 429 | 68 | 388 | 13,488 | |
| Rars..... | 86 | 138 | 75 | 185 | 249 | 156 | 82 | 96 | 166 | 58 | 253 | 101 | 72 | 46 | 193 | 122 | .... | 69 | 205 | 178 | 4 | 12 | 6 | 94 | 64 | 153 | 2,845 | |
| Watering horses..... | 19 | 8 | 9 | 8 | 16 | 1 | 11 | .... | 19 | 5 | .... | 13 | 11 | 26 | 2 | 31 | 34 | 2 | 97 | 10 | .... | 5 | 1 | 32 | .... | .... | 372 | |
| Factories..... | 5 | 6 | .... | 2 | 2 | 30 | 21 | .... | 36 | 9 | .... | 13 | 11 | 26 | 2 | 31 | 34 | 2 | 97 | 10 | .... | 5 | 1 | 32 | .... | .... | 372 | |
| Fountains..... | 1 | 1 | .... | 10 | 14 | 2 | 17 | 25 | 18 | .... | 6 | 6 | 10 | 27 | 4 | .... | 3 | 2 | 17 | 1 | 12 | 1 | 12 | 1 | 47 | 1 | 232 | |
| Horse stalls..... | 421 | 519 | 299 | 438 | 517 | 400 | 631 | 1469 | 1539 | 707 | 686 | 633 | 597 | 677 | 1750 | 641 | 182 | 442 | 958 | 1672 | 54 | 28 | 116 | 1062 | 113 | 653 | 17,283 | |
| Bakeries..... | 25 | 37 | 29 | 21 | 14 | 19 | 10 | 9 | 25 | 9 | 13 | 16 | 12 | 15 | 41 | 30 | 17 | 14 | 83 | 42 | 4 | 6 | 3 | 26 | 6 | 26 | 551 | |
| Dye tubs..... | 4 | 7 | .... | 6 | .... | 35 | 1 | .... | 14 | .... | .... | .... | .... | 61 | 41 | 42 | 24 | 64 | 6 | 5 | 20 | .... | .... | .... | .... | .... | 359 | |
| Meat-packers..... | 6 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 8 | |
| Foundries..... | 1 | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 9 | |
| Breweries..... | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | 72 |
| Sugar-houses..... | | 2 | | 1 | 1 | 2 | | | | 2 | 1 | 1 | | | | | | | | | | | | | | | | 11 |
| Distilleries..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | 10 |
| Slaughter-houses..... | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Hot-houses..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | 57 |
| Malt-houses..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | 17 |
| Brick-yards..... | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7 |
| Barber shops..... | 1 | 16 | 13 | .... | 23 | 16 | 1 | 7 | 38 | 8 | .... | 11 | 10 | 17 | 18 | 20 | 23 | 9 | 52 | 12 | 1 | 2 | 3 | 18 | 3 | .... | 820 | |
| Drug stores, offices & shops | 3 | 3 | 3 | 1 | 4 | 10 | 1 | 5 | 27 | 8 | 6 | 11 | 6 | 12 | 26 | 10 | 1 | 2 | 49 | 19 | 2 | 1 | 6 | 18 | 8 | 12 | 247 | |
| Photographers..... | | | 1 | | 6 | 11 | | 8 | 21 | 2 | 5 | 2 | 6 | 2 | 1 | | | | | | | | | | | | | 91 |

Statement of Receipts at Register's Office, from January 1 to December 31, 1870.

| MONTHS. | Delinquent Rents. | Penalties. | Rents, 1870. | Penalties. | Permits. | Water pipe. | Totals |
|----------------|-------------------|------------|--------------|-------------|-------------|--------------|--------------|
| January..... | \$9,633 50 | \$1,102 65 | \$37,311 50 | ..... | \$2,321 25 | \$27,292 16 | \$77,661 06 |
| February..... | 2,185 75 | 274 50 | 53,470 00 | ..... | 2,027 00 | 4,804 60 | 62,761 85 |
| March..... | 1,977 50 | 265 65 | 116,968 00 | ..... | 3,686 75 | 7,218 14 | 130,116 04 |
| April..... | 2,267 50 | 278 41 | 358,158 55 | ..... | 4,931 25 | 7,372 39 | 373,008 10 |
| May..... | 1,194 75 | 131 62 | 31,715 50 | \$1,403 86 | 5,192 00 | 5,317 56 | 144,925 29 |
| June..... | 586 50 | 64 14 | 40,161 50 | 1,925 11 | 4,727 00 | 9,399 34 | 56,863 59 |
| July..... | 355 50 | 32 48 | 7,564 00 | 1,023 49 | 4,117 25 | 10,788 75 | 23,881 47 |
| August..... | 155 50 | 19 62 | 17,137 75 | 2,347 06 | 3,593 25 | 11,291 71 | 31,844 59 |
| September..... | 579 75 | 75 03 | 28,288 33 | 3,763 96 | 4,361 00 | 11,102 73 | 48,170 60 |
| October..... | 1,000 50 | 69 02 | 18,195 50 | 2,331 15 | 3,208 65 | 7,043 07 | 31,847 89 |
| November..... | 1,369 75 | 139 21 | 12,286 25 | 1,490 82 | 3,582 75 | 7,782 55 | 26,651 33 |
| December..... | 560 50 | 59 12 | 13,624 25 | 381 65 | 4,772 00 | 7,906 12 | 17,303 64 |
| Total..... | \$21,777 00 | \$2,511 45 | \$724,881 13 | \$14,727 10 | \$46,820 15 | \$117,319 12 | \$928,035 95 |

