

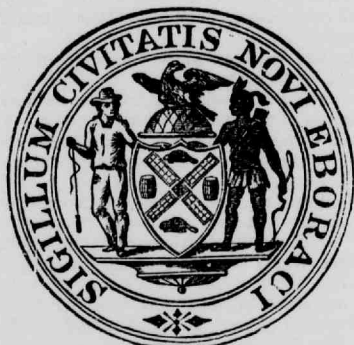
# THE CITY RECORD.

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### DEPARTMENT OF PUBLIC WORKS.

Report for the Quarter ending September 30, 1877.

DEPARTMENT OF PUBLIC WORKS,  
COMMISSIONER'S OFFICE, ROOM 19, CITY HALL,  
NEW YORK, October 31, 1877.

Hon. SMITH ELY, JR., Mayor :

SIR—In accordance with section 27 of the Charter, I have the honor to submit herewith a report of the operations of the Department for the quarter ending September 30, 1877.

The Financial Statements "A" and "B" show in detail the expenditures of the Department and the condition of its appropriations, and the reports of the several Bureaus, which are hereto annexed, give a record of their respective transactions.

#### SUMMARY OF EXPENDITURES.

On account of Appropriations raised by taxation.....	\$436,605 28
On account of Assessment Fund, for Street Improvements.....	173,760 69
On account of Funded Debt, for improvement and extension of Water Supply.....	255,068 61
Total.....	\$865,443 58

#### EXPENDITURES FOR THE CORRESPONDING QUARTER IN 1874, 1875, AND 1876.

Third quarter, 1874.....	\$1,907,056 13
Third quarter, 1875.....	1,720,026 45
Third quarter, 1876.....	1,132,657 75
Third quarter, 1877 (as above).....	865,443 58

#### EXPENDITURES FOR NINE MONTHS, ENDING SEPTEMBER 30, IN 1874, 1875, 1876, AND 1877.

Nine months ending September 30, 1874.....	\$5,519,120 87
" " " 1875.....	4,181,388 79
" " " 1876.....	3,413,340 19
" " " 1877.....	2,186,757 40

This shows a reduction for the past nine months, as compared with the corresponding nine months of 1874, of.....	\$3,332,363 47
As compared with the corresponding nine months of 1875.....	1,994,631 39
As compared with the corresponding nine months of 1876.....	1,226,582 79

#### CROTON WATER SERVICE.

The work on the new Storage Reservoir, in the middle branch of the Croton river, has been vigorously prosecuted, so that there is every assurance of its completion in time to receive the rainfall of next winter and spring. This insures the population against a recurrence of the scarcity and low pressure of water, caused by the severe droughts of this year and last year, as there will be a sufficient quantity of water stored in reservoirs and lakes to supply the deficiency in the natural flow of the Croton river. It will also obviate the necessity of drawing down the water of natural lakes and ponds to any considerable extent, and incurring expense in acquiring temporary water rights and cutting down outlets.

Proceedings have been instituted, under chapter 445 of the Laws of 1877, to acquire the permanent right to draw water from the natural lakes and ponds available for this purpose, and the Commissioners to appraise the value of such rights were appointed on the 20th of October, instant.

Since the 29th of June, the volume of the Croton river has been less than the quantity needed for our supply, and 4,020,000 gallons of water have been drawn from the reservoir and lakes to supply the deficiency. Much opposition has been made by adjoining property owners against the drawing of water from Lake Mahopac, and large amounts demanded for alleged damages. When the Department declined to pay such demands, and asked for the appointment of Commissioners of Appraisal, some of the claimants proceeded to fill up the outlet of the lake, and the Department was compelled to send a large force of workmen to reopen it and protect it from further interference. Fortunately, the recent rains have so increased the volume of the Croton river, that recourse to the lakes is no longer necessary this season, and by next summer the question of compensation for the right to draw water from them will be definitely settled by legal process.

In addition to the ordinary repairs of the aqueduct, the work of strengthening the structure by raising the protection walls and adding to the side embankments has been continued to the full extent that the limited appropriation would allow.

At Yonkers, it was necessary to build 700 cubic yards of protection wall and 100 cubic yards of retaining wall to protect the aqueduct from injury by excavations on adjoining private property.

During the quarter, 19,263 buildings were inspected, to detect waste of water, and it was found that waste occurred in 4,105 places, and that in 3,703 cases it was due to leaks in the plumbing, and in 402 cases to careless or wilful neglect to close faucets.

Considerable progress has been made in applying water meters along the water front and to large stables, manufacturing, and other establishments where water is used and wasted in large quantities. All the horse-car and omnibus stables, and some of the livery stables have been supplied with them, and forty-six meters have been placed on piers where water is furnished to shipping.

The Department has collected during the quarter, \$29,442.58 for water supplied to shipping, and \$3,238.50 for water furnished for building purposes.

Under the several contracts for laying water-pipes, to extend and improve the distributing system, as authorized from time to time, by the Common Council, there was laid during the quarter,

5,140 lineal feet of 48-inch pipe.
8,011 " 12-inch pipe.
11,109 " 6-inch pipe.

Total..... 24,260 lineal feet of pipe.

To facilitate the extinguishment of fires, 90 large and 37 small fire hydrants were placed in locations recommended by the Fire Department.

#### WATER SUPPLY—PRESENT AND FUTURE.

The following table shows the rain-fall for each month of 1876, and for ten months of 1877, as registered at the Boyd's Corners Reservoir in Putnam County :

	1876.	1877.
January.....	1.42 inches.	2.68 inches.
February.....	4.91 "	0.80 "
March.....	6.33 "	7.66 "
April.....	4.43 "	2.35 "
May.....	3.99 "	0.85 "
June.....	2.52 "	4.95 "
July.....	3.42 "	4.65 "
August.....	1.20 "	2.54 "
September.....	5.21 "	1.49 "
October.....	1.50 "	8.38 "
November.....	3.40 "	
December.....	2.35 "	

The drought of last year in the Croton district will be remembered as one of unusual severity, causing much inconvenience by a scarcity of water in the city. That of the present year, however, has been far more severe, exceeding anything known for half a century; and these two dry seasons, following directly one after the other, will be ever memorable in the records of the city's water supply.

From the preceding table it will be seen that the six months' rain-fall, from April 1st to September 30th, was—

In 1876.....	20.77 inches
In 1877.....	14.63 "

Showing a falling off of 6.14 inches rain-fall in the six warm months of 1877 as compared with those of the previous year. This great diminution of rainfall was quite sufficient to account for the diminished supply.

The long-continued drought caused so much anxiety, that on the 28th day of September I issued to the public, through the press, the following letter in explanation of the diminished supply, and asking the avoidance of waste in every form, in order to avert what might become a serious calamity :

"To the Public.

"The drought of 1876 in the Croton region and adjacent country—the severest known for half a century—has been followed this season by one of still greater severity, which is seriously affecting the water supply of this city. The equinoctial rains of last year afforded some relief, but the light September rain-fall of the present year has been entirely absorbed by the parched ground, leaving none to run into the streams. It is now ninety days since any water ran over the Croton dam into the Hudson river. For some time past large drafts have been made upon the artificial and natural reservoirs of the Croton district—every available lake having been put under contribution; but the long-continued and unprecedented drought warns me to give notice to citizens, and all who use the Croton water, to avoid waste, and to call upon them for aid in this great emergency, by observing the strictest economy in the use of water. The officers and employees of this Department have been instructed to exercise the utmost vigilance in suppressing waste, and I have asked the aid of the Police Department in enforcing this order.

"It is to be hoped that relief may soon come in copious showers; but it is the part of prudence, and indeed of necessity, to husband with care the present supply until such relief shall arrive.

"I perform an unwelcome but imperative duty for the second time during my brief administration of this Department, in notifying the public of a scarcity of water, a scarcity which should not and would not have existed had precautionary measures been adopted four or five years since, as I have heretofore fully explained in official reports and a statement addressed to the public last October.

"The new reservoir on the middle branch of the Croton has been pressed forward during this and the past season with much energy, but it cannot be brought into use before the close of the present year. Its capacity is nearly four thousand millions of gallons, and it will alone afford a supply for fifty or sixty days. This great reservoir should have been commenced two or three years earlier than the time selected, and, had this been done, no scarcity of water would have been felt either in the past or the present year. Appreciating its great importance, I have done everything possible to hasten its completion, and have taken steps to provide a still further supply by selecting a site for another and larger reservoir, which I propose to put under contract next season.

"In the belief that citizens generally will appreciate the circumstances as above explained, and contribute their aid in averting a serious calamity.

"I am, respectfully,

"ALLAN CAMPBELL,

"Commissioner of Public Works."

This unprecedented drought, and the consequent scarcity of water, have again invited criticism upon our water system, and very natural inquiries as to the probability of a recurrence of the evil. These comments have sometimes been accompanied by vague suggestions for increasing the supply, which, though doubtless, in most instances, well meant, are generally of a crude and chimerical character. In my previous quarterly reports, I gave some account of our water system, and my views as to the best plan of securing an abundant supply, not only for the present time but for the future, when New York shall have increased two or threefold in population.

Unfortunately, during my brief administration of this Department, the Croton region and adjacent country have been subject to drought in two successive seasons, unexampled in the history of that part of the State. This drought occurred while important works for increasing the supply of water, though in progress, were yet incomplete, and hence the inconvenience from diminished quantity and pressure. As stated in the foregoing letter to the public, had the large storage reservoir now constructing on the middle branch of the Croton river been ready for use, no scarcity would have been felt, even in the past season of exceptional drought.

Citizens generally, however, who only know that their water supply is reduced, and that they are discomforted thereby, are oftentimes inclined to condemn the source of supply as inadequate and the whole water system as a failure; but such judgment, based upon a temporary and exceptional deficiency, is incorrect. It is not the plan or system which is at fault, but the Department and officials in charge, who have failed to fulfill their duty in providing the necessary works and appliances in ample time to meet the increasing demands of the city, and to provide against such droughts as have occurred for two successive years, and to which every country is sometimes liable.

When the Croton water system was established nearly forty years ago, no storage reservoir beyond that formed by the Croton dam and those within the city limits were necessary; but it was always contemplated that with increase of population, manufactures and commerce, additional storage reservoirs would be required, and with this view complete surveys were made of the Croton watershed by the Aqueduct Department several years since to ascertain with accuracy its drainage area and the most eligible sites for reservoirs, so that the actual quantity of water which could be depended on might be known, and the reservoirs built from time to time, as needed. Such plan and system, and indeed every plan and system, must necessarily be based upon the assumption that the authorities are to do their duty in the premises. Great reservoirs, conduits and their accessories do not spring into existence when required, and without thought, labor and financial provision. Unfortunately the city government, as is too well known, was for several years not very remote in the past more concerned in promoting schemes of public plunder than in providing means of an increased water supply and other useful improvements, though urged to do so by the Engineers of the Department. The citizens of New York, who so long tolerated such a government, must suffer the fruits of its fraud and ignorance, and cannot expect honest and competent officials to remedy in a day, or a year, the accumulated evils of many years' neglect. It is therefore unjust to condemn the plan on which our water system is founded, when the evils are attributable not to the system itself and to the sources which nature has supplied, but to the failure of man to carry out in proper time and ways the works necessary to perfect the system. If we were drawing water even from a great river like the Hudson, instead of from the Croton valley, and neglected to increase the pumping power and area or number of conduits with the increasing demands of the city, as well might it be said that the Hudson was inadequate, when in fact the fault would rest with man and not with nature. We may have a very good plan and system of lighting the city, but if additional mains be not laid and additional works erected to provide an increased quantity of gas for a growing population, it is very certain that some portion of the city would be left in darkness, and this would result not from a defective plan, but from neglect to extend and perfect the system previously adopted.

While I have thought it proper to present these views upon our water system, I make great allowance for the complaints of citizens when deprived of the comfort and conveniences of a full and abundant supply of water, and I admit that it is the duty of this Department to see to it that the city is provided in every respect with a sufficient supply of this essential element, and if the Croton system is inadequate to the purpose, then to adopt or recommend some other mode which shall beyond peradventure meet the necessity of the case.

After careful study, and the experience of the late extraordinary drought, I see no reason to alter the opinion expressed in previous reports, that the Croton system (with such auxiliary supplies as have heretofore and shall hereafter be indicated) is the most economical, simplest and best system, all things considered, which can be adopted.

Amongst other sources of supply which have been suggested, are the Passaic and the Hudson river. The watershed of the former river above the Dundee dam, situated five miles below the city of Paterson and at the head of tidewater, has an area of about 950 square miles. The cities of Newark, Jersey City and Hoboken take their supply from this river below the Dundee dam, and provision would have to be made to pass them the quantity required for their use. The water, if taken at the dam, must be pumped into a reservoir, and carried thence across Saddle river and under the Hackensack to a proper point eight miles distant; then pumped into a reservoir, and thence led by pipes under the Hudson river to the reservoir in New York. To provide for an uninterrupted supply from this source, the pipes under the Hackensack and Hudson rivers should be carried through tunnels, that they may be readily reached for repairs.

The water of this stream is contaminated by the refuse of manufactures and the sewage of Paterson, a city of large and increasing population. Newark, Jersey City and Hoboken now complain of the quality of the water obtained from this river in time of drought, and are having examinations made for a different and more pure supply.

To tap the river at such elevation that it may be brought into New York without pumping would necessitate the construction of large storage reservoirs and compensation to the mill owners and cities using the water on the lower part of the river, and it is doubtful whether a grant to divert the water could be obtained.

The quantity of water flowing in the Passaic during recent droughts, according to authentic statements, was only one hundred millions gallons per day, or about the quantity consumed daily in New York. Considering the large cities in New Jersey, to be first supplied, the expensive and precarious method required to conduct the water to this city, and other objections which have been mentioned, this plan may be pronounced impracticable.

It has been proposed to pump the water of the Hudson river at Poughkeepsie to the high ground lying east of the river, and thence carry it by pipes several miles to the head waters of the Croton. A description and estimate of this plan was published in Poughkeepsie about a year ago, or after the drought of 1876, and contemplated a partial supply to aid the Croton in meeting such deficiencies. Our present system of storage reservoirs in the Croton valley will accomplish the object at far less expense, and with pure water, that of the Hudson at Poughkeepsie being sometimes brackish.

If the Hudson river shall ever be used for the supply of New York, its water must be taken where it is unaffected by the sea, perhaps one hundred to one hundred and twenty miles above the city, and thence conveyed by aqueduct or pipes in the valley of the Hudson itself to the point of distribution. The cost of such a work over the rough country which borders the Hudson River, would be enormous.

There is undoubtedly a great advantage in drawing a supply of water for a large city from a great and never-failing river like the Hudson, its capacity being practically without limit, and if there were no other and more feasible alternative, it might be well to consider this plan, formidable as it may appear. In the far distant future, when New York shall count its population by many millions, and when the Croton with its adjunct, the Housatonic, shall have been taxed to their utmost capacity, it is a satisfaction to know that the great city can never be deficient in its water supply, the Hudson affording a certain resort, though at great expense.

Another suggestion is that water may be procured from Long Island, by sinking wells in the sands, and conveying the water by pipes under the East river to this city. It has even been asserted that the present supply for Brooklyn is so abundant that a sufficient amount can be spared to supply the lower part of New York, under a pressure of sixty pounds to the square inch. This cannot be true, as during the late drought the Brooklyn Board of City Works was warning its citizens to be sparing of water, the reservoirs being greatly reduced. Even if a supply could be obtained from Long Island, its conveyance by pipes under the East river in any considerable quantity would be attended with hazard.

With this notice of suggestions which have been made for improving the water supply of New York, I will now give my views as to the best mode of securing the end proposed.

#### FIRST—AS TO THE QUANTITY WHICH THE CROTON WATERSHED WILL FURNISH.

From a careful survey made by the Croton Aqueduct Board in 1857-'8, it was found that the Croton watershed embraces an area of 338 square miles. In a report made by the Board to the Common Council in 1863, the average daily flow of the Croton was stated to be 339,000,000 gallons.

From the spring of 1866, when the storage reservoir at Boyd's Corners was commenced, a rain-gauge has been kept at that point. The elevation is 550 feet above the tide, and the rain-fall at that point may be considered a fair average of the rain-fall in the Croton basin in a period of twelve years.

From the above data and from daily observations taken at the Croton dam and in the aqueduct, the following table is constructed, showing the actual rain-fall in the Croton basin, the average amount in gallons of the natural flow of the river daily at the dam, the percentage of rain-fall delivered at the dam, and the number of days in each year when no water ran over the dam:

YEAR.	Rain-fall at Boyd's Corners Reservoir.	Average Amount Per Day of Natural Flow of Croton River at Croton Dam.	Percentage of Rain-fall.	Number of Days when no Water ran across Croton Dam.
	Inches.	Gallons.		
1866.....	51.77	441,000,000	51	50
1867.....	50.77	540,000,000	65	..
1868.....	50.33	601,000,000	74	8
1869.....	48.30	457,000,000	58	80
1870.....	44.63	348,000,000	47.5	102
1871.....	48.94	357,000,000	45	37
1872.....	40.74	307,000,000	49	34
1873.....	43.87	444,000,000	67	116
1874.....	42.37	428,000,000	63	83
1875.....	43.66	435,000,000	59	71
1876.....	40.68	368,000,000	56	175
January 1 to November 1, 1877 (10 months).....	36.35	307,000,000*	44	136

\* N.B.—The heavy rains of November will largely increase this average for the whole year 1877.

From which it appears that the highest average daily flow in any year was 601 million gallons, the general daily average for the twelve years was 419 million gallons, and the minimum average daily flow 307 million gallons, and allowing 100 million gallons daily to be delivered by the aqueduct (its maximum capacity), then it follows that even in the driest year over 200 million gallons daily run to waste, and that, if this were collected and impounded in storage reservoirs, to be delivered as demanded, the Croton basin would supply a population of three millions in number, allowing a consumption of the large quantity of 100 gallons daily per capita.

It would not, perhaps, be practicable to store all the water flowing in the river, and there would be some loss by evaporation, but on the other hand, the per capita allowance can with regulation against waste be much reduced below one hundred gallons daily, and therefore the Croton basin alone may be safely counted on to supply a city of two and a half million inhabitants.

I have made the above statements because false impressions are entertained by some as to the adequacy of the Croton watershed, founded doubtless upon the reduced supply during droughts. The facts therein presented demonstrate clearly the error of such opinions, and prove that by the construction of the proper works from time to time, always, of course, keeping well in advance of actual need, the demands of the city as it grows in population can be supplied from this source.

But one artificial reservoir has yet been brought into use, viz., that at Boyd's Corners, having a storage capacity of nearly three thousand million gallons. Another reservoir of nearly four thousand million gallons, on the middle branch of the Croton river, has been three years in course of construction, and will be ready for use in January, 1878. As I have several times stated, this reservoir will greatly aid the water supply, but the time, in my opinion, has arrived for commencing a third reservoir, for which a site has been selected on the east branch of the Croton, and plans and surveys are being made in order that this work may be put under contract next season. It must be remembered that we are every year laying additional and larger mains in the city, and the supply at the source must keep pace with the demand in the city. The proposed new reservoir will consume nearly three years in its construction, and will have a capacity of four and a half million gallons. These three great reservoirs, with the natural lakes for the use of which permanent provision is to be made under the law of last session, added to the natural flow of the Croton, will fill the present aqueduct every day in the year, and thus secure all the benefit which one aqueduct can possibly afford.

2d.—As there is but one aqueduct or conduit by which water is brought to the city, it is of the first importance that this work should be maintained in thorough repair, so that it may be filled nearly to its roof, and convey its maximum quantity. The Croton Aqueduct is a noble structure, and for thirty-five years has performed its duty without a breach sufficient to interrupt its current. In tunnels or excavations, where it rests upon natural foundations, it continues almost unimpaired; but in crossing valleys, upon artificial foundations, very slight settlements sometimes occur, causing cracks and leaks, which can only be temporarily remedied, until the water is drawn off, as is done once a year for as thorough repair as practicable in the short period of three days, beyond which time the supply cannot be interrupted.

Within the past two or three years considerable work has been done towards strengthening the aqueduct in its outer walls, and in improving and perfecting the arch inclosing the water way. It is proposed to continue this work each year, until the aqueduct is rendered as secure as possible, and

with this view I have asked the Board of Estimate and Apportionment for a small additional appropriation over and above the ordinary work of maintenance, which I trust will be granted. It is true economy carefully to guard and protect the single conduit by which the city is supplied, as breaches or leaks would entail serious consequences.

3d.—Waste of water must be prevented by the use of meters in all large establishments. Within the past year meters have been placed in railroad and omnibus stables. They have also been applied along the water front on docks and piers, where great waste previously existed. There is yet much to be done in this matter, but it is intended to follow it up until all establishments and places of the kind above-mentioned are metered. This, with careful inspection of private houses by competent persons, will effect an important saving in the amount of water used; indeed, the steps already taken have had an appreciable effect in accomplishing this most desirable purpose.

4th.—For the purpose of ascertaining what supply may be drawn from the Bronx, a careful survey is now in progress, but I am not yet able to state its results. More than fifty years ago, and before it was decided to use the Croton river, examinations were made of the Bronx with the object of supplying the city from its waters.

In 1824 Canvass White, who had been one of the Engineers of the Erie Canal, made a survey of this stream, and estimated that by building a dam at the outlet of the Rye ponds in Westchester county, six feet in height, and lowering the outlet two feet, the natural flow of the river could be so far aided as to afford a steady supply of 6,600,000 gallons per day. This quantity was deemed inadequate for a population then comparatively small, but rapidly increasing under the stimulus imparted by the Erie Canal, and its further consideration was abandoned and the study of the Croton valley taken up.

The circumstances are now entirely altered. Then the Bronx river was thought of as the main source of supply; now, if found available at all, it will be merely as an auxiliary, and for the supply of the annexed district north of the Harlem river, to which extent it would relieve the demand upon the present aqueduct, which is every year approaching nearer and nearer the maximum capacity of that structure.

The water should be taken out above White Plains, to avoid the impurities of the numerous villages situated on the Bronx below that place. It could be delivered at some point north of the Harlem river, at an elevation of fifty feet above the present aqueduct, and thus reach the highest ground in the suburban district. The extremely low cost of iron at the present time, as well as other economical considerations, would make an iron pipe of sufficient size the most proper conduit.

The feasibility of this plan will depend upon its cost and the quantity of water which can with certainty be secured. It is very desirable in the present condition of our burdensome debt and taxation, to defer as long as possible the large expense of an additional aqueduct, while at the same time it is equally important to maintain a liberal supply of water for the growing population. Now, if the waters of the Bronx and the Rye ponds can be introduced at a cost commensurate with the quantity delivered, it will just so far aid in securing the object proposed; and this conduit, though comparatively small, will remain a permanent part of the water system of the city. I will present the full results of the survey when the plans and estimates are prepared.

5th. *The Housatonic River.*—Next to the Croton basin, and as auxiliary thereto, the Housatonic river offers the most interesting and important subject for our consideration.

In my fourth quarterly report for the year 1876, I referred to it as follows:

"I have already explained that the Croton river and basin are adequate for the supply of a city of more than two millions of inhabitants, but in investigating the important subject I have been led to look beyond the Croton basin and to consider what additional supplies may be most feasibly and economically secured for the unfailing and abundant supply of water to this great metropolis.

"My knowledge of the topography of the country immediately north of the Croton valley, obtained from reconnaissance and surveys made several years ago, induced the belief that the waters of the Housatonic river might be tapped and led by conduit to the headwaters of the Croton. A cursory survey, recently made, establishes the perfect feasibility of this plan at a comparatively moderate cost.

"The Housatonic is a large river, having its source in the Berkshire hills, and in its southerly course through the State of Connecticut approaches, at a point ten miles north of the head of the Croton, within half a mile of the New York State line. At this point, known as Bull's Falls, a tributary of the Housatonic breaks through the mountain range which divides New York from Connecticut, and opens a way for the introduction of a canal by which the waters of the Housatonic may be led and discharged into the Croton basin.

"By means of this great auxiliary supply from a large river of the purest quality, the water supply of this great city may be considered assured, even for the distant future. Of course, legislative sanction of the State of Connecticut will be required in perfecting this plan."

In order to obtain accurate information in regard to this project, I propose to have a detailed survey made during the coming season, and plans and estimates prepared and filed in the Department, so as to be available whenever the proper time shall arrive for carrying the work into effect.

From the examination already made, the following information has been obtained:

The watershed of the Housatonic, above Bull's Falls, has an area of about 750 square miles, or more than double that of the Croton. From a measurement of the stream, made at a time of very low water, it was found to discharge 200,000,000 gallons daily.

A canal of about twenty-seven miles in length will lead the waters of the Housatonic, by gravity, into the Croton basin, for which canal two lines will require examination.

A short canal of ten miles, commencing near Bull's Falls, would, for a time, accomplish the purpose by raising the water at that point by pumps, to be operated by the water power of the river, which here falls eighty feet in half a mile.

With the large supply which the Housatonic will furnish, added to the drainage of the Croton watershed, it is clear that a population of more than three millions will be liberally provided.

6th. *High Service.*—When the Croton water was introduced into New York, and some years subsequently, the city, as then built, was below the level of the receiving reservoir, and water was delivered to the upper stories of the houses by hydraulic pressure. Since that time the elevated portions of the island have been built upon, where the land is as high as the surface of the Park reservoirs. Of course, at all those points, the water must be raised to the upper stories by pumping, and this was doubtless the original design of the Croton Aqueduct Commission.

In the year 1870, a small reservoir was built near the southern end of High Bridge, into which Croton water is pumped by steam power, the object being to supply the Manhattanville district. There being a surplus beyond the requirements of that immediate neighborhood, it has been distributed to other high points, and so pressing have been the demands for this high-service water, that it is now extended to the extreme limit of its capacity. Its great value and popularity having been proven, the necessary legislation to authorize the erection of additional pumping power was asked of the last Legislature, but the bill, which passed the Assembly, was not reached in the Senate.

I propose to renew the application at the coming session, and, if granted, to proceed next year with the necessary works upon the city lots between Ninety-seventh and Ninety-eighth streets, near Ninth avenue, already set apart for this purpose, and to carry out this most useful improvement.

7th. *Distribution of Water.*—The growth of the city has rendered an increase in the size and arrangement of the distributing mains necessary. The Department is making good progress in this work, and it is proposed to continue it under the authority conferred for that purpose, until the small mains of former years are replaced by large ones on the principal streets and avenues, and in connection therewith to put in a sufficient number of fire-hydrants. The unexampled low price of iron pipe makes it very desirable to carry on this work now. Under a recent contract, straight pipe of the very best quality has been procured at \$22.75 per ton of 2,240 pounds, probably the lowest price at which such pipe was ever bought by the city.

I trust you will make allowance for the length of this statement in regard to the water supply of the city and of the plans of the Department for insuring an abundance in the future. I think it has been clearly shown that the Croton system, including the Housatonic, is the true and only proper mode to be pursued. Of course, this plan contemplates an additional aqueduct, when increasing population shall have taxed the present one to its fullest capacity, but, I believe, in the way herein pointed out, this expense may be postponed for some years, and until the city is better able to bear it.

I close this branch of my report with an interesting statement showing the total expenditure and revenue of every kind, on account of Croton water, since its introduction in 1842 to the present time; no computation for interest being made on either the debt or credit side of the account. The system has proved a great blessing in promoting the health and general prosperity of the city, and it has been successful so far in meeting all demands except during extraordinary droughts, when failure, as I have already explained, resulted altogether from neglect to make timely provision for the necessary works, while, as a financial measure, it has been a remarkable success.

#### REVENUE.

The following table shows the yearly revenue derived from "Croton Water," from its introduction into the City in 1842, to October 1, 1877.

From October 5, 1842, to	Time.	Total Annual Revenue.
" May 1, 1843, "	1, 1843.....	\$32,053 74
" " 1, 1844, "	1, 1844.....	84,444 68
" " 1, 1845, "	1, 1845.....	117,227 86
" " 1, 1846, "	1, 1846.....	103,900 52
" " 1, 1847, "	1, 1847.....	193,346 24
" " 1, 1848, "	1, 1848.....	219,416 72
" " 1, 1849, "	1, 1849.....	250,081 51
" " 1, 1850, "	31, 1849.....	259,532 97
" January 1, 1850, "	31, 1850.....	458,951 87
" " 1, 1851, "	31, 1851.....	458,789 78
" " 1, 1852, "	31, 1852.....	578,426 48

From January 1, 1853, to December 31, 1853.	Time.	Total Annual Revenue.
" " 1, 1854, " " 31, 1854.	"	\$650,021 20
" " 1, 1855, " " 31, 1855.	"	703,730 83
" " 1, 1856, " " 31, 1856.	"	790,077 70
" " 1, 1857, " " 31, 1857.	"	778,292 77
" " 1, 1858, " " 31, 1858.	"	823,156 35
" " 1, 1859, " " 31, 1859.	"	840,928 08
" " 1, 1860, " " 31, 1860.	"	855,261 47
" " 1, 1861, " " 31, 1861.	"	868,843 58
" " 1, 1862, " " 31, 1862.	"	891,430 81
" " 1, 1863, " " 31, 1863.	"	893,896 82
" " 1, 1864, " " 31, 1864.	"	982,031 26
" " 1, 1865, " " 31, 1865.	"	1,006,191 77
" " 1, 1866, " " 31, 1866.	"	1,056,772 49
" " 1, 1867, " " 31, 1867.	"	1,125,605 96
" " 1, 1868, " " 31, 1868.	"	1,261,600 30
" " 1, 1869, " " 31, 1869.	"	1,312,093 05
" " 1, 1870, " " 31, 1870.	"	1,315,676 13
" " 1, 1871, " " 31, 1871.	"	77,641 95
" " 1, 1872, " " 31, 1872.	"	1,296,383 79
" " 1, 1873, " " 31, 1873.	"	1,353,591 59
" " 1, 1874, " " 31, 1874.	"	1,439,349 39
" " 1, 1875, " " 31, 1875.	"	1,386,132 41
" " 1, 1876, " " 31, 1876.	"	1,477,277 06
" " 1, 1877, " " 31, 1877.	"	1,444,256 71
" " 1, 1878, " " 31, 1878.	"	1,478,281 00
" " 1, 1879, " " 31, 1879.	"	1,180,641 96
Total.		\$30,105,338 80

## STATEMENT SHOWING COST OF CROTON WATER WORKS.

Total Amount expended for Works, Structures, Aqueducts, Pipes, etc., etc., connected with the Water Supply of the City of New York, including Maintenance and Repairs, from the Period of its Inception to the first day of October, 1877.

To January 1, 1865.	\$20,030,221 93
During the year 1865.	224,337 27
" " 1866.	442,628 05
" " 1867.	581,794 80
" " 1868.	726,437 40
" " 1869.	894,628 19
" " 1870.	1,172,078 48
" " 1871.	2,784,440 72
" " 1872.	1,836,847 68
" " 1873.	2,049,850 51
" " 1874.	1,465,708 03
" " 1875.	882,777 64
" " 1876.	1,066,645 50
To October 1, 1877.	533,707 53
Total Cost.	\$34,692,103 73
Total Cost.	\$34,692,103 73
Total Revenue.	30,105,338 80
Cost over Revenue.	\$4,586,764 93

## PAVEMENTS.

Five contracts for new street pavements, covering 67,026 square yards of stone block pavement and 5,016 square yards of Telford-macadam pavement (152d street, between Boulevard and Avenue St. Nicholas), have been completed under the ordinances of the Common Council.

Although the work of repaving down-town streets under chapter 476 of the Laws of 1875, was considerably delayed on account of the difficulty of obtaining the improved paving blocks required by the new specifications, and the dilatoriness of some of the contractors, the contracts for repaving Franklin street, from West Broadway to Centre street; Wall street, from William to Hanover street; Rector street, from Broadway to West street; Ferry street, from Gold street to Peck Slip; Spruce street, from Nassau to Gold street, and Nassau street, from Spruce to Wall street, have been completed, covering 14,645 square yards of pavement, and work is in progress on all the other repaving contracts, so that the prospect of having them all completed this season is favorable. The new pavement gives general satisfaction and is a great relief to the heavy traffic in those streets.

The general repairs of pavements have been prosecuted with energy. On the 10th of September the appropriation was, at my request, supplemented by a transfer of \$25,000 from the appropriation for "Lamps and Gas," thus enabling the Department to continue this most necessary work to the close of the season. Notwithstanding this addition to the appropriation, and every effort towards the efficiency of the repair force, it is impossible to repair all the defective pavements, and the necessity of a full appropriation for the coming year is apparent. The beneficial result of improving the condition of the pavements are so manifest in the increased facilities for commerce, comfort of travel, and promotion of public health by greater cleanliness, that every citizen will acquiesce in liberal appropriations for this purpose.

I have received numerous urgent appeals for repaving various streets, both up and down town, in the coming year. Some of the wooden pavements, which have now been down six or eight years, are utterly decayed, and must either be replaced with stone next year, or the rotten wood should be removed and the traffic carried on upon the bare earth. The Seventh avenue, from 14th to 59th street, is in this condition. It is a very important business avenue, and great disappointment is felt by the people along its line that it has not been repaved during the present year. This, however, has been impossible, as the total appropriation of \$200,000 has been nearly all required in repaving down-town streets. It will require \$150,000 for the repavement of the Seventh avenue alone. Fifth avenue from 59th to 90th street, also a wooden pavement, is in a very bad state, as are parts of Lexington avenue, Second avenue, Fourteenth street, and other important streets up-town, to say nothing of the many down-town streets which require repaving.

In view of all the facts, I have asked the Board of Apportionment for \$500,000, for repavements for the year 1878, and while I feel the necessity of economy in all expenditures, I regard the improvement of the condition of our streets of such paramount importance that I trust the Board of Appor-

tionment will grant the amount called for. By a liberal outlay for two or three years the pavements will be put in such condition that the cost of annual repairs will be very much reduced.

## SEWERS AND OTHER STREET IMPROVEMENTS.

The sewerage system has been extended by the addition of 11,106 lineal feet of sewers, 358 lineal feet of culverts, and 11 receiving basins.

A large amount of work has been done in cleaning and repairing sewers and basins, so as to keep them in efficient condition.

The following quantities of work have been done in regulating, grading, and otherwise improving streets:

5,831 cubic yards earth excavated.  
18,904 cubic yards rock excavated.  
104,600 cubic yards filling put in embankment.  
15,195 lineal feet of curb-stone set.  
13,025 lineal feet of gutter-stone set.  
48,920 square feet flagging laid.

The country roads and unpaved streets in the upper part of the city have received proper attention and care under the direction of the Superintendent of Streets.

## LAMPS AND GAS.

The number of public lamps has been increased during the quarter from 20,606 to 20,787.

Lamps have been erected and lighted on nine of the most frequented piers used as passenger landings along the North and East rivers, and further progress will be made in this direction until the piers and bulkheads are sufficiently lighted for the protection of persons and property. The Dock Department is co-operating with this Department in this useful work.

The Gas Commission having made a contract with the Yonkers Gas-light Company for lighting public lamps in Riverdale, near the northerly boundary of the city, seventy-one lamps have been erected and lighted in that district, in which there are many fine buildings and residences.

The photometrical apparatus in the building southeast corner of Grand and Centre streets, for testing the illuminating power of the gas furnished by the New York, Manhattan, and New York Mutual Gas-light Companies, has now been in operation nearly three months, and shows that the gas so far is fully equal to the standard required by the contracts for lighting public lamps. Rooms have also been secured for the purpose in Seventy-ninth street, where the gas furnished by the Metropolitan and Harlem Gas-light Companies can be tested as soon as the apparatus, now being manufactured, can be put in position. These tests are valuable, not only to the city directly, but to every gas consumer, by insuring the detection of any deficiency in the quality of the gas.

A detailed account of the methods, objects and results of the tests will be found in the report of the Superintendent of Lamps and Gas, hereto annexed.

## MISCELLANEOUS BUSINESS.

Due attention has been given to the necessary repairs and care of the various public buildings, the cleaning of public offices, and the furnishing of supplies to the various offices and courts. The interior of the City Hall, which for many years had received no further attention than the daily sweeping and cleaning, and had become very dingy in appearance, has been thoroughly renovated by scraping the pillars, stairs, cornices and other marble work, and painting the wood-work, at very moderate expense, by which this fine old building has been greatly improved in appearance.