RECEIPTS AND EXPENDITURES SINCE
CONSOLIDATION.

| YEARS. | Received by Register for water-rents and percentage. | Received by Chief Engineer for rents, old iron, scraps and private fire-plug attachments. | Total receipts from all sources. | Yearly increase. | Total expenditures. |
|-----------|--|---|----------------------------------|------------------|---------------------|
| 1855..... | \$381,410 17 | \$626 55 | \$382,036 72 | ..... | \$250,895 37 |
| 1856..... | 351,936 49 | 960 11 | 352,896 60 | Decrease. | 160,368 02 |
| 1857..... | 425,661 94 | 302 20 | 425,964 14 | \$73,067 54 | 200,605 82 |
| 1858..... | 457,518 48 | 129 75 | 457,648 23 | 31,684 09 | 187,978 09 |
| 1859..... | 548,128 19 | 3,051 89 | 551,180 08 | 93,531 85 | 411,737 09 |
| 1860..... | 557,121 76 | 1,409 77 | 558,531 53 | 7,351 45 | 252,506 23 |
| 1861..... | 533,094 76 | 885 30 | 533,980 06 | Decrease. | 238,989 54 |
| 1862..... | 544,767 25 | 1,025 82 | 545,793 07 | 11,813 01 | 177,271 69 |
| 1863..... | 568,740 60 | 937 69 | 569,678 29 | 23,885 22 | 213,750 20 |
| 1864..... | 609,257 28 | 855 29 | 610,112 57 | 40,434 28 | 253,968 75 |
| 1865..... | 629,887 47 | 6,500 95 | 636,388 42 | 26,275 85 | 422,337 58 |
| 1866..... | 666,294 95 | 3,927 18 | 670,222 13 | 33,833 71 | 616,712 92 |
| 1867..... | 761,559 45 | 5,891 44 | 767,450 89 | 96,228 76 | 575,844 49 |
| 1868..... | 772,605 76 | 4,404 83 | 777,009 59 | 9,558 70 | 802,217 46 |
| 1869..... | 808,508 23 | 4,962 60 | 813,470 83 | 36,461 24 | 909,768 28 |
| 1870..... | 928,035 95 | 7,335 01 | 935,370 96 | 121,900 13 | 1,144,073 51 |

Expenditures of the Department for the year 1870.

| | | | |
|--|----------|----|--------------|
| Salaries of Chief Engineer, Register, Clerks, &c., | \$28,711 | 84 | |
| Office expenses, - - - - - | 3,777 | 95 | |
| Salaries of Engineers, Firemen, &c., at works, - | 31,669 | 75 | |
| Supplies to works, viz.: | | | |
| Coal and wood, - - - - - | 60,514 | 53 | |
| Tallow, oil and gas, - - - - - | 4,878 | 31 | |
| Small stores, packing, &c., - - - - - | 2,828 | 37 | |
| Repairs to works, viz.: | | | |
| Fairmount works, - - - - - | \$7,561 | 80 | |
| Delaware " - - - - - | 3,387 | 90 | |
| Schuylkill " - - - - - | 4,183 | 99 | |
| 24th Ward " - - - - - | 2,499 | 82 | |
| Germantown " - - - - - | 1,114 | 64 | |
| Roxborough " - - - - - | 947 | 58 | |
| | | | 19,695 73 |
| Keeping grounds in order: | | | |
| Hardware, - - - - - | 14 | 75 | |
| Plants, - - - - - | 35 | 00 | |
| Bricklaying, - - - - - | 55 | 25 | |
| Wages, - - - - - | 1,894 | 76 | |
| | | | 1,999 76 |
| Buildings, grounds and reservoirs: | | | |
| Lumber, - - - - - | 1,744 | 66 | |
| Tin Roofing, - - - - - | 501 | 47 | |
| Plastering, - - - - - | 313 | 30 | |
| Hardware, - - - - - | 172 | 45 | |
| Painting and glazing, - - - - - | 499 | 53 | |
| Bricklaying, - - - - - | 264 | 67 | |
| Plumbing, - - - - - | 134 | 10 | |
| Sash and frames, - - - - - | 120 | 60 | |
| Flag stone, - - - - - | 436 | 20 | |
| Paper hanging, - - - - - | 81 | 62 | |
| Relaying track, - - - - - | 292 | 00 | |
| T Rail, - - - - - | 83 | 23 | |
| Amounts carried forward, - | \$4,653 | 77 | \$154,076 24 |