The following statement shows the attendance at the six public baths during the quarter, and demonstrates their popularity and usefulness:

	Total.	Daily average
At bath foot of Bethune street.	340,254	3,698
" East Fifth street.	390,127	4,240
" Gouverneur slip.	340,437	3,700
" East Thirty-seventh street.	360,295	3,959
" West Fifty-first street.	337,470	3,668
" East One Hundred and Fourteenth street.	359,160	3,904

Total attendance at all the baths for the quarter, 2,127,743.

Daily average attendance at each bath, 3,855.

Through the generosity of Mrs. John Jacob Astor, twelve new ornamental drinking fountains have been furnished and erected at her expense, and located as follows:

One each at—

Junction of Astor place and Clinton place.  
Broadway and Thirty-second street.  
South and Fulton streets.  
South and Roosevelt streets.  
South and Catharine streets.  
South and Pike streets.  
Front and Fulton streets.  
Front and Beekman streets.  
Roosevelt and Cherry streets.  
New Chambers and James streets.  
East Broadway and Rutgers streets.  
Beech street, near West Broadway.

The fountains at Astor place and at Broadway and Thirty-second street, are also surmounted by an ornamental lamp.

In accepting, with thanks, this useful gift from Mrs. Astor, on behalf of the city, I have also assumed the obligation of maintaining the fountains in good condition, at the city's expense.

The Department has collected and paid into the City Treasury the following amounts of revenue from various sources:

Croton water rent.	\$731,242 22
Penalties on Croton water rent.	2,916 65
Permits to tap Croton pipes.	1,778 50
Water furnished to shipping.	29,422 58
Water furnished for building purposes.	3,238 50
Permits to construct street vaults.	10,509 08
Permits to make sewer connections.	4,365 23
Sales of sewer-pipe to contractors.	669 75
Removing obstructions.	45 17
Rent of derrick.	33 00
Total.	\$784,220 68

Very respectfully,

ALLAN CAMPBELL,  
Commissioner of Public Works.

## Appendix "A."

Showing Titles of Appropriations; Balances of 1876 on July 1, 1877; Requisition and Transfers of 1876, during Third Quarter, 1877; Balances of 1876 on October 1, 1877; Appropriations and Transfers of 1877; Requisitions, First Six Months, 1877; Requisitions, Third Quarter, 1877; Balances of 1877, on October 1, 1877; and the Titles and Conditions of the "Trust Accounts."

TITLES OF APPROPRIATIONS.	BALANCES OF 1876 ON JULY 1, 1877.	REQUISITIONS AND TRANSFERS, 1876, FOR THIRD QUARTER, 1877.	BALANCES OF 1876 ON OCTOBER 1, 1877.	APPROPRIATIONS AND TRANSFERS OF 1877.	REQUISITIONS, FIRST SIX MONTHS, 1877.	REQUISITIONS, THIRD QUARTER, 1877.	BALANCES OF 1877 ON OCTOBER 1, 1877.
Aqueduct—Repairs and Maintenance.	\$8 04	\$8 04		\$100,000 00	\$39,476 51	† \$27,377 71	\$33,145 78
Boulevard, Roads, etc., Maintenance.	21 50	21 50		40,000 00	16,500 82	11,873 49	11,585 69
Contingencies—Department of Public Works.	489 38	489 38		2,500 00	807 91	797 39	894 70
Flagging Sidewalks and Fencing Vacant Lots.	923 86	923 86		1,000 00		201 00	799 00
Free Floating Baths.	44 52	44 52		10,000 00	2,928 65	2,758 14	4,313 21
Free Floating Baths, Additional.				30,130 87	4,928 95	5,455 17	19,746 75
Lamps and Gas.	1,240 90	1,240 90		641,095 95	291,228 48	148,576 27	201,291 20
Public Buildings—Construction and Repairs.	119 59		\$119 59	43,934 82	14,124 32	13,412 42	16,398 08
Public Drinking Hydrants.	14 86	14 86		2,500 00	1,072 59	857 48	569 93
Removing Obstructions in Streets and Avenues.	718 95	718 95		2,000 00	569 65	172 60	1,257 75
Repairing and Renewal of Pipes, Stop-cocks, etc.	236 92	236 92		104,880 41	45,939 57	20,663 34	38,277 50
Repairing and keeping, etc., Wooden Pavements.	1,902 56	1,902 56					
Repairing Stone Pavements.	1,335 55	1,335 55					
Repaving under chapter 476, Laws of 1875.							
Repairs and Renewal of Pavements.							
Roads and Avenues, and Sprinkling.	55 59	55 59		215,000 00		52,953 25	162,046 75
Salaries—Department of Public Works.				175,000 00	50,877 80	81,174 83	42,947 37
Street Improvements—Cleaning.	264 60	264 60		20,000 00	9,763 54	7,008 64	3,227 82
Supplies for and Cleaning Public Offices.	29 00	29 00		60,000 00	50,747 96	24,968 15	24,283 89
Wells and Pumps, Repairing and Cleaning.	7,781 51	* 7,739 75	41 76	1,000 00	19,344 12	7,978 30	32,677 58
Third District Court-house Fund.	1 00	1 00		100,000 00	52,902 77	18,564 90	28,532 33
Third District Court-house Fund—Appropriation for 1877.				3,000 00	1,203 40	979 00	817 60
				24,888 73	20,878 09	3,925 02	85 62
				18,000 00		6,908 18	11,091 82
Totals.	\$15,187 73	\$15,026 38	\$161 35	\$1,694,930 78	\$623,918 33	\$436,605 28	\$634,407 17

\* Amount transferred, \$1,361.51. Amount drawn by Requisition of 1876, \$6,378.24.

† Amount of Voucher of Second Quarter returned, \$209.16.

TRUST ACCOUNTS.	AMOUNT AUTHORIZED BY THE BOARD OF ESTIMATE AND APPORTIONMENT.	AMOUNT CALLED FOR BY COMMISSIONER OF PUBLIC WORKS.	AMOUNT OF REQUISITIONS TO JULY 1, 1877.	AMOUNT TO CREDIT JULY 1, 1877.	AMOUNT OF REQUISITIONS, THIRD QUARTER, 1877.	AMOUNT TO CREDIT OCTOBER 1, 1877.
Additional Alterations of Aqueduct, Ninety-third to One Hundred and Thirteenth street.....	\$3,550,000 00	\$3,600,000 00	\$3,598,439 45	\$1,560 55	.....	\$1,560 55
Additional Alterations of Aqueduct, One Hundred and Eighteenth to One Hundred and Forty-second street.....	65,165 57	100,000 00	50,254 06	49,745 94	\$7,261 87	42,484 07
Boulevard, Roads, etc.—Assessment Fund.....	.....	.....	26,213 55	.....	8,406 16	.....
Croton Water Works Extension—High Service, Carmansville.....	.....	185,990 84	165,980 51	20,004 33	.....	20,004 33
Croton Water Works Extension—Storage Reservoir.....	.....	127,729 29	127,418 02	311 27	.....	311 27
Croton Water Fund.....	1,000,000 00	1,100,000 00	945,128 25	154,807 75	79,605 26	75,202 49
Croton Water-main Fund, No. 2.....	3,625,000 00	3,750,000 00	3,702,057 80	47,042 20	.....	47,042 20
Croton Water-main Fund, No. 2.....	600,000 00	870,000 00	455,542 62	414,457 38	84,479 31	329,978 07
Meter Stock.....	53,500 00	1,025,000 00	700,589 58	324,410 42	2,423 25	321,987 17
Pavement Repair Stock.....	.....	50,000 00	.....	50,000 00	.....	50,000 00
Sewer Repair Stock.....	245,000 00	373,000 00	299,436 97	73,563 03	.....	73,563 03
Street Improvement Fund.....	.....	.....	1344,618 99	.....	228,059 45	.....
Water Stock of 1870.....	500,000 00	500,000 00	499,914 37	85 63	.....	85 63

C. T. McCLENACHAN, First Bookkeeper, D. P. W..

## Appendix "B."

A Statement in Detail of all Liabilities Incurred by the Department of Public Works for Payment of which Requisitions were drawn on the Comptroller during the Quarter ending September 30, 1877.

## APPROPRIATIONS.

## Aqueduct—Repairs and Maintenance—

Brick and cement.....	\$715 10
Building stone.....	470 00
Castings.....	86 58
Coal.....	4,740 38
Hardware.....	21 29
Incidental expenses.....	336 50
Land acquired.....	202 00
Laying sidewalk.....	46 80
Lumber.....	430 99
Oil.....	301 52
Pay-rolls.....	22,054 15
Repairing engine.....	55 52
Rope, etc.....	186 24
Rubber hose.....	40 75
Taxes.....	112 77
Tools.....	96 47

Total.....\$29,957 06

## Boulevards, Roads and Avenues—Maintenance of—

Broken stone.....	\$195 00
Cement.....	4 05
Gravel.....	942 19
Horsekeeping, etc.....	71 43
Leather.....	8 80
Nails.....	8 52
Office rent.....	71 22
Pay-rolls.....	10,362 29
Powder and fuse.....	4 65
Rubber hose.....	48 00
Sand and clay.....	157 34

Total.....\$11,873 49

## Contingencies—Department of Public Works—

Altering map, etc.....	\$125 00
Block book.....	20 00
Horsekeeping.....	100 70
Postage stamps, etc.....	200 00
Stairway.....	19 89
Traveling expenses, etc.....	331 80

Total.....\$797 39

## Flagging and Fencing in front of City Property—

Flagging at Ludlow Street Jail.....\$201 00

## Free Floating Baths—

Pay-rolls.....	\$1,922 00
Repairs.....	502 94
Supplies.....	253 20
Towing.....	80 00

Total.....\$2,758 14

## Free Floating Baths (Additional)—

Pay-rolls.....	\$3,844 00
Repairs.....	1,062 44
Supplies.....	388 73
Towing.....	160 00

Total.....\$5,455 17

## Lamps and Gas—

Base for ornamental lamp.....	\$65 00
Crossheads and bolts.....	882 50
Gas-fitting.....	282 67
Lamps.....	776 00
Lamp globes.....	450 00
" irons.....	126 60
" posts.....	1,125 00
Lighting Bath, Bethune street.....	50 40
" " Gouverneur street.....	65 28
" " Fifth street.....	35 04
" " Thirty-seventh street.....	34 00
" " Fifty-first street.....	21 75
" " One Hundred and Fourteenth street.....	50 87
" Brown-stone Building.....	25 20
" City Hall.....	583 67
" County Jail.....	288 96
" Court, 2d District Civil.....	12 72
" " 4th ".....	1 44
" " 5th ".....	5 28
" " 6th ".....	96
" " 8th ".....	4 32
" " 9th ".....	1 10
" " 1st District Police.....	209 76
" " 2d ".....	26 88
" " 3d ".....	83 04
" " 4th ".....	31 50
" " 5th ".....	5 22
" " Marine.....	4 56
" " Special Sessions.....	72
" Department of Buildings.....	48
" Engine-house, Highbridge.....	186 44
" Market, Catharine street.....	45 36
" " Centre street.....	306 48
" " Clinton street.....	234 72
" " Essex street.....	145 44
" " Fulton street.....	426 96
" " Jefferson.....	101 76

## Lamps and Gas—

Lighting Market, Tompkins.....	\$128 16
" " Union.....	33 36
" " Washington street.....	459 36
" New Court-house.....	627 84
" Office of Corporation Attorney.....	29 04
" " Engineer Boulevard.....	1 92
" " Receiver of Taxes.....	94 56
" Photometrical Rooms.....	2 16
" Rivington Street Yard.....	3 12
" South Gate-house.....	8 80
" Street-lamps, Central Gas-light Co.....	18,389 93
" " Harlem Gas-light Co.....	17,741 13
" " Manhattan Gas-light Co.....	27,952 27
" " Metropolitan Gas-light Co.....	27,382 36
" " New York Gas-light Co.....	13,166 28
" " New York Mutual Gas-light Co.....	4,375 69
" " New York & New Jersey Globe Gas-light Co.....	13,983 67
" " Suburban Gas-light Co.....	12,087 12
" " Yonkers Gas-light Co.....	839 56
Map of gas-mains.....	120 00
Office rent.....	116 67
Pay-rolls.....	990 00
Repairing and supplies.....	113 73
Street signs.....	1,541 41
Testing apparatus, etc.....	1,690 05

Total.....\$148,576 27

## Public Buildings—Construction and Repairs—

Brown-stone Building.....	\$522 73
City Hall.....	1,512 31
County Jail.....	246 97
Court, 3d District Civil.....	341 92
" 4th ".....	351 56
" 5th ".....	4 87
" 8th ".....	50 58
" 10th ".....	48 94
" 2d District Police.....	118 85
" 4th ".....	97 15
" 5th ".....	8 75
Dog Pound.....	3,583 17
Engine-house (C. H. Park).....	20 40
Market, Centre.....	263 34
" Essex.....	9 62
" Franklin.....	373 87
" Jefferson.....	102 72
" Washington.....	1,686 00
Miscellaneous.....	276 86
New Court-house.....	1,876 49
No. 49 Beekman street.....	161 36
No. 19 Chatham street.....	9 70
No. 61 ".....	239 00
No. 89 ".....	51 82
No. 91 ".....	21 84
No. 93 ".....	634 00
No. 53 Spring street.....	155 00
No. 160 Wooster street.....	246 18
Pay-roll—Carpenters.....	306 00
Register's Office.....	90 42

Total.....\$13,412 42

## Public Drinking Hydrants—

Repairing.....\$857 48

## Removing Obstructions in Streets and Avenues—

Cartage and labor.....\$172 60

## Repairs and Renewal of Pavements—

Belgian blocks.....	\$15,966 00
Bridge stone.....	337 50
Broken stone.....	1,552 75
Pay-rolls.....	55,904 53
Repairing pavements.....	873 82
Sand.....	5,550 00
Tools.....	990 23

Total.....\$81,174 83

## Repairing and Renewal of Pipes, Stop-cocks, etc.—

Horsekeeping.....	\$155 30
Hydrants.....	187 50
Hydrant boxes.....	275 00
Lumber.....	86 52
Oil, etc.....	79 85
Pay-rolls.....	18,636 17
Rammer.....	72 00
Repairing hydrants.....	187 50
" patterns.....	61 20
" trucks.....	135 60
Seine.....	60 50
Shovels.....	25 50
Stop-cocks.....	668 50
Supplies.....	32 20

Total.....\$20,663 34

## Repaving under Chapter 476, Laws 1875—

Pay-rolls.....	\$882 00
Paving Ferry, Spruce, and Nassau streets.....	12,648 50
" Franklin, Wall, and Rector streets.....	8,878 03
" Maiden lane, Liberty, and Cortlandt streets.....	1,525 37
" Warren and Murray streets.....	11,851 35
" West Broadway and College place.....	17,178 00

Total.....\$52,953 25

## Roads and Avenues and Sprinkling—

Gravel	\$840 00
Lumber	72 30
Pay-rolls	4,188 55
Repairing tools	107 79
Stone chips	1,800 00
Total	\$7,008 64

## Salaries—Department of Public Works—

Pay-rolls	\$24,968 15
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## Sewers—Repairing and Cleaning—

Basin heads	\$205 00
Brick and cement	208 25
Cleaning basin	15 00
Lumber	39 80
Manhole covers	329 70
Pay-rolls	7,180 55
Total	\$7,978 30

## Supplies for and Cleaning Public Offices, for 1876—

Bureau Repairs and Supplies (Miscellaneous)	\$6,378 24
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## Supplies for and Cleaning Public Offices, etc.—

Board of Aldermen	\$26 50
Assessors	3 81
Brown-stone Building	111 34
Bureau Repairs and Supplies (Miscellaneous)	2,028 75
City Hall	382 04
City Library	37 50
City Record	20 90
County Jail	464 86
Court, 3d District Civil	998 95
4th "	121 51
6th "	97 09
8th "	32 94
9th "	25 00
10th "	50 42
2d District Police	328 60
3d "	70 24
4th "	24 00
6th "	3 75
Common Pleas	84 00
General Sessions	109 15
Marine	256 21
Special Sessions	34 50
Department of Finance	273 69
Public Works	217 66
Dog Pound	87 45
Governor's Room	84 50
New Court-house	171 01
Office of Commissioners of Accounts	67 65
Jurors	90 00
Corporation Attorney	56 42
Counsel	105 77
County Clerk	7 74
District Attorney	15 00
Mayor	92 16
Public Administrator	5 25
Surrogate	435 47
Pay-rolls—Cleaners, etc.	11,484 57
Photometrical Rooms	58 50
Total	\$18,564 90

## Third District Court-house—

Pay-rolls	\$125 00
Plastering	1,494 00
Plumbing	3,417 95
Pointing Masonry	611 23
Roofing	1,260 00
Total	\$6,908 18

## Third District Court-house Fund—

Clock in tower	\$1,800 00
Extra work	475 13
Gas-fitting	39 03
Grates	117 00
Mantels	275 00
Pay-rolls	250 00
Plumbing	81 02
Repairing Masonry	190 82
Vault covers, etc.	14 52
Wash basins, etc.	682 50
Total	\$3,925 02

## Wells and Pumps—Repairing and Cleaning—

Putting in	\$456 50
Repairing	522 50
Total	\$979 00

## SUMMARY OF APPROPRIATIONS.

Aqueduct—Repairs and Maintenance	\$29,957 06
Boulevard, Roads, and Avenues—Maintenance of	11,873 49
Contingencies—Department of Public Works	797 39
Flagging and Fencing in front of City Property	201 00
Free Floating Baths	2,758 14
Free Floating Baths (Additional)	5,455 17
Lamps and Gas	148,576 27
Public Buildings—Construction and Repairs	13,412 42
Public Drinking Hydrants	857 48
Removing Obstructions in Streets and Avenues	172 60
Repairs and Renewal of Pavements	81,174 83
Repairing and Renewal of Pipes, Stop-cocks, etc.	20,663 34
Repaving under Chapter 476, Laws of 1875	52,953 25
Roads and Avenues and Sprinkling	7,008 64
Salaries—Department of Public Works	24,968 15
Sewers—Repairing and Cleaning	7,978 30
Supplies for and Cleaning Public Offices, for 1876	6,378 24
Supplies for and Cleaning Public Offices, etc.	18,564 90
Third District Court-house	6,908 18
Third District Court-house Fund	3,925 02
Wells and Pumps—Repairing and Cleaning	979 00
Total	\$445,562 87

## TRUST ACCOUNTS.

## ADDITIONAL ALTERATIONS OF AQUEDUCT ONE HUNDRED AND EIGHTEENTH TO ONE HUNDRED AND FORTY-SECOND STREET.

Special castings	\$7,261 87
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## CROTON WATER FUND.

Building Storage Reservoir	\$66,301 56
Drawing water from lakes	1,075 00
Exchange of horse	125 00
Geologist's services	1,500 00
Horsekeeping, etc.	201 00
Judgment	2,318 48
Legal services	3,686 26
Pay-rolls	3,718 30
Rent of mill seat	375 00
Repairing outlet of lake	95 00
Supplies	65 60
Traveling expenses	144 06
Total	\$79,605 26

## CROTON WATER MAIN FUND, NO. 2.

Broken stone	\$331 20
Castings	31,676 97
Cement	117 50
Coke and wood	72 50
Horsekeeping, etc.	150 05
Hydrants	3,622 25
Hydrant boxes	275 00
Laying mains	16,157 65
Lumber	85 03
Pay-rolls	24,436 21
Repairing pipes	2,016 64
Rope	165 30
Stop-cock boxes and covers	1,212 58
Stop-cocks	4,022 40
Tools	109 45
Traveling expenses	28 58
Total	\$84,479 31

## METER STOCK.

Water meters	\$2,423 25
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## STREET IMPROVEMENT FUND.

Curb, Gutter and Flagging—	
South side Little Twelfth street, between Washington and Tenth avenues, F. McCabe, contractor	\$28 90
South side Sixty-fourth street, between Eighth and Ninth avenues, G. F. Doak, contractor	576 66
Total	\$858 56

## Flagging—

Fifty-sixth street, between Sixth and Seventh avenues, F. McCabe, contractor	\$392 04
Fifty-eighth street, between Ninth avenue and No. 344, T. L. Butler, contractor	195 16
South side Sixtieth street, between First and Second avenues, F. McCabe, contractor	33 99
Sixty-fourth street, between Eighth and Ninth avenues, F. McCabe, contractor	671 48
Total	\$1,292 67

## Fencing—

Broadway, between Forty-second and Fifty-ninth street, G. F. Doak, contractor	\$43 36
South side Forty-third street, between Lexington and Third avenues, P. Burns, contractor	65 31
North side Forty-fifth street, between Ninth and Tenth avenues, G. F. Doak, contractor	33 89
North side Sixtieth street, between Tenth and Eleventh avenues, G. F. Doak, contractor	72 85
North side Sixty-third street, between Boulevard and Eighth avenue, G. F. Doak, contractor	192 71
Between Seventy-first and Seventy-second streets, and Second and Third avenues, G. F. Doak, contractor	170 41
Between Seventy-third and Seventy-fourth streets, and Fifth and Madison avenues, J. B. Healy, contractor	176 50
Between Eighty-third and Eighty-fourth streets, and Fifth and Madison avenues, P. Burns, contractor	259 06
Total	\$1,014 29

## Paving—

Avenue A, between Eighty-sixth and Ninety-third street, J. B. Devlin, contractor	\$8,134 31
Fourth avenue, between Forty-ninth and Sixty-seventh streets, C. P. Devlin, contractor	23,594 23
Lawrence street, between Ninth avenue and Boulevard, G. F. Doak, contractor	7,826 23
Fifty-sixth street, between Sixth and Seventh avenues, G. A. Treacy, contractor	3,667 61
Seventy-fourth street, at intersection Fourth avenue, J. B. Devlin, contractor	50 60
Seventy-ninth street, between Ninth avenue and Hudson River, J. G. Smith, contractor	8,090 86
Ninety-fifth street, between First and Second avenues, E. Bradburn, contractor	2,663 00
One Hundredth street, between Eighth and Tenth avenues, P. Mulholland, contractor	8,529 82
One Hundred and Sixth street, between Third avenue and Harlem river, D. McGrath, contractor	15,679 34
One Hundred and Twelfth street, between Third avenue and Harlem river, J. P. Lenihan, contractor	729 70
One Hundred and Nineteenth street, between Avenue A and Harlem river, G. A. Treacy, contractor	2,906 25
Total	\$81,871 95

## Receiving Basins—

Corner Clinton and South streets, Law. Rock, contractor	\$270 00
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## Regulating, Grading, etc.—

New avenue, between One Hundred and One Hundred and Tenth streets, G. F. Doak, contractor	\$1,054 51
New avenue, between One Hundred and Fourteenth street and Avenue Saint Nicholas, G. F. Doak, contractor	390 74
Fourth avenue, between One Hundred and Second and One Hundred and Tenth streets, E. Bradburn, contractor	1,062 60
Eighth avenue, between One Hundred and Twenty-eighth street and Harlem river, Mills & Ambrose, contractors	10,234 00
Ninth avenue, between Seventy-second and Ninety-first streets, T. Smith, contractor	2,275 00
Tenth avenue, between Ninety-fifth and One Hundred and Tenth streets, J. Slattery, contractor	2,982 70
Broadway, between Manhattan and One Hundred and Thirty-third streets, G. F. Doak, contractor	7,598 92
Forty-second street, between Second avenue and East river, T. Connell, contractor	1,103 20

## Regulating, Grading, etc.—

Forty-third street, between Second and Third avenues, O. Gearty, contractor.....	\$6,197 45
Forty-fourth street, between First and Third avenues, J. Mulholland, contractor.....	3,171 11
Seventy-eighth street, between Ninth avenue and Boulevard, P. Mulholland, contractor.....	1,545 60
One Hundred and Third street, between First and Fifth avenues, J. C. Dowling, contractor.....	1,227 45
One Hundred and Seventh street, between Fifth avenue and Harlem river, P. Farley, contractor.....	12,720 40
One Hundred and Fifteenth street, between Eighth avenue and Harlem river, D. Crowley, contractor.....	9,000 07
One Hundred and Forty-sixth street, between Tenth avenue and Boulevard, D. Crowley, contractor.....	2,205 00
Total.....	\$62,768 75

## Sewers—

Waverley place, between Charles and Perry streets, Chris. Keyes, contractor.....	\$210 50
Avenue A, between Seventy-fourth and Seventy-ninth streets, R. M. Christie, contractor.....	13,266 82
First avenue, between Ninety-second and One Hundred and Tenth streets, J. C. Dowling, contractor.....	16,269 92
Second avenue, between One Hundred and Eleventh and One Hundred and Sixteenth streets, R. M. Christie, contractor.....	4,417 76
Third avenue, between Eleventh and Twelfth streets, R. M. Christie, contractor.....	918 42
Fourth avenue, between Nineteenth and Twentieth streets, Chris. Keyes, contractor.....	196 80
Fourth avenue, between Eighty-fourth and Eighty-fifth streets, J. B. Healy, contractor.....	45 40
Fourth avenue, between Eighty-fifth and Eighty-eighth streets, J. B. Healy, contractor.....	124 00
Fourth avenue, between Ninety-first and Ninety-second streets, P. Mulholland, contractor.....	41 40
Eighth avenue, between Sixty-eighth and Eighty-first streets, Alex. Lutz, contractor.....	668 60
Eighth avenue, between Ninety-second and One Hundred and Fifth streets, Alex. Lutz, contractor.....	10,582 60
Tenth avenue, between Seventy-seventh and Eighty-first streets, B. Noonan, contractor.....	3,463 60
Eleventh avenue, between Sixty-sixth and Seventy-sixth streets, Crimmins & Dowdney, contractors.....	7,364 00
Fortieth street, between Tenth avenue and Hudson river, Devlin & McKim, contractors.....	4,364 50
Forty-second street, between Third avenue and East river, J. Mulholland, contractor.....	3,491 78
Fifty-seventh street, between Eighth and Ninth avenues, F. McCabe, contractor.....	285 37
Fifty-ninth street Extension, J. J. Jones, contractor.....	1,859 45
One Hundred and Third street, between Fourth and Lexington avenues, T. Scanlon, contractor.....	1,334 80
One Hundred and Nineteenth street, between Fourth and Fifth avenues, J. G. Smith, contractor.....	4,725 77
One Hundred and Twenty-fourth street, between First avenue and Harlem river, Devlin & McKim, contractors.....	174 40
One Hundred and Thirtieth street, between Tenth avenue and Broadway, C. H. Reilly, contractor.....	2,607 32
One Hundred and Forty-seventh street, outlet, Alex. Lutz, contractor.....	2,325 75
One Hundred and Fifty-second street, between Tenth avenue and Avenue St. Nicholas, W. M. Taylor, contractor.....	2,104 88
Total.....	\$80,843 84

Curb, Gutter and Flagging.....	\$858 56
Flagging.....	1,292 67
Fencing Vacant Lots.....	1,014 29
Paving.....	81,871 95
Receiving-basins.....	270 00
Regulating, Grading, etc.....	62,768 75
Sewers.....	80,843 84
Surveyors' Fees.....	6,059 60
Incidental Expenses.....	277 28
Pay-rolls—Engineers Sewers.....	7,041 26
“ “ Inspectors Sewers.....	2,280 00
“ “ Paving.....	644 00
“ “ Regulating, Grading, etc.....	2,885 50
Total.....	\$248,107 70

## STREET IMPROVEMENT FUND, TELFORD PAVEMENT.

New avenue, between One Hundred and One Hundred and Tenth streets—	
Horsekeeping.....	\$3 53
Pay-rolls.....	200 89
Total.....	\$204 42

New avenue, between One Hundred and Fourteenth street and Avenue St. Nicholas—	
Horsekeeping.....	\$1 45
Pay-rolls.....	140 98
Total.....	\$142 43

One Hundred and Twenty-second street, between Tenth avenue and Riverside Drive—	
Flag stone.....	\$28 16
Pay-rolls.....	32 02
Total.....	\$60 18

One Hundred and Fifty-second street, between Avenue St. Nicholas and Boulevard—	
Pay-roll.....	\$32 68

New avenue, between One Hundredth and One Hundredth and Tenth streets.....	\$204 42
New avenue, between One Hundred and Fourteenth street and Avenue St. Nicholas.....	142 43
One Hundred and Twenty-second street, between Tenth avenue and Riverside Drive.....	60 18
One Hundred and Fifty-second street, between Avenue St. Nicholas and Boulevard.....	32 68
Total.....	\$439 71

## SUNDY ASSESSMENT FUNDS.

Avenue B, between Seventy-ninth and Eighty-sixth streets—	
Horsekeeping, etc.....	\$4 20
Pay-rolls.....	90 75
Regulating, grading, etc.....	3,191 26
Surveying.....	460 22
Total.....	\$3,746 43
First avenue, bet. Eighty-sixth and One Hundred and Sixteenth streets—	
Filling.....	\$1,877 75
Horsekeeping.....	5 69
Pay-rolls.....	484 33
Total.....	\$2,367 77

Tenth avenue, bet. One Hundred and Tenth and Manhattan streets—	
Pay-rolls.....	\$152 03
Sixth avenue Planting—	
Pay-rolls.....	2 25
Seventh avenue Planting—	
Pay-rolls.....	32 41
Avenue St. Nicholas Planting—	
Pay-rolls.....	21 65
Boulevard Planting—	
Pay-rolls.....	107 51
Ninety-sixth street, between First and Fifth avenues—	
Pay-rolls.....	87 07
One Hundred and Twenty-fourth street, between Avenue A and Sixth avenue—	
Pay-rolls.....	4 08
Total.....	\$6,521 20

## GENERAL SUMMARY.

Appropriations.....	*\$445,562 87
Additional Alterations, Aqueduct, One Hundred and Eighteenth to One Hundred and Forty-second street.....	7,261 87
Croton Water Fund.....	79,605 26
Croton Water Main Fund No. 2.....	84,479 31
Meter Stock.....	2,423 25
Street Improvement Fund.....	248,107 70
Street Improvement Fund, Telford Pavement.....	439 71
Sundry Assessment Funds.....	6,521 20
Grand total.....	\$874,401 17

\* Requisition amounting to \$2,370.19, withdrawn from the Comptroller's Department on Appropriation "Aqueduct, Repairs, and Maintenance."

DEPARTMENT OF PUBLIC WORKS,  
CHIEF ENGINEER'S OFFICE, CITY HALL,  
NEW YORK, October 8, 1877.

ALLAN CAMPBELL, Esq., Commissioner of Public Works:

SIR—I have the honor to report that during the quarter ending September 30, 1877, there has been expended in this Bureau for work done and materials furnished, and for which bills have been transmitted, as follows:

Aqueduct Repairs and Maintenance.....	\$29,957 06
Contingencies, Department Public Works.....	100 70
Croton Water Fund.....	77,286 78
Croton Water Main Fund No. 2.....	69,113 42
Repairing and Renewal of Pipes, Stock-cocks, etc.....	6,414 17
Meter Stock.....	2,423 25
Total.....	\$185,295 38

## PROCURING WATER.

The work of building the new storage reservoir on the middle branch of the Croton river has been prosecuted with energy by the contractors.

3,853 cubic yards masonry have been laid in centre wall and tunnel, and 96,300 cubic yards embankment put in dam. Contracts have been made for the necessary pipes and stop-cocks for drawing the water from this reservoir, and are now being received.

The roads and fences around the reservoir are nearly completed, and the ground to be overflowed properly cleared. If nothing extraordinary prevents, the dam will be so far finished that the gates may be closed in December, and this reservoir filled with the winter and spring rains.

The legal proceedings for procuring the lands to be overflowed, belonging to the Tilly Foster Iron Mining Company, are still pending.

Surveys are also being prosecuted for another storage reservoir on the east branch of the Croton river.

No satisfactory arrangements having been made with the parties controlling the water rights of Lakes Mahopac and Kirk, the necessary legal proceedings have been taken to obtain the permanent right to pond and draw water from these lakes.

The rain-fall at Boyd's Corners reservoir was, in July, 4 65-100 inches; August, 2 54-100 inches; and in September, 1 49-100 inches.

The drought that commenced in June has continued during the past three months. The light rains that fell did not apparently increase the water in the streams and springs. The natural flow of Croton river has not furnished a full supply to the aqueduct since June 29th. No water since that date having run over the Croton dam, the balance of the supply has been drawn from the reservoir at Boyd's Corners and the natural lakes in Putnam and Westchester counties, as follows:

From Where Drawn.	No. of Gallons
Boyd's Corners Reservoir.....	2,725,000,000
Lake Mahopac.....	380,000,000
Lake Gleneida.....	125,000,000
Lake Gilead.....	170,000,000
Barrett's Pond.....	160,000,000
Pine Pond.....	75,000,000
White Pond.....	90,000,000
Long Pond.....	35,000,000
Peach Pond.....	40,000,000
Haine's.....	40,000,000
Lake Waccabuc.....	90,000,000
Cross Pond.....	90,000,000

Total gallons..... 4,020,000,000

Had the reservoir now building on the middle branch of the Croton been completed in 1875, no scarcity of water would have been known in 1876 or 1877, and with its completion this year, no no further scarcity is apprehended, or difficulty arising from drawing down the natural lakes.

A few of the residents living near the shores of Lake Mahopac, feeling themselves aggrieved that their demands for compensation for the drawing of water from this lake in September had not been paid, but left for determination by commissioners to be appointed October 20, turned out with a large force of men and teams and filled up the outlet of the lake.

This lake has been used as a reservoir for the storage and drawing water as required for the last hundred years, and the city had possession by permission from the owners of the outlet to draw the water. As the water was necessary for the safety of the city, a large force was sent immediately, and the outlet again opened, and the force kept there to protect the flow until the heavy rains of the 5th October rendered the water from this lake no longer necessary, when the men were withdrawn.

During the dry weather men were employed lowering the channel of the west branch, near the crossing of the road between Carmel and Lake Mahopac, and the channel cut down so as to lower the water passing the low lands above the bridge.

A force was also put on the Muscote river below Red Mills, and the channel cleaned out and lowered.

## BRONX RIVER.

A party has been organized and a survey commenced of the Bronx river and its feeders, in order to determine the amount of water available from this stream. It is believed that a supply of very pure water for the new wards can be obtained from this river above White Plains, and brought in by gravitation, at an elevation that will supply the high grounds in this district.

## AQUEDUCT REPAIRS AND MAINTENANCE.

The ditches, drains, culverts, and fences on the line of the aqueduct have been kept in good order, the reservoirs, gate chambers, etc., painted and whitewashed where necessary.

The removing of a portion of the earth on top of the aqueduct, on embankments, and placing it on the sides of the aqueduct, and the raising the protection walls has been carried on as rapidly as possible with the means available under the appropriation for the year.

On three of the embankments where the arch of the aqueduct was cracked, another arch has been laid outside of the present one and the spandrels carried higher.

The effect of removing a portion of the covering from the arch and placing it on the sides, and carrying up the walls, has been very satisfactory.

At Yonkers, where private parties were excavating near the aqueduct, endangering the same, 700 cubic yards of protection wall has been built and 100 cubic yards of retaining wall.

During the very low water in the Croton, advantage was taken to remove the weeds and other objectionable matter that had accumulated on the shallow portions of the Croton Lake; and also, in the old Reservoir in Central Park.

The High Service Engines at High Bridge have been regularly run, and fully supplied the reservoir and tank in Tower.

LAYING WATER-PIPES.

Two contracts for pipes and special casting, and three contracts for laying same, have been made, which include all of the small pipes authorized to be laid by the Common Council up to September 15, 1877.

Contracts for laying pipes in Sixty-ninth street, between First avenue and Avenue A, and on west side of Avenue A, between Seventy-first and Sixty-ninth streets; Broadway, between One Hundred and Thirtieth and One Hundred and Thirty-third streets, and on One Hundred and Thirty-third street, between Broadway and Boulevard; west side of Boulevard, between One Hundredth and One Hundred and Eighth streets; in Eighty-first street, between end of pipe and Riverside avenue; in Tenth avenue, east side, between Fifty-eighth and Fifty-seventh streets; in Fifty-seventh street, between Seventh and Tenth avenues; in One Hundred and Thirty-fifth street, between Willis avenue and 48 feet east of Willis avenue; in Seventy-seventh street, between Fourth and Madison avenues; and on west side of Fourth avenue, between Seventy-seventh and Seventy-eighth streets; in Seventy-sixth street, between Boulevard and Riverside avenues, and in One Hundred and Thirty-seventh street, between Willis and Alexander avenues, and in Fourth avenue, both sides from Forty-ninth street to Harlem river have been completed.