| | | |
|----------------------------|--------------|--------------|
| Amounts brought forward, - | - \$4,653 77 | \$154,076 24 |
| Repairing scales, - - | - 250 75 | |
| Dredging, - - - | - 2,685 56 | |
| Repairs to wharf, - - | - 653 70 | |
| Lime and cement, - - | - 98 44 | |
| Wrought iron beams, - | - 37 00 | |
| Sand, - - - | - 27 00 | |
| Slating, - - - | - 20 05 | |
| Rope, &c., - - - | - 36 47 | |
| Wages, - - - | - 11,057 05 | |
| Sundry bills, - - - | - 224 75 | |
| | <hr/> | 19,734 60 |

Iron pipes, fire plugs, and other fixtures,
and materials for laying pipes, &c. :

| | | |
|-----------------------------|-------------|--------------|
| Iron pipes, - - - | 115,957 51 | |
| Iron castings, - - - | - 10,655 00 | |
| Brass castings, - - - | - 3,199 50 | |
| Lead, - - - | - 8,505 55 | |
| Wrought iron and steel, - | - 2,124 17 | |
| Hardware, - - - | - 2,048 69 | |
| Coal, - - - | - 706 75 | |
| Bolts and washers, - - - | - 1,462 48 | |
| Lumber, - - - | - 1,467 68 | |
| Leather, - - - | - 266 43 | |
| Gasket and rope, - - - | - 1,001 18 | |
| Galvanizing spindles, - - | - 192 18 | |
| Blower, - - - | - 123 50 | |
| Tubing, - - - | - 440 82 | |
| Paints and oils, - - - | - 389 37 | |
| Machine work, - - - | - 311 68 | |
| Wharfage, - - - | - 91 00 | |
| Stop cock pattern, - - - | - 199 87 | |
| Rents, - - - | - 178 00 | |
| Belting, - - - | - 18 87 | |
| Sundry bills, - - - | - 311 49 | |
| | <hr/> | 149,651 72 |
| Amount carried forward, - - | - - | \$323,462 56 |

| | | |
|---|-----------|--------------|
| Amount brought forward, - - - | | \$323,462 56 |
| Labor, laying pipe, setting plugs, &c., and for fitting up stop cocks, &c. viz.: | | |
| First district, - - - | 5,389 7. | |
| Second " - - - | 7,782 36 | |
| Third " - - - | 10,764 47 | |
| Fourth " - - - | 6,291 51 | |
| Germantown, - - - | 3,611 49 | |
| Manayunk, - - - | 1,127 61 | |
| | <hr/> | 34,967 17 |
| Shop, viz.: | | |
| Wages, - - - | 16,045 42 | |
| Surveyors, for measuring pipe, - - - | 3,166 84 | |
| Pipe plans, - - - | 1,354 75 | |
| Dressing tools, - - - | 53 20 | |
| Powder and fuse, - - - | 63 61 | |
| Paving around plugs, - - - | 422 75 | |
| Hauling pipe, - - - | 651 00 | |
| Lumber, - - - | 237 94 | |
| Sundry bills, - - - | 104 93 | |
| | <hr/> | 22,100 44 |
| Keeping pipes, plugs, stops and fixtures in good order, viz.: | | |
| Wages, First district, - - - | 4,224 20 | |
| " Second " - - - | 5,178 25 | |
| " Third " - - - | 8,727 25 | |
| " Fourth, " - - - | 6,209 99 | |
| " Germantown, - - - | 871 70 | |
| " Manayunk, - - - | 351 86 | |
| Paving around plugs, - - - | 1,131 50 | |
| Plumbing, - - - | 17 30 | |
| Drain pipe, - - - | 354 90 | |
| Sundry bills, - - - | 91 00 | |
| | <hr/> | 27,157 95 |
| Amount carried forward, - - - | | \$407,688 12 |