Two gangs of men are at work placing large fire hydrants on Broadway and other streets asked for by the Fire Department.

AMOUNT OF PIPE LAID.

48-inch pipe.....	5,149 lineal feet.
12-inch pipe.....	8,011 "
6-inch pipe.....	11,109 "
Total.....	24,260 "

Large hydrants placed.....	90
Small hydrants placed.....	37
Total.....	127

FOR FURNISHING WATER TO SHIPPING AND FOR BUILDING PURPOSES.

The necessary inspection of the pipes, etc., on the wharves and piers, and of the use of water by parties along the river front and for building purposes has been continued.

46 meters have been placed on the pipes furnishing water to shipping, and four other parties are making the necessary changes in the pipes and connections for placing meters.

Other parties leasing piers and bulkheads are holding off until their leases for the future are settled by the proper authorities.

409 permits have been issued for the use of water for shipping—

Amounting to.....	\$26,646 77
Amount measured by meters.....	2,775 81
Total.....	\$29,422 58

164 permits have been issued for the use of water for building purposes—

Amounting to.....	\$3,238 50
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Examination of houses and plumbing in same, so as to stop waste, have been continued, as follows:

REPORT OF EXAMINATIONS

Made by Inspectors relative to Leaky Fixtures and Waste of Water, from July 1, 1877, to September 30, 1877, inclusive.

DISTRICT.	Whole Number of Buildings Inspected.	Number in which Plumbing was Defective or Water Wasted.	FAUCETS.		WATER-CLOSETS OR URINALS.		HYDRANTS IN YARDS.		PIPES BURST.	BALL-COCKS WANTED.
			Leak.	Waste.	Leak.	Waste.	Leak.	Waste.		
First.....	1,812	250	15	32	15	69	4	8	2	..
Second.....	962	63	..	..	..	..	63	..	..	..
Third.....	1,212	105	79	15	2	8	8	9	..	..
Fourth.....	846	26	..	..	..	..	..	..	1	..
Sixth.....	1,177	202	188	..	3	..	19	..	3	..
Seventh.....	830	87	103	..	6	7	1	..	..	..
Eighth.....	586	119	169	..	..	1	..	..	..	..
Tenth.....	469	52	42	1	2	4	5	2	..	..
Eleventh.....	580	58	53	..	..	8	..	1	..	..
Twelfth.....	1,249	221	204	8	..	1	3	10	..	..
Fourteenth.....	478	34	28	..	..	4	6	..	2	..
Fifteenth.....	2,094	334	426	2	1	7	16	1	3	..
Seventeenth.....	1,452	314	462	..	23	..	39	..	3	..
Nineteenth.....	866	51	43	2	2	3	1	..	2	4
Twentieth.....	1,702	297	318	7	24	..	10	..	5	..
Twenty-first.....	2,948	848	951	5	154	181	11	7	15	1
Total.....	19,263	3,061	3,245	66	234	291	185	40	39	5

WATER METERS.

Meters have been placed on the car and omnibus stables, and are now being placed on livery and sale stables.

Below is a statement of those in use on the 30th September:

	3/8 INCH.	1 INCH.	1 1/2 INCH.	2 INCH.	3 INCH.	4 INCH.	TOTAL.
General Manufacturing.....	6	111	3	59	19	4	202
Livery Stables.....	..	..	..	..	..	..	26
Hotels.....	..	4	..	1	..	..	5
Ferry Houses.....	..	3	..	..	..	..	3
Sugar Refineries.....	..	4	1	9	2	..	16
Baths.....	..	8	..	1	..	..	9
Breweries.....	..	8	..	3	..	..	11
Gas Companies.....	..	9	1	..	8	1	22
Car and Stage Stables.....	..	27	8	8	4	..	47
Piers.....	..	2	..	8	24	15	49
Total.....	6	202	13	92	57	20	390

Very respectfully yours,

JOHN C. CAMPBELL,  
Chief Engineer Croton Aqueduct.

DEPARTMENT OF PUBLIC WORKS,  
WATER PURVEYOR'S OFFICE, NO. 4 CITY HALL,  
NEW YORK, October 6, 1877.

Hon. ALLAN CAMPBELL, Commissioner of Public Works:

SIR—I have the honor to submit the following report of the transactions of this bureau for the months of July, August, and September of the current year:

REPAIRING CROTON PIPES, ETC.

Three companies have been employed during the past quarter in repairing and renewing pipes, stop-cocks, and fire-hydrants.

All necessary repairs have been made, and no serious breaks have occurred along the line of water pipes.

PLACING LARGE HYDRANTS.

A force has been employed in placing large hydrants at various points, and in repaving over Croton-mains.

REPAIRS TO PAVEMENTS.

This work has received all the attention in my power during the last quarter. It is impossible, with the force employed, to meet all the complaints that are made, but I have endeavored to have repairs made where I have found them to be most required.

REPAVING UNDER CHAPTER 476, LAWS OF 1875.

A number of streets, sufficient to exhaust the appropriation under this head, have been and are being repaved with the new regulation blocks, affording great relief to the business portion of the community.

BOULEVARDS, ROADS, AND AVENUES.

I respectfully refer you to the report of Frederick H. Hamlin, Engineer-in-Charge, hereto appended and marked "A," for the detail of work done in this department of my bureau for the past quarter.

Number of Men Employed under charge of Bureau of Water Purveyor during months of July, August, and September, 1877, paid from different Appropriations, with amounts of Pay-rolls.

MONTHS, 1877.	REPAIRING AND RENEWALS OF PIPES, STOP-COCKS, ETC.		CROTON WATER MAIN FUND, No. 2.		REPAIRS AND RENEWALS OF PAVEMENTS.	
	No. of Men.	Amounts.	No. of Men.	Amounts.	No. of Men.	Amounts.
July.....	54	\$3,241 50	102	\$5,529 44	426	\$20,075 30
August.....	54	2,312 24	94	5,439 74	349	18,487 77
September.....	55	3,232 58	94	5,171 59	276	14,150 34
Totals.....		\$9,786 32		\$16,140 77		\$52,713 41

RECAPITULATION.

Amounts of Pay-rolls for July, August, and September, 1877.

Repairs and Renewals of Pipes, Stop-cocks, etc.....	\$9,786 32
Croton Water-main Fund, No. 2.....	16,140 77
Repairs and Renewals of Pavements.....	52,713 41
	\$78,640 50

No. of Square Yards.	PAVING WORKS UNDER CONTRACTS COMPLETED.
10,953.	Avenue A, from Eighty-sixth to Ninety-third street.
33,760.	Fourth avenue, from Forty-ninth to Sixty-seventh street.
16,521.23	Seventy-ninth street, from Ninth avenue to the Hudson river.
5,792.	One Hundredth street, from Eighth to Tenth avenue.
67,026.23	

Number of vault permits issued during the months of July, August, and September, 1877 (forty)..... 40  
Receipts for vault permits, same period..... \$10,509 08

Respectfully submitted,  
DANIEL O'REILLY, Water Purveyor.

"A."

DEPARTMENT OF PUBLIC WORKS,  
BUREAU OF WATER PURVEYOR,  
NEW YORK, October 1, 1877.

D. O'REILLY, Esq., Water Purveyor:

SIR—In regard to the work performed during the last three months intrusted to my care under your supervision, I would respectfully report the following:

Maintenance of the Boulevards, Roads and Avenues.

The appropriation for 1877 is.....	\$40,000 00
Amount expended to July 1st.....	16,500 82
Amount expended from June 30th to October 1st.....	14,380 85
	30,881 67
Unexpended balance.....	\$9,118 33

The regulating and grading, curbing, guttering and flagging that portion of the Eastern Boulevard, formerly known as Avenue B, Seventy-ninth to Eighty-sixth street, having been completed, a dirt roadway is being made the entire width between curbs, and the proper condition of the avenue will hereafter be maintained.

The laying of the macadamized roadway on One Hundred and Fifty-second street, Avenue St. Nicholas to Boulevard, is finished, and the street between these limits was opened to the public on the 24th ultimo, 5,016 square yards of pavement laid since July 1, 1877.

All of which is respectfully submitted,

FRED. H. HAMLIN,  
Engineer in Charge Roads and Avenues.

DEPARTMENT OF PUBLIC WORKS,  
BUREAU OF STREET IMPROVEMENTS (Room 11, City Hall),  
NEW YORK, October 5, 1877.

Hon. ALLAN CAMPBELL,  
Commissioner of Public Works:

SIR—I have the honor to transmit herewith a report of the transactions of this Bureau for the months of July, August and September, 1877, showing statements of the amount of work done on the various contracts, of the amount of vouchers drawn, of contracts completed, and contracts under way and suspended, also permits issued by this Bureau.

For contracts entered into during this period I beg to refer to the Contract Clerk's report.

Respectfully,

GEO. A. JEREMIAH,  
Superintendent Street Improvements.

DEPARTMENT OF PUBLIC WORKS,  
BUREAU OF STREET IMPROVEMENTS,  
NEW YORK, October 1, 1877.

GEO. A. JEREMIAH, Esq., Supt. Street Improvements:

SIR—I would respectfully present the following statement of the present condition and of the progress during the last three months of that portion of the work under your direction the immediate responsibility of which devolves upon the Engineer-in-Charge.

The regulating and grading of First avenue, Ninety-second to One Hundred and Ninth street has been discontinued since September 7, 1877. The contract of John A. Bouker, to furnish and deliver material has been closed, and vouchers for final payment transmitted.

Earth filling since last report, 6,380 cubic yards.

Also, rip-rap, as per order, 490 cubic yards.

Ninety-sixth street, from First to Second avenue, being graded, curb and flagging will be set this fall and assessment list resumed.

189 square feet of flagging were furnished and laid according to contract for macadamizing One Hundred and Fifty-second street. Avenue St. Nicholas to Boulevard finished September 22d, 1877.

It is certainly expected that the planting of the Boulevard, Sixth and Seventh avenues and Avenue St. Nicholas with elm and maple trees will be completed during the ensuing fall.

Specifications for planting One Hundred and Tenth street, First avenue to Riverside drive, with the scarlet or red maple, are about to be prepared with the intention of completing the work before next summer.

Tenth avenue, One Hundred and Tenth to Manhattan street, remains uncompleted, no notice of the approval of the sureties required by the contract have as yet been received.

Vouchers for labor performed or material furnished have been drawn, amounting to sums as represented in the following exhibit:

First avenue, Eighty-sixth to One Hundred and Sixteenth street.....	\$7,039 09
Avenue B, Seventy-ninth to Eighty-sixth street.....	3,746 43
One Hundred and Twenty-second street, Tenth avenue to Riverside drive.....	60 18
New avenue, between Eighth and Ninth avenues, One Hundredth to One Hundred and Tenth street.....	1,866 57

New avenue, between Eighth and Ninth avenues, One Hundred and Fourteenth street to Avenue St. Nicholas.....

Tenth avenue, One Hundred and Tenth to Manhattan street.....	550 74
Ninety-sixth street, First to Fifth avenue.....	152 03
One Hundred and Twenty-fourth street, Avenue A to Sixth avenue.....	176 32
One Hundred and Fifty-second street, Avenue St. Nicholas to Boulevard.....	40 25
Boulevard, tree planting.....	211 02
Avenue St. Nicholas, tree planting.....	111 52
Sixth avenue, tree planting.....	25 66
Seventh avenue, tree planting.....	2 25
	32 41

Total.....\$13,434 47

All of which is respectfully submitted,

FRED. H. HAMLIN,  
Engineer in Charge Roads and Avenues.

#### STATEMENT OF CONTRACTS

In Progress in the Bureau of Street Improvements on the 30th day of September, 1877.

LOCATION OF WORK.	NAME OF CONTRACTOR.	SURVEYOR.	INSPECTOR.	CONTRACT TIME.	ESTIMATED COST.	AMOUNT EARNED.	30 PER CENT. RETAINED.	AMOUNT PAID.	REMARKS.
Regulating, grading, curb, gutter, and flagging— Lexington avenue, One Hundred and Second street to Harlem river.....	Michael Gavin.....	W. V. Smith.....	Suspended.....	10 months.....	\$50,201 00	\$55,921 60	\$16,776 48	\$39,145 12	
Fourth avenue, One Hundred and Second to One Hundred and Tenth street.....	Edward Bradburn.....	W. V. Smith.....	Norman McLeod.....	200 days.....	12,585 00	3,058 00	917 40	2,140 60	
Eighth avenue, One Hundred and Twenty-eighth street to Harlem river.....	Mills & Ambrose.....	W. V. Smith.....	Clark Vandewater.....	2½ years.....	143,870 75	51,340 00	15,402 00	35,938 00	
Ninth avenue, Seventy-second to Eighty-first street.....	Terrence Smith.....	W. V. Smith.....	Michael McNamara.....	5 months.....	9,277 00	3,250 00	975 00	2,275 00	
Tenth avenue, Eighty-first to Eighty-second street.....	John Mulholland.....	Eugene E. McLean.....	James Anderson.....	90 days.....	1,454 92	.....	.....	.....	
Tenth avenue, Ninety-fifth to One Hundred and Tenth street.....	John Slattery.....	F. M. Leonard.....	John Meade.....	150 days.....	15,857 28	4,261 00	1,278 30	2,982 70	
Eleventh avenue, Fifty-ninth to Seventy-second street.....	Michael Gavin.....	Charles H. Haswell.....	Arthur Flynn.....	1 year.....	41,448 00	30,609 56	10,982 88	25,626 68	
Forty-second street, Second avenue to East river.....	Thomas Connell.....	Eugene E. McLean.....	Suspended.....	270 days.....	15,859 00	11,355 00	3,406 50	7,948 50	Work suspended on account of obstruction from sewer contract.
Sixty-second street, Tenth to Eleventh avenue.....	John Wyberd.....	T. & J. Slaton.....	Andrew Connors.....	9 months.....	7,967 91	1,534 84	460 45	1,074 39	
Seventieth street, Third avenue to East river.....	John S. Masterson.....	Wm. M. Dean.....	Isaac Odell, Jr.....	6 months.....	38,295 00	31,413 60	9,424 08	21,989 52	
Seventy-first street, Fifth avenue to East river.....	Herman Polye.....	Wm. H. Michaels.....	Charles Schloss.....	4 months.....	24,907 80	7,790 00	2,337 00	5,453 00	
Seventy-eighth street, Boulevard to Ninth avenue.....	Patrick Mulholland.....	A. Doubleday.....	Francis Maguire.....	250 days.....	15,494 25	6,849 97	2,055 00	4,794 97	
Eighty-first street, Ninth to Tenth avenue.....	Michael Gavin.....	Charles H. Haswell.....	John Kortright.....	50 days.....	3,587 00	.....	.....	.....	
Eighty-fifth street, Avenue A to Avenue B.....	John B. Devlin.....	Wm. M. Dean.....	George R. Cole.....	20 days.....	1,796 98	.....	.....	.....	
Ninety-third street, Boulevard to Eighth avenue.....	John Mulholland.....	C. F. Mairs.....	Philip Farley.....	50 days.....	7,021 00	.....	.....	.....	
Ninety-sixth street, Boulevard to Hudson river.....	Abraham Dowdney.....	W. V. Smith.....	Samuel Brower.....	550 days.....	29,086 00	15,400 00	4,620 00	10,780 00	
One Hundred and Third street, First to Fifth avenue.....	John C. Dowling.....	W. V. Smith.....	Joseph Frankan.....	600 days.....	29,360 00	3,293 50	988 05	2,305 45	
One Hundred and Sixth street, Madison to Fourth avenue.....	Edward Bradburn.....	Wm. M. Dean.....	James W. Hazlett.....	300 days.....	4,206 20	.....	.....	.....	
One Hundred and Seventh street, Fifth avenue to Harlem river.....	Patrick Farley.....	M. Lovell.....	Bryan Gaughan.....	300 days.....	45,720 00	40,972 00	12,291 60	28,680 40	
One Hundred and Forty-sixth street, Tenth avenue to Boulevard.....	Daniel Crowley.....	M. Lovell.....	Michael H. Whalen.....	100 days.....	9,982 50	4,935 00	1,480 50	3,454 50	
Regulating, grading, curb, flagging, and paving— Broadway, Manhattan to One Hundred and Thirty-third street.....	George F. Doak.....	P. M. Dowd.....	John Murray.....	39 days.....	15,426 74	10,855 60	3,256 68	7,598 92	
Retaining walls, arch, etc.— Forty-second street, First to Second avenue.....	Jeremiah R. Byron.....	G. S. Avery, Assistant Engineer.....	Patrick O'Brien.....	100 days.....	29,214 50	.....	.....	.....	
				Total.....	\$552,618 83	\$288,839 67	\$86,651 92	\$202,187 75	

#### SPECIAL CONTRACTS (UNDER \$1,000).

Fifty-eighth street, north side, Eighth to Ninth avenue ..	George F. Doak.....	Wm. M. Dean.....	.....	20 days.....	\$199 98				
Seventy-ninth street, south side, Ninth avenue to Boulevard.....	Lawrence Rock.....	R. L. Waters.....	.....	20 days.....	660 80				
One Hundred and Twentieth street, north side, Avenue A to First avenue.....	Lawrence Rock.....	Eugene E. McLean.....	.....	20 days.....	418 63				
Fiftieth street, north side, Lexington to Fourth avenue.....	Patrick Burns.....	W. V. Smith.....	.....	20 days.....	31 54				
				Total.....	\$1,310 95				

#### OLD CONTRACTS SUSPENDED.

Fourth avenue, Fifty-eighth to Seventy-first street.....	Patrick Farley.....	R. Foley.....	Suspended.....	2 years.....	\$48,185 82	\$42,232 65	\$12,669 76	\$29,562 89	
Eighty-first street, Second avenue to East river.....	M. J. Bannon.....	Frank E. Towle.....	Suspended.....	200 days.....	16,208 90	3,840 00	1,152 00	2,688 00	
				Total.....	\$64,394 72	\$46,072 65	\$13,821 76	\$32,250 89	

BUREAU OF STREET IMPROVEMENTS,  
NEW YORK, September 30, 1877.

#### QUARTERLY REPORT OF THE BUREAU OF STREET IMPROVEMENTS.

Statement showing the amount of work done during the months of July, August, and September, 1877.