| | | |
|--|-----|--------------------|
| Amount brought forward, - | - | \$407,688 12 |
| Drilling and making new attachments, | | |
| viz.: | | |
| Wages, First district, | - - | 1,379 25 |
| “ Second “ - | - - | 1,408 50 |
| “ Third “ - | - - | 1,750 25 |
| “ Fourth “ - | - - | 2,486 50 |
| “ Germantown, | - - | 234 50 |
| “ Manayunk, | - - | 126 00 |
| | | <hr/> 7,385 00 |
| Iron railing, Fairmount, | - - | 268 26 |
| Carriage hire and keep of horse for use of Chief | | |
| Engineer, - - - - | - - | 648 81 |
| Germantown Water Company, | - - | 5,000 00 |
| For boilers and connections at Schuylkill | | |
| Works in place of old and worn out | | |
| boilers in south boiler house: | | |
| Boilers, &c., - - - | - - | 13,201 20 |
| Cement, - - - - | - - | 247 83 |
| Bricklaying, - - - | - - | 2,623 37 |
| Lumber, - - - - | - - | 202 86 |
| Wrought iron beams, | - - | 144 75 |
| Lime, - - - - | - - | 108 30 |
| Stone, - - - - | - - | 583 41 |
| Fire Brick, - - - | - - | 839 00 |
| Bricks, - - - - | - - | 993 70 |
| Powder, &c., - - - | - - | 51 56 |
| Rope, - - - - | - - | 82 23 |
| Wages, - - - - | - - | 5,879 14 |
| | | <hr/> 24,957 35 |
| Bills of twice-paid and over paid water | | |
| rents, - - - - | - - | 123 75 |
| For the relief of Mary E. Carter, widow | | |
| of Richard D. Carter, late in the | | |
| employ of the Water Department, | | 1,000 00 |
| | | <hr/> \$447,071 29 |
| Amount carried forward, - | - | |

| | |
|--|--------------------------|
| Amount brought forward, - - | \$447,071 29 |
| Assisting to keep up the supply of water : | |
| Wages, - - - - | 628 49 |
| Lumber, - - - - | 53 10 |
| Advertising, &c., - - - - | 92 95 |
| | <hr/> 774 54 |
| To pay expert or experts, &c., in suit of Schuylkill Navigation Co. <i>vs.</i> City : | |
| Experts, - - - - | 600 00 |
| Witness fees, - - - - | 28 00 |
| Depositions, - - - - | 100 00 |
| Subpœnaes, &c., - - - - | 31 00 |
| | <hr/> 759 00 |
| | <hr/> <hr/> \$448,604 83 |

EXTENSIONS OF WORKS.

AMOUNTS PAID FROM WATER LOANS.

Item 1.

For engine house, foundations, stack,
wharf, tunnel, coal sheds, scales, boiler
setting, grading, &c., Belmont Water
Works:

| | | |
|------------------------|------------|-----------------|
| Cap and cornice, - - - | \$1,650 00 | |
| Fire brick, - - - | 324 00 | |
| Hardware, - - - | 70 71 | |
| Lumber, - - - | 345 43 | |
| Cement, - - - | 103 50 | |
| Lightning rod, - - - | 68 40 | |
| Dressing tools, - - - | 15 54 | |
| Machine work, - - - | 131 12 | |
| Sash, &c., - - - | 31 20 | |
| Sundry bills, - - - | 30 66 | |
| Wages, - - - | 2,079 01 | |
| | | <u>4,849 57</u> |

Item 2.

For boilers and connections, Belmont
Water Works:

| | |
|------------------------------|----------|
| Boilers (reservation), - - - | 2,500 00 |
|------------------------------|----------|

Item 3.

For reservoir, Belmont Water Works:

| | | |
|--------------------------------|----------|-------------------|
| Lime, &c., - - - | \$949 45 | |
| Coping, - - - | 635 29 | |
| Gravel, - - - | 954 10 | |
| Powder and fuse, - - - | 94 77 | |
| Oil, - - - | 34 75 | |
| | | <u>\$2,668 36</u> |
| Amounts carried forward, - - - | | \$7,349 57 |

| | | | |
|--------------------------------|---|------------|------------|
| Amounts brought forward, | - | \$2,668 36 | \$7,349 57 |
| Railroad tickets for laborers, | - | 122 50 | |
| Hardware, - - - | - | 15 00 | |
| Barrows, - - - | - | 36 00 | |
| Bricks, - - - | - | 36 25 | |
| Dressing tools, - - - | - | 877 15 | |
| Iron pipe, - - - | - | 794 55 | |
| Sluice gates, &c., - - - | - | 1,508 40 | |
| Wages, - - - | - | 26,787 50 | |
| Sundry bills, - - - | - | 47 69 | |
| | | <hr/> | 32,893 40 |

Item 4.

For a 20-inch main on Lancaster avenue,
from Belmont ave. to Fortieth street:

| | | | |
|----------------------|---|----------|----------|
| Stop cock, - - - | - | \$229 16 | |
| Hauling mains, - - - | - | 204 00 | |
| Wages, - - - | - | 1,974 34 | |
| | | <hr/> | 2,407 50 |

Item 6.

For the completion of the engine house,
grading, scales, coal sheds, &c., Rox-
borough Water Works:

| | | | |
|---------------|---|---------|--------|
| Lumber, - - - | - | \$77 65 | |
| Wages, - - - | - | 56 31 | |
| | | <hr/> | 133 96 |

Item 7.

For repairs to Mount Airy reservoirs:

| | | | |
|----------------------------|---|------------|-------------|
| Lumber, - - - | - | 423 36 | |
| Sand, - - - | - | 120 00 | |
| Cement, - - - | - | 605 15 | |
| Hardware, - - - | - | 39 13 | |
| | | <hr/> | |
| Amounts carried forward, - | - | \$1,187 64 | \$42,784 43 |

| | | | |
|----------------------------|--|------------|------------------|
| Amounts brought forward, - | | \$1,187 64 | \$42,784 43 |
| Fence, - - - - | | 53 75 | |
| Bricks, - - - - | | 15 60 | |
| Rope, - - - - | | 121 40 | |
| Sundry bills, - - - - | | 37 93 | |
| Wages, - - - - | | 16,133 21 | |
| | | | <u>17,549 53</u> |

Item 8.

For engine, boilers and connections, boiler house, and alterations and additions to engine foundations, Schuylkill Water Works :

| | |
|--------------------------------|-----------------|
| Boilers (reservation), - - - - | 4,000 00 |
| Flag stones, - - - - | 227 23 |
| Lime, - - - - | 165 32 |
| Wages, . - - - - | 425 50 |
| | <u>4,818 05</u> |

Item 9.

For substituting turbine wheel in place of old breast wheels Nos. 4 and 5, Fairmount Water Works :

| | |
|--------------------------------------|------------------|
| Iron castings, - - - - | 663 36 |
| Machine work, - - - - | 225 66 |
| Hardware, - - - - | 66 83 |
| Lumber, - - - - | 17 46 |
| Bricks, - - - - | 4 50 |
| Coal, - - - - | 150 00 |
| Hauling, - - - - | 50 00 |
| Bricklaying, - - - - | 103 12 |
| Lime, - - - - | 28 50 |
| Turbine wheel (reservation), - - - - | 7,559 28 |
| Sundry bills, - - - - | 36 12 |
| Wages, - - - - | 5,026 75 |
| | <u>13,931 58</u> |
| Amount carried forward, . - - - - | \$79,083 59 |

Amount brought forward, - - \$79,083 59

Item 10.

For incidentals:

| | |
|----------------------------|----------|
| Machine work, - - - | 1,622 10 |
| Flume (reservation), - - - | 500 00 |
| Felting, - - - | 392 70 |
| Hose, - - - | 351 15 |
| Hardware, - - - | 469 57 |
| Tallow and oil, - - - | 169 57 |
| Lanterns, - - - | 32 80 |
| Drain pipe, - - - | 14 97 |
| Steam gauge, - - - | 30 00 |
| Sundry bills, - - - | 163 30 |
| Siding (use of), - - - | 11 00 |
| | <hr/> |
| | 3,757 16 |

Item 4.

For reservoir:

| | |
|----------------|-------|
| Wages, - - - - | 75 30 |
|----------------|-------|

Item 8.

For Cornish engine, boilers and connections:

| | |
|--------------------------------------|------------|
| Boilers (reservation on contract), - | \$5,650 00 |
| Felting, - - - - | 561 60 |
| Fire brick, - - - - | 51 30 |
| Bricks, - - - - | 28 00 |
| Sundry bills, - - - - | 73 43 |
| Lumber, - - - - | 45 05 |
| Wages, - - - - | 24 00 |
| | <hr/> |
| | 6,433 38 |

| | | |
|-------------------------------|-------------|-------------|
| Amount carried forward, - - - | <hr/> <hr/> | \$89,349 43 |
|-------------------------------|-------------|-------------|

Amount brought forward, - - - \$89,349 43

Item 9.

For engine house, foundation and stack :

| | |
|---|----------|
| Tin roofing, - - - - | 1,122 85 |
| Making and sinking a crib in front of Fairmount dam, through the deep water, and placing an oak apron upon it : | |
| Wages, - - - - - | 103 07 |

Item 1.

For the purchase and laying a 16-inch, 12-inch and 10-inch main for Manayunk :

| | |
|------------------|--------|
| Wages, - - - - - | 119 37 |
|------------------|--------|

Item 2.