Earth excavated.....	Cubic yards.....	5,831
Rock excavated.....	".....	18,904
Filling furnished.....	".....	104,600
Curb and gutter stones set.....	Lineal feet.....	13,025 <sup>25</sup> / <sub>100</sub>
Curb stones set.....	".....	2,170
Flagging laid.....	Square feet.....	48,920 <sup>55</sup> / <sub>100</sub>
Flagging relaid.....	".....	206
Gutter stones set.....	Lineal feet.....	173
Board fence built.....	".....	3,138 <sup>87</sup> / <sub>100</sub>

#### PERMITS ISSUED.

41 permits to repair sidewalks.

#### WORKS COMPLETED.

Regulating, grading, curb, gutter, and flagging—  
Forty-third street, from Second to Third avenue.  
Curb, gutter, and flagging—  
South side of Little Twelfth street, from Washington street to Tenth avenue.  
Flagging—  
South side of Fifty-sixth street, from Sixth to Seventh avenue.  
North side of Sixtieth street, from First to Second avenue.  
Sixty-fourth street, from Eighth to Ninth avenue.  
Fencing vacant lots—  
North side of Forty-fifth street, from Ninth to Tenth avenue.  
Sixty-third street, from Boulevard to Eighth avenue.  
North side of Sixtieth street, from Tenth to Eleventh avenue.  
Madison and Fifth avenues, Eighty-third and Eighty-fourth streets.  
Seventy-third and Seventy-fourth streets, and Fifth and Madison avenues.

#### AMOUNT OF VOUCHERS DRAWN.

On account of regulating, grading, etc.....	\$68,802 37
On account of Contingencies—Department of Public Works.....	250 00
On account of flagging sidewalks in front of city property.....	201 00
Total.....	\$69,253 37

GEO. A. JEREMIAH,  
Superintendent of Street Improvements.

DEPARTMENT OF PUBLIC WORKS,  
BUREAU OF SEWERS, ROOM 21, CITY HALL,  
NEW YORK, October 4, 1877.

Hon. ALLAN CAMPBELL, Commissioner of Public Works:

SIR—In compliance with your instructions, I beg leave to hand you herewith a report of the transactions of this Bureau for the quarter ending September 30, 1877.

Respectfully,

STEVENSON TOWLE,  
Engineer in charge of Sewers.

#### REPORT OF THE TRANSACTIONS OF THE BUREAU OF SEWERS FOR THE QUARTER ENDING SEPTEMBER 30, 1877.

Credits to General Fund— Amounts received for 252 permits for sewer connections.....	\$4,365 23
Vitrified Stone-ware Pipe— Amounts received for pipe sold to contractors and credited to Street Improvement Fund.....	\$669 75
Engineers' Fees— Amounts of Engineers and Surveyors' fees assessed on property benefited, charged in assessment lists, and credited to Street Improvement Fund.....	\$6,919 00
Sewers—Repairing and Cleaning— Unexpended balance, June 30, 1877.....	\$40,461 20
Vouchers transmitted to the Commissioner of Public Works: Pay-rolls of Mechanics and Laborers.....	\$10,751 05
Sundries.....	613 07
Balance, September 30, 1877.....	29,097 08
	40,461 20
Sewer Repair Stock— Unexpended balance, March 31, 1876.....	\$563 03
Street Improvement Fund— Vouchers transmitted to the Commissioner of Public Works.....	\$93,441 44
Pay-rolls of Engineers, etc.....	\$10,608 07
Pay-rolls of Inspectors on Sewers.....	3,504 00
On contracts for sewers.....	75,778 54
William Nelson, Jr.....	3,240 55
Sundries.....	310 28
	93,441 44

NOTE—Vouchers Nos. 36, 37, and 39, amounting to..... \$18,603 00  
 "On Contracts for Sewers," were transmitted March 27, 1877, and appeared in the statement of quarter ending March 31, 1877; these were subsequently returned for alteration in form and now reappear in the above statement as Vouchers Nos. 107, 108, and 109, on "Contracts for Sewers." (Robert McChristie)..... \$15,362 45  
 Wm. Nelson, Jr., for pipe furnished to Robert McChristie, for different sewers..... 3,240 55  
 18,603 00

Work done by Mechanics and Laborers, William Webb, Foreman—

1,331 receiving-basins and culverts cleaned.  
 2,605 lineal feet of sewer cleaned.  
 232 lineal feet of sewer rebuilt.  
 155 lineal feet of culvert rebuilt.  
 1 receiving-basin rebuilt.  
 120 receiving-basins repaired.  
 7 new granite basin-heads and gutter stones put on.  
 10 basin-heads reset.  
 10 new basin covers put on.  
 11 basin covers replaced.  
 76 man-holes repaired.  
 22 new man-hole frames and covers put on.  
 67 man-hole frames and covers reset.  
 13 new man-hole covers put on.  
 45 lineal feet of spur pipe laid.  
 20 lineal feet of curb stone set.  
 496 cubic yards of earth excavation.  
 124 square yards of sidewalk relaid.  
 257 square yards of Belgian pavement relaid.  
 545 square yards of cobble-pavement relaid.

Work done by Contract—

11,106 lineal feet of sewer built.  
 358 lineal feet of culvert built.  
 11 receiving-basins built.  
 1,435 lineal feet of house connections built.  
 742 piles driven.

Making the present total length of sewerage in the city 1,903,104 lineal feet (360 44-100 mles), with 4,377 receiving-basins.

DEPARTMENT OF PUBLIC WORKS,  
 BUREAU OF STREETS, ROOM 19, CITY HALL,  
 NEW YORK, October 10, 1877.

ALLAN CAMPBELL, ESQ., Commissioner of Public Works:

SIR—In compliance with your instructions I herewith submit the report of this Bureau for the quarter ending September 30, 1877.

The principal roads, avenues and streets that are unpaved, in the upper part of the city, have been maintained in a fair condition for travel.

Much work which is desirable should be done will have to be left over to next year, owing to the insufficiency of the appropriation.

The following are the principal items of work done:

Repairing Fifth avenue from Ninetieth to One Hundred and Twenty-third street.  
 Repairing Eighth avenue, from One Hundred and Twenty-fifth street to McComb's Dam.  
 Repairing Tenth avenue, from One Hundred and Forty-first street to One Hundred and Fifty-fifth street.  
 Repairing Kingsbridge road, from One Hundred and Fifty-fourth street to Kingsbridge.  
 Repairing old Broadway, from One Hundred and Thirty-third to One Hundred and Forty-fourth street.  
 Repairing Inwood lane, from Kingsbridge road to Hudson river.  
 Repairing Break Neck hill, from Eighth avenue to Hudson river.  
 Repairing One Hundred and Twenty-fourth street, from Seventh avenue to Avenue St. Nicholas.  
 Repairing One Hundred and Twenty-eighth street, from Sixth to Eighth avenue.  
 Repairing One Hundred and Fifty-first street, from Tenth avenue to Boulevard.  
 Repairing One Hundred and Fifty-second street, from Boulevard to Hudson river.  
 Repairing One Hundred and Fifty-eighth street, between Tenth avenue and Hudson river.  
 Building, repairing and cleaning culverts and drains on the following streets, avenues and roads: Kingsbridge road, from One Hundred and Fifty-fourth street and Kingsbridge.  
 Eighth avenue, from One Hundred and Twenty-fifth street to McComb's Dam.  
 One Hundred and Forty-third and One Hundred and Forty-fourth streets, from Eighth avenue up Break Neck hill to One Hundred and Forty-fifth street.  
 Repairing the curb and gutter stones on One Hundred and Fifty-second street, between Boulevard and Hudson river.

The following is the amount appropriated for roads, avenues and sprinkling for 1877..... \$20,000 00  
 Amount expended for the first and second quarter..... 11,503 54

Balance unexpended July 2, 1877..... \$8,496 46

Expenditures for quarter ending September 29th:—

Pay roll of laborers, etc., for two weeks ending June 30th..... \$747 40  
 " " " " " " July 14th..... 654 20  
 " " " " " " July 31st..... 755 40  
 " " " " " " August 15th..... 684 30  
 " " " " " " August 31st..... 732 40  
 " " " " " " September 15th..... 614 85  
 William McDonald, limestone chips..... 900 00  
 P. Daly, repairing tools, etc..... 107 79  
 C. E. Gates & Co., lumber and spikes..... 72 30  
 \$5,268 64

Balance unexpended October 1, 1877..... \$3,227 82

Traveling expenses of James J. Mooney, Superintendent of streets, paid from Contingencies, Department of Public Works..... \$62 50

Respectfully,  
 JAMES J. MOONEY,  
 Superintendent of Streets.

DEPARTMENT OF PUBLIC WORKS,  
 BUREAU OF LAMPS AND GAS,  
 NEW YORK, October 5, 1877.

Hon. ALLAN CAMPBELL, Commissioner of Public Works:

SIR—In accordance with the provisions of section 27, chapter 335, of the Laws of 1873 (the City Charter), I submit the following report of the transactions of "The Bureau of Lamps and Gas" for the three months ending September 30, 1877:

In Exhibit "A" will be found an abstract of all vouchers certified by me during the quarter. Exhibit "B" is a statement showing the various amounts expended for gas to the several public markets, offices, etc., and for fitting up, repairing, and lighting the public lamps, etc. Exhibit "C" is a summary of the appropriation for "Lamps and Gas," for 1877, showing an expenditure during the quarter of one hundred and forty-nine thousand six hundred and thirty dollars and eighty-six cents (\$149,630.86), and, for the nine months, of four hundred and forty-two thousand seven hundred and fifty-eight dollars and seventy-seven cents (\$442,758.77), with liabilities for lighting the public lamps, month of September, amounting to forty-six thousand and seven dollars and twenty-four cents (\$46,007.24); also transfers by the "Board of Apportionment," to various other appropriations, of eighty-three thousand nine hundred and four dollars and five cents (\$83,904.05), leaving an available balance for the ensuing three months of one hundred and fifty-two thousand three hundred and twenty-nine dollars and ninety-four cents (\$152,329.94). Exhibit "D" is a summary of the "Lamp Account," and shows the number of New lamps lighted, old lamps relighted, and lamps discontinued by each gas company during the quarter, and the total number of lamps burning September 30, 1877, under the supervision of this Department, to be twenty thousand seven hundred and eighty-seven, there being an increase during the quarter of one hundred and eighty-one; this includes the new lamps erected at Riverdale, on the public piers, and on portions of new streets in the upper sections of the city. In Exhibit "E" will be found a statement showing the illuminating power of the gas supplied by the New York, Manhattan, and New York Mutual Gas-light Companies. It will be seen by this statement that the gas furnished by each company has exceeded the limit required by their contracts, which is sixteen candles. The figures therein shown are taken from

the weekly reports of the "Gas Examiner," and give the lowest, highest, and average illuminating power during each week, the examinations being made daily. As the making of these tests was commenced during the present quarter, I give the following report for the week ending September 29, in order to show the form in which the reports are made:

Report of Photometrical Examinations of Illuminating Gas, for the week ending September 29, 1877, made at the Photometrical Room of the Department of Public Works, southeast corner Grand and Centre streets.

DATE.	TIME.	Thermometer.	Barometer.	GAS COMPANY.	BURNER.	Pressure at Point of Ignition.	Consumption of Gas, Rate per hour.	Consumption of Candle, Grs. per hour.	ILLUMINATING POWER.	
									Observed.	Corrected.
1877.		DEG.				INCH.				
Sept. 24	11 A.M.	69	30.28	New York.....	{Sugg-Letheby, 15 holes.....}	.05	4.95	120.0	15.88	16.04
" 25	11 A.M.	70	30.26	" .....	" .....	.05	4.97	117.0	16.64	16.32
" 26	10 A.M.	71.5	30.23	" .....	" .....	.05	5.00	120.0	16.36	16.36
" 27	11 A.M.	73	30.22	" .....	" .....	.05	5.03	117.0	16.96	16.43
" 28	11 A.M.	75	30.24	" .....	" .....	.05	5.03	118.2	16.76	16.41
" 29	9 A.M.	76	30.16	" .....	" .....	.05	5.04	120.0	17.04	16.90
									Average.	16.41
" 24	10 A.M.	67.5	30.28	Manhattan.....	" .....	.05	5.00	121.2	16.56	16.72
" 25	10.30 A.M.	69.5	30.26	" .....	" .....	.05	5.00	118.8	17.36	17.18
" 26	12 M.	72	30.23	" .....	" .....	.05	5.00	124.2	17.08	17.67
" 27	10.30 A.M.	73	30.22	" .....	" .....	.05	4.90	123.6	16.52	17.36
" 28	11.30 A.M.	75	30.24	" .....	" .....	.05	4.97	121.8	17.64	18.01
" 29	9.30 A.M.	76	30.16	" .....	" .....	.05	4.98	120.0	17.60	17.67
									Average.	17.43
" 24	12 M.	69	30.28	N. Y. Mutual..	" .....	.05	4.21	122.4	15.36	18.60
" 25	9.30 A.M.	69	30.26	" .....	" .....	.05	4.16	123.6	15.20	18.81
" 26	12.30 P.M.	72	30.23	" .....	" .....	.05	4.26	121.2	16.31	19.32
" 27	10 A.M.	72.5	30.22	" .....	" .....	.05	4.22	124.2	15.48	18.97
" 28	12 M.	75	30.24	" .....	" .....	.05	4.18	118.8	15.92	18.85
" 29	8.30 A.M.	75.5	30.16	" .....	" .....	.05	4.08	121.2	14.84	18.35
									Average.	18.81

During the past month the painting of all the lamp-posts and lanterns has been completed by the several gas companies in accordance with their contracts. This work will be quite advantageous to the city, inasmuch as the iron posts and the tin work of the lanterns will be preserved by the paint, while all the public lamps present a neat and cleanly appearance, and an increased amount of light is obtained by the whiteness of the inside of the lantern. This has all been effected with but trifling expense to the city, while, in former years it has been a source of extravagant and useless waste of the public moneys, inasmuch as what little work was done, was effected in a very inferior and unworkmanlike manner. I deem it due to the New York and Manhattan companies to publicly state that in painting the lamps in their districts, they have done more than the contracts required, as all the large ornamental lamp-posts with clusters of lamps were painted in a very neat and ornamental manner, instead of the plain color required for the ordinary posts.

On the tenth of July a contract for erecting and lighting, not to exceed seventy-five lamps at Riverdale, in the Twenty-fourth Ward, was awarded by the "Gas Commission" to the Yonkers Gas-light Company, at the rate of fifteen dollars and forty-five cents for lighting each lamp for the five and one half months ending December 31st next. On July 21st, the contract was duly executed, and on the 27th seventy-one lamps had been erected and lighted, and, as a consequence, this beautiful suburb now presents after nightfall a safer and more cheerful appearance. In locating these lamps I did not follow the rule adopted in the city proper, that is to say, of placing the lamps at regular distances of about one hundred feet apart, but rather selected locations, irrespective of distance, where the light would show to the best advantage. This was necessary in consequence of the limited number of lamps allotted, and my desire to benefit as far as possible all sections of the place. The length of the streets on which the lamps are placed is two and three quarter miles, the shortest distance between lamps is 115 feet, and the longest 420 feet, while the average distance is about 200 feet. There is left on Riverdale avenue, south of Mount St. Vincent, a vacant space of about 4,000 feet on which, I think, about nineteen lamps should be erected, as this appears to be the main thoroughfare to Yonkers, the lamps to be located 200 feet apart.

On August 20, a communication was received from the Department of Docks, in answer to your letter of June 23, stating that said Department would co-operate in the erection of lamp-posts for lighting certain designated piers on the North and East rivers. I accordingly entered at once upon the prosecution of the work, and during the month of September the piers at foot of Harrison street, Franklin street, West Tenth street, Twenty-second street, and Twenty-fourth street, North river; and Thirty-third, Twenty-third and Grand streets, and Pier 24 East river, were properly lighted, as also several bulkheads on both rivers. It is found that the work, as far as progressed, has been of much benefit to all persons having occasion to visit the water-front after nightfall and the improvement has received general approbation. There are still left many dark and somewhat dangerous spots on both rivers, where the presence of gas-lamps will be of service towards the prevention of crime and perhaps the saving of human life, and I have consequently made a note of these places and arranged for the erection of lamps. In lighting the above mentioned piers I have used, where practicable, an iron lamp-post of the ordinary pattern, but with a flange four inches in width on the bottom of the base, and this is secured to the deck by four five-eighth bolts; where these posts would not be deemed safe, in consequence of the danger of their being broken by the concussion of heavily laden vehicles, wooden pile butts have been used of twelve-inch diameter and four feet in height above the deck, and on this is mounted an appropriate and somewhat ornamental iron column, about five feet six inches in height, and containing the lantern; an inch groove cut lengthwise of the pile contains the stand-pipe for the gas, vulcanized rubber-coated pipe was exclusively used, as the ordinary wrought-iron pipe would be too liable to corrosion in consequence of its exposure to the moisture of the salt water.

Mrs. John Jacob Astor, having requested and obtained your permission to erect, at her own expense, several "drinking fountains" in various localities throughout the city for the benefit of the thirsty wayfarer, I deem it proper to place upon public record those which, in part, come under the care of this Bureau, inasmuch as they are fountains and lamps combined. One of these is located at the intersection of Astor place with Clinton place, opposite the Mercantile Library building, and the other on Thirty-second street, between Broadway and Sixth avenue, opposite the Union Time Savings Bank, two locations previously lighted by the ordinary street lamp. The new lamps are of a neat and ornamental character, and I think that the lady is entitled to credit for her thoughtful and generous regard for the comfort of the people.