For the purchase and laying a 20-inch main to connect the Roxborough Water Works with the Germantown Water Works :

| | |
|----------------------------------|-----------|
| Mains, - - - - | 1,306 05 |
| Hardware, - - - - | 12 25 |
| Packing, - - - - | 39 00 |
| Machine work, - - - - | 40 03 |
| Pipe bridge, balance contract, - | 51,879 11 |
| Sundry bills, - - - - | 72 08 |
| Wages, - - - - - | 1,322 56 |
| | <hr/> |
| | 54,671 08 |

Amount carried forward, - - - \$145,365 80

Amount brought forward, - - \$145,365 80

Item 3.

For the purchase and laying a 36-inch ascending main, from Schuylkill Water Works to the Spring Garden reservoir. (Authorized to purchase a 20-inch main for pipe bridge connecting Roxborough reservoir with Mount Airy reservoir, from this Item, as per ordinance Feb. 28, 1870 :)

| | | | | | |
|------------------|---|---|---|--------|----|
| Mains (20-inch), | - | - | - | 19,447 | 69 |
| Inspecting main, | - | - | - | 235 | 10 |
| Hauling main, | - | - | - | 216 | 00 |
| Sundry bills, | - | - | - | 200 | 00 |
| Wages, | - | - | - | 491 | 67 |
| | | | | <hr/> | |
| | | | | 20,590 | 46 |

Item 4.

For the purchase and laying a 30-inch ascending and a 20-inch descending main for the Twenty-fourth Ward Water Works. (Authorized to draw warrants for building coal sheds, connecting railway from the Reading R. to the same, scales, grading, &c., at Belmont Water Works, as per ordinance Feb. 28, 1870 :)

| | | | | | |
|-------------------------|---|---|---|-----------|----|
| Roofing, | - | - | - | 1,916 | 41 |
| Bricks, | - | - | - | 1,451 | 70 |
| Tinwork, | - | - | - | 284 | 22 |
| Hardware, | - | - | - | 165 | 29 |
| Stone, | - | - | - | 380 | 38 |
| Siding, &c., | - | - | - | 3,344 | 75 |
| Bricklaying, | - | - | - | 3,543 | 11 |
| | | | | <hr/> | |
| Amounts carried forward | - | | | \$11,085 | 86 |
| | | | | \$165,956 | 26 |

| | | |
|--------------------------|-------------|--------------|
| Amounts brought forward, | \$11,085 86 | \$165,956 26 |
| Lumber, - - - | - 1,078 51 | |
| Sand, - - - | - 71 50 | |
| Cement, - - - | - 74 78 | |
| Lime, - - - | - 567 10 | |
| Painting, &c., - - - | - 561 02 | |
| Cresting, - - - | - 254 83 | |
| Wood mouldings, - - - | - 120 66 | |
| Scale, - - - | - 140 00 | |
| Machine work, - - - | - 684 13 | |
| Iron pipe, - - - | - 194 70 | |
| Felting, - - - | - 62 25 | |
| Towing, - - - | - 83 50 | |
| Powder and fuse, - - - | - 33 25 | |
| Sundry bills, - - - | - 186 40 | |
| Wages, - - - | - 2,828 69 | |
| | <hr/> | 18,027 18 |

For the purchase and erection of two
pumping engines for the Twenty-fourth
Ward Water Works (now Belmont
Water Works):

| | | |
|------------------------------------|-------------|-----------|
| Engine No. 1 (contract), - | - 47,500 00 | |
| Engine No. 2 (account contract), - | - 10,200 00 | |
| | <hr/> | 57,700 00 |

Item 1.

For engine and foundations at the Schuyl-
kill Water Works, in place of old En-
gine No. 3:

| | | |
|---------------------|----------|--|
| Cement, - - - | - 500 20 | |
| Lime, - - - | - 28 50 | |
| Brickwork, - - - | - 289 74 | |
| Machine work, - - - | - 630 31 | |
| Force pump, - - - | - 300 00 | |

| | | |
|----------------------------|------------|--------------|
| Amounts carried forward, - | \$1,748 75 | \$241,683 44 |
|----------------------------|------------|--------------|

| | | |
|--------------------------|--------------|--------------|
| Amounts brought forward, | - \$1,748 75 | \$241,683 44 |
| Granite, - - - | - 63 00 | |
| Hardware, - - - | - 62 70 | |
| Piles, - - - | - 155 00 | |
| Gate hoist, - - - | - 253 78 | |
| Lumber, - - - | - 904 11 | |
| Sundry bills, - - - | - 137 49 | |
| Wages, - - - | - 6,289 29 | |
| | <hr/> | 9,614 12 |

Item 2.

For additional duplex engine at the Delaware Water Works:

| | |
|----------------------------|----------|
| Engine (on account), - - - | 7,200 00 |
|----------------------------|----------|

Item 3.