In report of June 30, I stated that rooms had been procured in the building known as "Odd Fellows Hall," situated on the southeasterly corner of Grand and Centre streets, and that suitable apparatus was then being fitted up and adjusted for the purpose of testing the gas supplied by the several gas companies doing business in the lower section of the city, and also the burners furnished to the public street-lamps; this expenditure being incurred in compliance with a resolution of the Common Council ordering the same to be done. The necessity of having such apparatus in this city has been often seen in consequence of frequent criticisms by the public press and complaints from the people in regard to the quality of the gas. It was also a necessity because our contracts require that the gas supplied to the public lamps shall be of an illuminating power of not less than sixteen candles when tested by a photometer at a distance of not less than one mile from the place of manufacture, and, as regards its purity, shall be free, within limits, from all ingredients injurious to health or capable of deteriorating its illuminating power. In the absence, however, of proper apparatus, the city authorities have labored under the disadvantage of having no means of ascertaining the quality of the gas or how free it might be from noxious compounds. Since the first discovery of gas as an artificial light frequent improvements have been made in its manufacture for the purpose of increasing its illuminating power, freeing it from impurities, and economizing its production; and it has become a necessity to all well-regulated communities. In fact its whole history furnishes many examples of the progress with which domestic illumination has advanced. At first the only lights in the public highways were those used by the cautious citizen who deemed it prudent to make his nocturnal visit under the protection of a flambeau or a lantern, or the lamp hanging from the house front. In

modern times, however, a wonderful change has been effected by the use of gas in the whole system of artificial illumination, and it has also produced an equally important change in the domestic concerns of the people. It has economized industry, developed the arts, protected property, diminished crime, and operated in various ways as a medium of wealth, prosperity, and social improvement. Notwithstanding all this it has been a frequent source of discussion between the gas companies and the public in all places where it is used.

To solve the question as to what constitutes a proper quality of gas for this city, rooms have been procured and fitted up, as before stated; and as perhaps but comparatively few of our citizens have any conception of the method by which the tests are made, it may not be out of place to give a description of the means employed for the purpose; and in order for a proper understanding of the apparatus and its workings, a reference is here made to the science of

#### PHOTOMETRY.

This is the art whereby the relative illuminating power of artificial light is determined. Practical Photometry depends, firstly, on the sensibility of the visual organs and on the mental power to judge, under favorable conditions, respecting the equal illumination of any object; and secondly, on the law that the degree to which an object is illuminated is inversely proportionate to the square of the distance of the object from the source of light.

Many photometers have been invented, but those only which are based on Bunsen's method have been generally employed. Bunsen invented a screen or disc of paper greased over part of its surface, so as to render it unequally translucent. This disc was supported or held in an upright position, and the lights to be compared were placed one on each side of the disc, in such manner that a straight line, if extended from light to light, would pass through the centre of the disc at right angles to its surface, and also through each flame midway between its apex and base. The weaker light was then moved towards the disc until the disc became equally illuminated on each side, and, as a consequence, the inequality in the translucency of its parts became invisible, or nearly so. The distance from the disc to the centre of each light was then measured and squared, and the quotient which resulted from the division of one of the squares by the other gave the relative illuminating power of the flame. Improvements have been made from time to time on Bunsen's method for the purpose of rendering the comparison of artificial light as facile and exact an operation as possible. Probably the most obvious of these consist in the employment of a graduated bar of specific length, the fixing of the lights at its ends, and the attachment of the disc to a slide resting upon and free to move along the bar between the lights. The graduations on the bar indicate, on inspection, the value of the stronger light in multiples of the weaker, thereby saving trouble and also preventing the possibility of errors, which might, in the absence of such graduations, arise from inaccuracy in measurement and in calculations. The fixing of the lights conduces to regularity of combustion, which is liable to be disturbed by motion. Other and possibly not less important improvements have been introduced by William W. Goodwin, of Philadelphia, the value of which will be understood from the description hereinafter given of the apparatus procured from him for the use of the Department of Public Works of this city.

Photometry is practiced for several purposes, viz.: to ascertain the relative value of the various substances used in artificial illumination and the most advantageous method of burning them; as a means of selecting burners which are best adapted for the perfect combustion of illuminating gases, and as an aid to the improvement of burners themselves, etc. But the purpose for which it is most extensively practiced is to discover whether the gas supplied by gas companies possesses such an illuminating value as the public have a right to expect, and the requisite candle-power usually fixed in the contracts between the companies and municipalities; and it is for this purpose that a complete laboratory and photometry-room have been fitted up in "Odd Fellows Hall," before mentioned. At this place daily tests are made of the different gases furnished to the lower section of the city. These tests cover those for photometry, impurities (such as sulphur, ammonia, carbonic acid, carbonic oxide, bisulphide of carbon), and for density and specific gravity. In the photometry-room has been placed a 60-inch bar photometer, constructed upon the Bunsen principle before referred to, with various improvements suggested by Dr. Letheby and Mr. Sugg (of England), with the more recent ones of Mr. Goodwin, of Philadelphia. These consist of a delicate candle-balance placed so that the candle can be weighed "in situ," thus dispensing with any necessity for handling the candle, always more or less a source of error; also an electro-magnetic attachment for instantaneously stopping clock and meter and extinguishing gas and candle when normal quantity of gas or sperm has been consumed, on expiration of time for which the instrument may be set. In addition to the scale and electrical attachments, sight-box, candle-balance, micrometer cock with its standard burner, the instrument is furnished with a delicate governor for regulating the pressure to any degree, from the highest point furnished by the gas companies down to the lowest minimum at which gas will burn to advantage, an arched pressure gauge for indicating the same, and a test meter for recording the exact quantity of gas consumed during the test. This meter is so constructed that it will register one-twelfth of a cubic foot in one revolution of the measuring-drum, because one-twelfth of a cubic foot per minute will be equal to five cubic feet per hour, the standard quantity. The dial of the meter is arranged for ascertaining the number of revolutions which the meter has made during the time occupied in performing an experiment. In order that the water-line of the meter may be always known, and, if necessary, easily corrected, a water-gauge is attached with the true water-line marked thereon. Lubricators are also fitted to the front and back bearings of the shaft of the measuring-drum, for the instrument is only correct when the working friction is the same as at the time it was proved. In the body of the movement there is also placed a clock which will accurately define one minute, and provided with an arrangement for starting and stopping instantly. This is required in order to ascertain the rate of the consumption, not only of the gas but also of the candle, as it would be quite difficult to correctly ascertain the exact consumption of one or two candles and observe the illuminating power of the gas in one minute, hence a certain number of minutes should be taken, so that a proper average of the consumption of the candle may be arrived at. Practice has shown that the best experiments are usually performed in ten minutes, therefore the clock has, in addition to the minute hand, an arrangement for showing how many minutes have elapsed from the commencement to the end of an experiment.

It is claimed that this is the most complete instrument ever invented for photometrical purposes, and the accuracy and facility with which our daily experiments have thus far been made, prove beyond question that the claim is well founded.

In order to insure absolute accuracy there is also attached to the photometer a "standard cubic foot" so arranged that one cubic foot of gas can be passed through the meter under any pressure required, there being a pressure gauge attached to indicate the same at any moment; also a thermometer so arranged within a glass tube that the gas, in passing from the cubic foot to the test meter must flow around the thermometer, the temperature of which can be readily observed. This cubic foot is a duplicate of the one furnished to the U. S. Government Inspector for the District of Columbia. Its capacity is 62 321-1000 lbs. of distilled water at a temperature of 62 degrees, Fahr., and with the barometer at 30 inches. It is so constructed that it can readily be detached from the photometer and suspended within a copper tank so arranged that "provers" (the instrument used for testing consumers' meters) can also be tested for their accuracy. Finally the photometer is furnished with a full set of "Sugg's improved standard burners," capable of testing gas as low as ten candles and as high as thirty candles; the usual standard in this country is from sixteen to eighteen candles, although there are companies furnishing gas of from eighteen to twenty-two candles. The standard burner is so constructed that the quantity of gas it is made to consume per hour shall be permitted to arrive at the point of ignition by an easy and regular flow, without eddies, and at such a velocity that after passing through the hole or other aperture in the top, the particles of carbon contained in the gas shall not be forced out at the top of the chimney until the atmosphere shall have had time to raise them to a sufficiently high state of incandescence, both to render them luminous to the fullest degree and thoroughly consume them.

The sizes of standard burners, are as follows:

#### For 16-Candle Gas.

External diameter, 1.10 inches across the top.  
Centre aperture, 0.55.  
Diameter of holes, 0.66.  
Chimney, 7 inches long; internal diameter, 1 7-8 inches; steatite top, 15 holes, perforated regulator for air.

#### For 18-Candle Gas.

External diameter, 1.10 inches across top.  
Centre aperture, 0.60.  
Diameter of holes, 0.66.  
Chimney, 7 inches long; internal diameter, 1 7-8 inches; steatite top, 15 holes, perforated regulator for air.

For gases of higher or lower illuminating power the number of holes, central aperture, outside diameter of burner, and length and diameter of chimney are varied to suit the gas; this is absolutely necessary for securing the best results from the gas.

The foregoing described apparatus is placed on a properly constructed table, in a room so arranged as to insure a nearly uniform temperature, well ventilated and free from draughts. The walls, ceiling and floor, are painted a deep dull black, and windows so darkened that not a ray of natural light can enter. Pipes connecting with the mains of the several gas companies are so

arranged that, by turning a cock, gas from either company can be introduced to the photometer as may be desired.

In the experiments for illuminating power, the following points are observed:

The gas supplied by each gas company is tested daily.

The disc of the photometer is carefully noticed, to see that the paper is perfectly smooth.

The chimney is kept perfectly clean.

The candles are such as are described in the "London Gas Act," of 1860, namely, sperm candles of six to the pound, each burning at the rate of 120 grains per hour.

Two candles are used together, one whole candle being cut in the middle, and each piece burned from the centre toward the ends.

The burner used is the Sugg-Letheby Standard, with 15 holes, and chimney 7 inches long by 1 7-8 inches diameter.

The quantity of gas burned is regulated to 5 cubic feet per hour, when possible. With the Mutual gas, however, this cannot be done; in which case the gas is pushed to the verge of smoking.

The gas is allowed to burn continuously for 15 minutes before the testings begin, and the candles are allowed to attain their normal condition, namely, a bent wick with glowing tip, and an even and dry cup.

In no case is the gas or candle interfered with during the testings.

Each testing includes ten observations made at intervals of one minute.

No test is considered satisfactory if the gas or candle consumption varies greatly from the normal quantity.

The candles are carefully weighed before and after each set of observations, and if the rate of consumption should be more or less than 120 grains per hour, the necessary correction is made.

Correction is also made for the gas consumption when the ratio is more or less than 5 feet per hour.

The meter clocks are tested once in each week, and the meters once a month.

The height of the barometer and the temperature of the gas is observed at the testings.

#### Pressure.

As the pressure under which gas is burned has much to do with the quantity consumed and its illuminating power, and as the contracts of the gas companies require that the burners supplied to the public lamps shall be of a capacity to burn, and shall burn three cubic feet per hour under a pressure of one inch of water, instruments for accurately recording the variations of pressure on the mains of the several companies have been placed in the photometer-rooms. These are called Pressure Registers, and they are so constructed that any variation of pressure will raise or lower a float or holder placed within a tank. From the top of the holder a rod extends upward to a vertical drum, around which is coiled a ruled paper divided by twenty-four vertical lines, one for each hour, and horizontal lines 1-10 of an inch apart for the pressure. The drum is made to revolve once in twenty-four hours, by a clock placed above it, and properly connected for that purpose. On the top of the rod extending from the drum is placed a lead-pencil pressing with a light spring against, and marking the ruled paper; thus a sudden pressure being communicated to the holder, and withdrawn immediately, the rod with the pencil will rise and descend, thereby marking a vertical line; but, if the pressure should be continuous for any protracted period, the line will be indicated by the length of the horizontal line in relation to the vertical line. The importance of noting the pressure at which gas is furnished may be seen, when it is stated that an increase of four times the pressure will double the discharge, and vice versa; for instance, if gas is furnished to a burner consuming, say five feet per hour, at a pressure of two inches, and, if from any cause the pressure should be reduced to one half inch, then the consumption would be reduced to two and one half feet. The illuminating power is also greatly influenced by the pressure and quantity consumed. For instance, if a burner consuming five feet of gas per hour under one-tenth of an inch pressure, should give a light equal to twelve candles, and the orifice be so restricted that a pressure of 10-10 would be required to pass five feet in the same time, then the light would be but 2 1/2 candles, and if restricted so that 40-10 would be necessary to pass five feet in the same time, then the light would practically be reduced to nil. Again, if, say, gas passing through a burner at the rate of five feet per hour, should give a light equal to fifteen candles, and the quantity should be reduced to two and one half feet per hour (just one half), then the illuminating power would be but three candles. It can, therefore, be readily seen that pressure and quantity of gas consumed in a given time are important factors in the proper consumption of gas.

The following statement will show the average maximum and minimum pressure of the several gas companies, at Grand and Centre streets, as indicated by the pressure registers in the photometer-room:

GAS COMPANY.	AVERAGE MAXIMUM PRESSURE.	AVERAGE MINIMUM PRESSURE.	DISTANCE FROM GAS-WORKS.
New York Gas-light Co.....	1.6 inches.	1.4 inches.	2 4-100 miles.
Manhattan Gas-light Co.....	2.6 "	1.1 "	1 83-100 "
New York Mutual Gas-light Co.....	2.9 "	1.2 "	1 79-100 "

The above is the average pressure during the twenty-four hours, at the point mentioned, the highest being the night, and the lowest the day pressure. It will be seen that there is but slight variation in the pressure of the New York Company, which, I presume, is caused by the fact that this company has a very large day consumption, which compels a nearly uniform pressure at their works. The night pressure of the Manhattan and Mutual Companies, as will be seen, is largely in excess of day pressure, in consequence of their gas being mostly required during the night, hence the pressure must be graduated hourly according to the amount of gas presumed to be required. The pressure shown at the photometer-room gives no indication of what it may be in different sections of the city, which, of course, will vary, more or less, according to the distance the gas is to be sent, and also in consequence of the unevenness of the ground. In order to maintain a pressure at the extremities of a district, and on the low-lands, sufficient to provide an adequate supply of gas, an excessive pressure must be produced on the high-lands and intermediate points. The importance of maintaining a nearly uniform pressure throughout a gas district, is well understood by all gas-engineers, but how to do so is a problem they have not yet been able to solve.

It is essential, from time to time, that the pressure existing at certain portions of a district should be known, and, hence, some half dozen points are selected for the purpose, consisting of both high and low grounds. Inspectors are then detailed for these points and provided with a small pressure gauge, which is placed on a street lamp-post; the gauge is then examined every half hour or hour, and the pressure noted. This is an inconvenient method, as the inspectors are required to travel from point to point and note the pressure on the gauge; therefore, to obviate much trouble and simplify the work, I suggested to Mr. Goodwin the possibility of devising, if possible, a Portable Pressure Register, convenient and simple in form, and small enough to be placed inside of a lantern on our city lamp-posts, and capable of registering a pressure of four inches. This he has succeeded in doing, and one has been forwarded to me and is now on exhibition in this office. It is compact and convenient, and seems to admirably answer the desired purpose, and I have no doubt but that it will be appreciated by all gas companies or other parties having occasion to know the pressure existing in different sections of a city; as, by this instrument, the pressure is automatically registered during the entire twenty-four hours.

#### IMPURITIES.

As sulphur and ammonia are impurities constantly found in gas, and should be removed as far as possible in its manufacture, it is necessary to have certain forms of apparatus to determine the presence of these impurities, and the quantity remaining in the gas as furnished for consumption. It may be observed, concerning the purity of gas, that it can be considered and pronounced commercially pure, and, in the ordinary sense of the term, free from all noxious elements, when after a lengthened exposure to the usual tests for carbonic acid, ammonia, and sulphuretted hydrogen, no indications of these impurities exist. When burned in that state it is less injurious, in a sanitary point of view, than either oils, tallow, or wax. With reference to the maximum quantity of impurity in each form with which gas may be allowed to be charged, it should not exceed the following:

**Sulphuretted Hydrogen**—All gas should be wholly free from this impurity.

**Ammonia**—The maximum amount of this impurity should not exceed 5 grains in 100 cubic feet of gas, although the Metropolitan Gas Referees of London fix the limit at 2 1/2 grains.

**Sulphur compounds**, other than sulphuretted hydrogen.

The maximum amount of sulphur allowable should not exceed 20 grains per 100 feet.

From the preceding it can be readily understood with what extreme delicacy the modern method of testing gas is observed.

The tests usually applied for ascertaining the purity of gas are, for ammonia, turmeric, or reddened litmus paper and hydrochloric acid; for sulphuretted hydrogen, acetate of lead paper, and for carbonic acid, lime water. For the purpose of properly detecting these impurities instruments have been placed in the Laboratory called sulphur and ammonia test burners. It consists of a cup, constructed with a mercury seal, in which is placed a glass receiver; the gas enters from the bottom of the cup and passes through the receiver to an exit tube at the top, fitted with a small burner, at which the gas is kept constantly burning. Acetate of lead and turmeric papers are suspended over the orifice through which the gas enters, and show at once by their discoloration the presence of either sulphuretted hydrogen or ammonia. This test, however, merely shows the presence of the impurities, but give little or no indication as to the quantity. To ascertain the amount of sulphur contained in a given volume of gas, a very different apparatus is required. Having first determined the presence of ammonia, it is then essential to arrive at the quantity, and for this the following apparatus is used. A test meter so arranged as to show any consumption from .001 to 100 cubic feet, the meter being fitted with a double dry governor; an ammonia tube, filled with beads, called a saturator; a deci-gallon measure, viz.: 7,000 grains; burettes holding 700 grains, divided into 100 parts; pipettes, graduated to contain 700, 350, 140, 70 and 35 grains. With the aid of this apparatus a standard solution of acid is made, of which say 70 grains will saturate or neutralize 1 grain of ammonia. If the saturator is charged with 140 grains of the standard solution, and then ten cubic feet of gas is passed through the same, and it is found that the standard solution with which the saturator was charged will neutralize but 1½ grains of ammonia, it is evident that the reduction of its neutralizing power must be caused by the ammonia in the ten feet of gas passed through it, which would equal 5 grains in 100 cubic feet.