For ascending main, Belmont Water Works:

| | | |
|-------------------------------|-------------|--------------------|
| Mains (on account), - - - | - 36,935 82 | |
| Lead, - - - | - 2,405 36 | |
| Gasket, - - - | - 184 68 | |
| Lumber, - - - | - 102 64 | |
| Hauling mains, - - - | - 1,388 00 | |
| Dressing tools, - - - | - 108 00 | |
| Hardware, - - - | - 21 75 | |
| Railroad tickets, - - - | - 262 50 | |
| Sundry bills, - - - | - 69 75 | |
| Wages, - - - | - 6,679 92 | |
| | <hr/> | 48,158 42 |
| Amount carried forward, - - - | - | <hr/> \$306,655 98 |

Amounts brought forward, - - - \$306,655 98

Item 4.

For (on account) descending main from
the Belmont reservoir, and for crossing
the Schuylkill river mains (on ac-

| | | | | |
|--------------------------------------|--------|----|---|-------------|
| count): | - | - | - | - 52,112 40 |
| Iron castings, | - | - | - | - 1,218 56 |
| Lead, | - | - | - | - 4,876 31 |
| Gasket, | - | - | - | - 434 70 |
| Check valve, | - | - | - | - 440 00 |
| Hauling mains, | - | - | - | - 1,782 50 |
| Hardware, | - | - | - | - 142 42 |
| Rope, | - | - | - | - 61 50 |
| Lumber, | - | - | - | - 83 68 |
| Inspecting mains, | - | - | - | - 768 80 |
| Contract, submerged main (on acc't), | 20,000 | 00 | | |
| Dredging for " " " | - | - | - | - 720 48 |
| Towing " " " | - | - | - | - 1,366 50 |
| Sundry bills, | - | - | - | - 112 45 |
| Wages, | - | - | - | - 9,787 39 |
| | | | | <hr/> |
| | | | | 93,907 69 |

Item 5.

For (on account) of pumping main, from
the Delaware works to the reservoir :

| | | | | |
|--------------------------|---|---|---|-----------------------------|
| Mains, | - | - | - | - 91,855 71 |
| Lumber, | - | - | - | - 443 28 |
| Gasket, | - | - | - | - 606 85 |
| Lead, | - | - | - | - 7,093 60 |
| Inspecting mains, | - | - | - | - 314 00 |
| Castings, | - | - | - | - 290 00 |
| Hauling mains, | - | - | - | - 802 50 |
| Bricklaying, | - | - | - | - 382 05 |
| Hardware, | - | - | - | - 134 07 |
| | | | | <hr/> |
| Amounts carried forward, | | | | - \$101,922 06 \$400,563 67 |

| | | |
|----------------------------|--------------|--------------|
| Amounts brought forward, - | \$101,922 06 | \$400,563 67 |
| Plumbing, - - - | - 34 00 | |
| Coke, - - - | - 39 50 | |
| Wharf builders' work, - | - 956 30 | |
| Sundry bills, - - - | - 75 00 | |
| Wages, - - - | - 20,216 06 | |
| | <hr/> | 123,242 92 |

Item 6.

For pumping main, from the Schuylkill

Water Works to the reservoir :

| | |
|---------------------|------------|
| Main, - - - | - 7,232 93 |
| Hauling main, - - - | - 236 00 |
| Gasket, - - - | - 162 00 |
| Wages, - - - | - 35 00 |
| | <hr/> |

7,665 93

Item 7.

For substituting turbine wheel in place
of the old breast wheels Nos. 6 and 7,
at Fairmount Water Works :

| | |
|-----------------------------|-------------|
| Turbine wheel (on account), | - 31,824 56 |
| Stone, - - - | - 1,284 25 |
| Granite, - - - | - 1,768 00 |
| Lumber, - - - | - 1,236 15 |
| Iron beams (wrought), | - 261 25 |
| Sand, - - - | - 194 20 |
| Cement, - - - | - 1,777 62 |
| Lime, - - - | - 135 28 |
| Castings, - - - | - 1,559 84 |
| Machine work, - - - | - 2,174 00 |
| Brick work, - - - | - 851 87 |
| Wood mouldings, &c., | - 60 96 |
| Roofing felt, - - - | - 60 00 |
| | <hr/> |

| | | |
|----------------------------|-------------|--------------|
| Amounts carried forward, - | \$43,187 98 | \$531,472 52 |
|----------------------------|-------------|--------------|

| | | | |
|--------------------------|---|-------------|--------------|
| Amounts brought forward, | - | \$43,187 98 | \$531,472 52 |
| Plastering, - - - | - | 97 00 | |
| Coal, - - - | - | 143 65 | |
| Hardware, - - - | - | 308 91 | |
| Gum, - - - | - | 84 50 | |
| Iron and steel, - - - | - | 395 88 | |
| Plumbing, - - - | - | 40 40 | |
| Bricks, - - - | - | 516 00 | |
| Sundry bills, - - - | - | 138 33 | |
| Wages, - - - | - | 15,008 70 | |
| | | <hr/> | 59,921 35 |

Item 8.

For (on account) reservoir adjoining the present reservoir of the Delaware

Water Works :

| | | | |
|---------------------------|---|-----------|--------------------------|
| Stone, - - - | - | \$729 64 | |
| Lumber, - - - | - | 898 75 | |
| Building tool house, | - | 108 50 | |
| Roofing " - - - | - | 15 36 | |
| Cement, - - - | - | 64 62 | |
| Lime, - - - | - | 39 80 | |
| Gravel, - - - | - | 24 00 | |
| Drain pipe, - - - | - | 66 30 | |
| Hose, - - - | - | 53 50 | |
| Watering cart, - - - | - | 140 00 | |
| Hardware, - - - | - | 157 25 | |
| Hauling stops, - - - | - | 94 00 | |
| Survey of lot, - - - | - | 15 28 | |
| Sundry bills, - - - | - | 135 51 | |
| Wages, - - - | - | 54,375 22 | |
| | | <hr/> | 56,917 73 |
| Amount carried forward, - | - | | <hr/> <hr/> \$648,311 60 |

Amount brought forward, - \$648,311 60

Item 9.

For enlarging the reservoir now building
at Belmont Water Works:

| | | | |
|-------------------------|---|-----------|------------------|
| Stone, - - - | - | 1,006 05 | |
| Gravel, - - - | - | 340 90 | |
| Dressing tools, - - - | - | 616 80 | |
| Lime, - - - | - | 154 00 | |
| Lumber, - - - | - | 11 76 | |
| Railroad tickets, - - - | - | 175 00 | |
| Sundry bills, - - - | - | 12 87 | |
| Wages, - - - | - | 26,131 96 | |
| | | | <u>28,449 34</u> |

Item 10.

For incidentals:

| | | | |
|--------------------|---|-------|---------------|
| Advertising, - - - | - | 95 40 | |
| Sundries, - - - | - | 47 50 | |
| | | | <u>142 90</u> |

Item 1.

For new engine and pump, with founda-
tion and inlet thereto, Roxboro' Works:

| | | | |
|------------------|---|----------|-----------------|
| Iron Work, - - - | - | 20 84 | |
| Cement, - - - | - | 27 50 | |
| Wages, - - - | - | 1,110 69 | |
| | | | <u>1,159 03</u> |

Item 2.

For new engine and boiler house, Rox-
borough:

| | | | |
|-------------------------|---|--------|-----------------|
| Bricks, - - - | - | 144 00 | |
| Flagging, - - - | - | 180 00 | |
| Lumber, - - - | - | 204 27 | |
| Hardware, - - - | - | 11 50 | |
| Sash frames, &c., - - - | - | 204 00 | |
| Stone, - - - | - | 245 00 | |
| | | | <u>1,188 77</u> |

Amounts carried forward, \$988 77 \$678,062 87

| | | | |
|--------------------------|---|----------|--------------|
| Amounts brought forward, | - | \$988 77 | \$678,062 87 |
| Brown stone, | - | 719 60 | |
| Mason work, | - | 309 12 | |
| Castings, | - | 668 63 | |
| Wages, | - | 2,148 38 | |
| | | <hr/> | 4,834 50 |

Item 3.

For necessary repairs to reservoir, Roxborough :

| | | | |
|---------|---|----------|----------|
| Lime, | - | 2,230 50 | |
| Clay, | - | 94 25 | |
| Lumber, | - | 45 60 | |
| Wages, | - | 5,880 09 | |
| | | <hr/> | 8,250 44 |

Item 4.

For small engine and stand pipe, at Roxb. Reservoir, to supply Germant'n :

| | | | |
|-------------|---|----------|----------|
| Bricks, | - | 25 60 | |
| Flag stone, | - | 162 91 | |
| Lumber, | - | 100 38 | |
| Mains, | - | 167 63 | |
| Boiler, | - | 1,800 00 | |
| Mason work, | - | 583 11 | |
| Wages, | - | 1,346 57 | |
| | | <hr/> | 4,186 20 |

Item 5.

For incidentals :

| | | | |
|---------------------|---|-------|--------|
| Measurer's charge, | - | 27 67 | |
| Survey of lot, &c., | - | 87 00 | |
| Sundries, | - | 20 00 | |
| | | <hr/> | 134 67 |

\$695,468 68