For the determination of sulphur two kinds of apparatus are generally used, one known as Dr. Letheby's, and the other as the Referee's. The first consists of a test meter with double dry governor—same as used for ammonia, a glass cylinder about 13 inches long and 4½ inches in diameter, one end of which is fitted to a bent funnel or trumpet tube, so arranged as to cover a "Leslie" gas-burner; through the centre of the burner there passes a funnel, the larger end of which is placed over a beaker containing a strong solution of ammonia, from the other end of the glass cylinder there extends a glass tube of about ¾ inch diameter and from three to four feet long, all of which is supported upon a wooden stand. The other, or the Referee's, consists of a glass bubbling jar, filled with marbles for condensing surface, to which is attached a trumpet tube, covering a burner, around which is placed lumps of carbonate of ammonia; from the jar there passes a tube for carrying off the carbonic acid gas; the condensation falls into the beaker, and is there treated in the same manner as with the Letheby apparatus. This apparatus is fixed in a room capable of being kept at a temperature not lower than 60 degrees Fahrenheit, free from the sulphur disengaged from fires or gas burning in the room, and well ventilated, so that no draught of air can affect the flame or the apparatus. The chemical reaction, upon which the analysis for sulphur depends, is as follows:

Gas contains hydrogen, carbon, and sulphur, which, in the process of combustion, combine with the oxygen of the atmosphere, and form water, carbonic acid and sulphurous acid; the last being speedily oxidized, more or less completely, into sulphuric acid; ammonia being present—in the beaker referred to—the acids unite with it, ammoniac carbonate and sulphate being formed, which are thrown down in a solution with the condensed water of combustion, condensed on the surface of the glass cylinder and tube. A certain portion of this water of condensation is then treated with hydrochloric acid to render the same acid; to this solution is then added a solution of baric chloride, after which it is boiled for a few minutes, or until no further additional milkiness is produced in the liquid; a white precipitate will then fall and leave the liquid quite clear. The liquid is then filtered and the powder thoroughly washed; the powder and the filter are then placed in a platinum crucible, the weight of which has been accurately determined in a sensitive balance. The crucible and contents are then heated in the flame of a "Bunsen" burner, the effect of which will be to consume the filter. When the crucible is cold, it is reweighed, and the difference between this weight and that previously recorded will be the weight of the powder contained therein, which is baric sulphate, and from this can readily be determined the amount of sulphur contained in the gas. The scale used in weighing the baric sulphate is sensitive to the one-thousandth of a grain, and it is placed within a glass case for protection against draughts of air, dust, etc. The following table will show the amount of sulphur and ammonia found in the gases of the New York, Manhattan, and New York Mutual Gaslight companies:

GAS COMPANY.	SULPHURETTED HYDROGEN.	SULPHUR. (Grs. in 100 cu. ft.)	AMMONIA. (Grs. in 100 cu. ft.)
New York Gas Co.	None.	42.72	1.33
Manhattan Gas Co.	None.	23.04	2.71
New York Mutual Gas Co.	None.	12.52	1.20

The above results were obtained by the Referee's apparatus, and the amount of gas burned was 10 cubic feet, the volume being corrected to the standard barometric pressure of 30 inches of mercury and the temperature of 60 degrees Fahr.

In connection with the apparatus already described, there is an instrument, designed by W. W. Goodwin, for the determination of the density and specific gravity of gas by what is known as the effusion method as first introduced by Prof. Bunsen. By this instrument the specific gravity of gas can be determined with great accuracy in a very few minutes. This method is based on the fact that the specific gravity of two gases which stream out of a fine opening in a thin plate are very nearly proportionate to the square of the time of effusion; for instance, if a given volume of gas flowed through the orifice in 90 seconds and the same volume of air required 139 seconds, then by dividing the square of the gas time by the square of the air time, the specific gravity would be shown, as follows:

$$\text{Gas time, } 90^2 = 8100 \\ \text{Air time, } 139^2 = 19321 = 419 \text{ specific gravity.}$$

The following is the specific gravity of the gas tested at the Photometrical rooms of this Department:

New York Gas,	specific gravity, .469; illuminating power	16.08
Manhattan Gas,	“ .468; “	17.87
N. Y. Mutual Gas,	“ .691; “	20.09

Assuming that gas is pure, its specific gravity is about as follows:

16 candle gas.	455
17 “	468
18 “	482
19 “	495
20 “	508

The tests for the specific gravity of gas in comparison to its illuminating power, however, cannot be relied on, because coal gas is a compound of a variable mixture of gases, having, in some instances, similar specific gravities but very different powers of illumination. Thus olefiant and carbonic oxide are both contained in coal gas and possess about the same specific gravity, but the first is one of the most powerful agents used in the production of light, whilst for this purpose the last is absolutely useless. Again, the presence of either sulphur, ammonia, carbonic acid, or atmospheric air will increase the specific gravity and at the same time reduce the illuminating power.

The Photometer room has also been provided with a five-foot meter prover, with a connection for the pipes of either gas company, and, by this, meters can be tested, if necessary. Also, with suitable test-meters for determining the consumption of gas by different kinds of burners, by observations of one minute, under any degree of pressure.

During the past month a suite of two rooms has been procured in Seventy-ninth street, and the apparatus for the same is now in course of manufacture. It is expected that this place will be in operation within the next two weeks, and then the gases of the Harlem and Metropolitan companies can also be examined.

The apparatus having been fitted up, it then became necessary to obtain the services of a competent person for the making of the different tests, and in order that equal and exact justice should be done as between the gas companies and the people, it was essential that the person so employed should have no interest, direct or indirect, in any of the gas companies of this city, and also be entirely free from bias. In addition to his knowledge of the use of the photometer, he should understand the nature of illuminating gases and be familiar with the practice of chemistry. These requirements, I believe, have been met by the employment of Mr. Edward G. Love, of the School of Mines of Columbia College, he having had much experience with one of the most eminent chemists of this country.

With the facilities afforded by the foregoing enumerated apparatus, and the completion of the rooms in Seventy-ninth street, the Department of Public Works will be in a position to thoroughly test and settle all questions that may arise as to the illuminating power and purity of the gas supplied by the several gas companies of this city, and it is confidently believed that no public office in this or any other country will be better fitted for the inspection of gas.

All of which is respectfully submitted.

S. McCORMICK,  
Superintendent of Lamps and Gas.

## EXHIBIT "A."

Abstract of Vouchers certified by the Superintendent of Lamps and Gas on account of the Appropriation for Lamps and Gas, etc., for the Quarter ending September 30, 1877.

DATE OF VOUCHER.	NO. OF VOUCHER.	IN WHOSE FAVOR.	FOR WHAT PURPOSE.	AMOUNT.
1877.				
July 2	363	Central Gas-light Co.	Lighting public lamps, month of June.	\$5,664 00
" 2	364	Central Gas-light Co.	Lighting public lamps, month of June.	958 70
" 2	365	Suburban Gas-light Co.	Lighting public lamps, month of June.	3,883 33
" 2	366	Suburban Gas-light Co.	Lighting public lamps, month of June.	146 71
June 30	367	New York Gas-light Co.	Lighting public lamps, month of June.	4,565 74
" 30	368	Manhattan Gas-light Co.	Lighting public lamps, month of June.	9,770 17
" 30	369	New York Mutual Gas-light Co.	Lighting public lamps, month of June.	1,471 22
" 30	370	Harlem Gas-light Co.	Lighting public lamps, month of June.	5,867 98
" 30	371	N. Y. and N. J. Globe Gas-light Co.	Lighting public lamps, month of June.	4,685 05
" 15	372	William J. Nash.	Tin pipe, etc., for Photometrical Rooms.	13 30
" 26	373	James Daly.	Paint, etc., for Photometrical Rooms.	8 80
" 30	374	John Matthews.	1,367 glass street signs.	273 40
July 17	375	John H. O'Donnell.	50 lamp-posts.	500 00
" 13	376	Keuffel & Esler.	1 roll mounted paper.	12 80
" 14	377	Michael Smith.	Gas-fitting, etc., for Photometrical Rooms.	269 37
June 27	378	Henry Wallace.	Carpenter work for Photometrical Rooms.	65 13
" 30	379	Eimer & Amend.	Chemicals, etc., for Photometrical Rooms.	45 55
July 18	380	E. P. Gleason Manufacturing Co.	75 street lamps.	217 50
" 18	381	J. L. Mott Iron Works.	75 lamp-posts, for Twenty-fourth Ward.	712 50
" 18	382	J. L. Mott Iron Works.	75 lamp-irons, for Twenty-fourth Ward.	75 00
" 31	383	Pay-roll.	Inspectors, month of July.	400 00
" 31	384	Pay-roll.	Lighters of Public Markets, month of July.	95 00
" 31	385	William W. Goodwin & Co.	Photometrical apparatus, etc.	676 00
" 14	386	William W. Goodwin & Co.	Pressure registers, etc.	928 00
" 27	387	William W. Goodwin & Co.	Experimental gas-burners.	40 50
" 31	388	J. W. Bartlett.	75 Boulevard lamp-globes.	150 00
" 31	389	New York Mutual Gas-light Co.	Lighting public lamps, month of July.	1,448 72
Aug. 1	390	N. Y. and N. J. Globe Gas-light Co.	Lighting public lamps, month of July.	4,638 48
" 1	391	Central Gas-light Co.	Lighting public lamps, month of July.	5,652 00
" 1	392	Central Gas-light Co.	Lighting public lamps, month of July.	293 12
" 1	393	Suburban Gas-light Co.	Lighting public lamps, month of July.	3,883 33
" 1	394	Suburban Gas-light Co.	Lighting public lamps, month of July.	145 21
July 31	395	New York Gas-light Co.	Gas to public markets, etc., month of July.	925 43
" 31	396	Manhattan Gas-light Co.	Gas to public markets, etc., month of July.	523 92
" 31	397	Metropolitan Gas-light Co.	Gas to public offices, etc., month of July.	33 50
" 31	398	Harlem Gas-light Co.	Gas to public offices, month of July.	86 35
" 25	399	American Meter Co.	3 boxes experimental candles.	27 00
" 31	400	New York Gas-light Co.	Lighting public lamps, month of July.	4,380 02
" 31	401	Manhattan Gas-light Co.	Lighting public lamps, month of July.	9,091 66
" 31	402	Harlem Gas-light Co.	Lighting public lamps, month of July.	5,871 08
" 31	403	Yonkers Gas-light Co.	Lighting public lamps, month of July.	640 12
Aug. 1	404	New York Sand Blast Works.	2,217 glass street signs.	432 10
" 3	405	J. W. Bartlett.	30 Boulevard lamps, for Twenty-fourth Ward.	90 00
" 4	406	Alexander Brandon.	150 street lamps.	433 50
" 7	407	J. L. Mott Iron Works.	16 lamp-brackets.	24 00
" 7	408	J. L. Mott Iron Works.	50 crossheads and 100 lamp-irons.	170 00
June 30	409	Metropolitan Gas-light Co.	Lighting public lamps, month of June.	9,551 38
July 21	410	Metropolitan Gas-light Co.	Lighting public lamps, month of July.	8,901 65
Aug. 16	411	E. P. Gleason Manufacturing Co.	1,300 glass street signs.	260 00
" 20	412	J. L. Mott Iron Works.	15 lamp-posts for public piers.	150 00
" 31	413	Pay-roll.	Inspectors, month of August.	400 00
" 31	414	Pay-roll.	Lighters of Public Markets, month of August.	95 00
" 22	415	J. W. Bartlett.	150 Boulevard lamp-globes.	300 00
" 25	416	E. P. Gleason Manufacturing Co.	Ornamental lamp.	3 00
" 31	417	J. L. Mott Iron Works.	60 iron bolts.	6 00
Sept. 1	418	Central Gas-light Co.	Lighting public lamps, month of August.	5,640 00
" 1	419	Central Gas-light Co.	Lighting public lamps, month of August.	182 11
" 1	420	Suburban Gas-light Co.	Lighting public lamps, month of August.	3,883 33
" 1	421	Suburban Gas-light Co.	Lighting public lamps, month of August.	145 21
" 1	422	Yonkers Gas-light Co.	Lighting public lamps, month of August.	199 44
Aug. 31	423	New York Gas-light Co.	Gas to public markets, etc., month of August.	841 92
" 31	424	Manhattan Gas-light Co.	Gas to public markets, etc., month of August.	506 64
" 31	425	Harlem Gas-light Co.	Gas to public offices, month of August.	97 80
" 28	426	Brainerd & Foskett.	1 granite base.	40 00
" 28	427	J. L. Mott Iron Works.	50 iron bolts, etc.	6 00
" 28	428	J. L. Mott Iron Works.	30 iron bolts.	3 60
" 31	429	Odd Fellows' Hall Association.	Rent of offices for photometrical tests.	116 07
Sept. 1	430	N. Y. and N. J. Globe Gas-light Co.	Lighting public lamps, month of August.	4,660 14
" 6	431	J. L. Mott Iron Works.	Bolts and washers.	12 00
" 10	432	J. L. Mott Iron Works.	10 lamp-posts.	100 00
" 10	433	J. L. Mott Iron Works.	20 lamp-posts.	200 00
Aug. 31	434	Herman Wuerz.	Map of Metropolitan Gas District.	120 00
" 31	435	New York Gas-light Co.	Lighting public lamps, month of August.	4,214 52
" 31	436	Manhattan Gas-light Co.	Lighting public lamps, month of August.	9,090 44
" 31	437	Metropolitan Gas-light Co.	Lighting public lamps, month of August.	8,929 33
" 31	438	New York Mutual Gas-light Co.	Lighting public lamps, month of August.	1,455 75
" 31	439	Harlem Gas-light Co.	Lighting public lamps, month of August.	6,002 07
" 31	440	Metropolitan Gas-light Co.	Gas to public offices, etc., month of August.	36 75
Sept. 10	441	Pollock & Van Wagenen.	Paints, etc.	2 71
" 15	442	J. L. Mott Iron Works.	20 lamp-posts.	175 00
" 19	443	Francis McEntee.	Setting granite base.	25 00
" 29	444	Pay-roll.	Lighters of Public Markets, month of September.	95 00
" 29	445	Pay-roll.	Inspectors, month of September.	444 00
" 29	446	New York Gas-light Co.	Gas to public markets, etc., month of September.	705 60
" 29	447	Manhattan Gas-light Co.	Gas to public markets, etc., month of September.	458 64
" 29	448	Metropolitan Gas-light Co.	Gas to public offices, etc., month of September.	38 48
" 29	449	Harlem Gas-light Co.	Gas to public offices, etc., month of September.	87 81
" 18	450	E. P. Gleason Manufacturing Co.	100 street lamps.	290 00
" 20	451	J. L. Mott Iron Works.	5 lamp-posts.	50 00
" 20	452	J. L. Mott Iron Works.	25 lamp-post columns.	106 25
" 25	453	J. L. Mott Iron Works.	100 iron bolts, etc.	10 44
" 27	454	J. L. Mott Iron Works.	10 lamp-brackets.	15 00
" 27	455	J. L. Mott Iron Works.	30 lamp-posts.	300 00
" 27	456	J. L. Mott Iron Works.	100 crossheads and 100 lamp-irons.	240 00
" 28	457	J. W. Bartlett.	50 Boulevard lamp-tops.	100 00
" 28	458	J. W. Bartlett.	3 green Boulevard globes.	12 90
Total amount of vouchers drawn for lamps and gas.				\$149,630 86
On Account of Contingencies—Department Public Works.				
Ju'y 2	362	S. McCormick.	Hire of horse and wagon and traveling expenses.	\$62 50

## EXHIBIT "B."

Statement showing the Amounts paid for Gas to the various Public Markets, Offices, etc., and for Fitting up, Repairing, and Lighting the Public Lamps, etc., for the Quarter ending June 30, 1877.

Washington Market.....	\$437 76	
Catharine Country Market.....	22 80	
Catharine Meat.....	21 84	
Fulton Meat.....	141 84	
Fulton Country.....	272 64	
Essex Market.....	158 16	
Centre.....	304 08	
Clinton.....	240 48	
Union.....	35 52	
Tompkins.....	134 16	
Jefferson.....	105 84	
		\$1,875 12
First District Police Court.....	\$108 00	
Second.....	21 60	
Third.....	75 36	
Fourth.....	40 73	
Fifth.....	5 22	
Second District Civil Court.....	12 48	
Fourth.....	1 92	
Fifth.....	4 56	
Sixth.....	1 20	
Eighth.....	4 80	
Marine Court.....	5 04	

HARLEM GAS-LIGHT COMPANY.	
Number of lamps burning June 30, 1877.....	2,016
Number of new lamps lighted during the quarter ending September 30, 1877 ..	45
Number of old lamps relighted during the quarter ending September 30, 1877..	9
	<u>2,070</u>
Less lamps discontinued during the quarter ending September 30, 1877.....	10
Total number of lamps burning September 30, 1877.....	2,060
NEW YORK MUTUAL GAS-LIGHT COMPANY.	
Number of lamps burning June 30, 1877 .....	586
Number of new lamps lighted during the quarter ending September 30, 1877 ..	..
Number of old lamps relighted during the quarter ending September 30, 1877..	..
	<u>586</u>
Less lamps discontinued during the quarter ending September 30, 1877.....	1
Total number of lamps burning September 30, 1877 .....	585
NEW YORK AND NEW JERSEY GLOBE GAS-LIGHT COMPANY.	
Number of lamps burning June 30, 1877.....	2,108
Number of new lamps lighted during the quarter ending September 30, 1877 ..	2
Number of old lamps relighted during the quarter ending September 30, 1877..	..
	<u>2,110</u>
Less lamps discontinued during the quarter ending September 30, 1877.....	..
Total number of lamps burning September 30, 1877.....	2,110
CENTRAL GAS-LIGHT COMPANY.	
Number of lamps burning June 30, 1877 .....	1,587
Number of new lamps lighted during the quarter ending September 30, 1877 ..	7
Number of old lamps relighted during the quarter ending September 30, 1877 ..	..
	<u>1,594</u>
Less lamps discontinued during the quarter ending September 30, 1877.....	9
Total number of lamps burning September 30, 1877 .....	1,585
SUBURBAN GAS-LIGHT COMPANY.	
Number of lamps burning June 30, 1877.....	973
Number of new lamps lighted during the quarter ending September 30, 1877 ..	..
Number of old lamps relighted during the quarter ending September 30, 1877..	..
	<u>973</u>
Less lamps discontinued during the quarter ending September 30, 1877.....	..
Total number of lamps burning September 30, 1877.....	973
YONKERS GAS-LIGHT COMPANY.	
Number of lamps burning June 30, 1877.....	..
Number of new lamps lighted during the quarter ending September 30, 1877 ..	71
Number of old lamps relighted during the quarter ending September 30, 1877..	..
	<u>71</u>
Less lamps discontinued during the quarter ending September 30, 1877.....	..
Total number of lamps burning September 30, 1877 .....	71
Total number of lamps burning September 30, 1877 .....	20,787

*Summary of the Appropriation for Lamps and Gas for 1877, showing the Balance against which no Vouchers have been drawn, with the Amount of Liabilities against the Appropriation, for the Quarter ending September 30, 1877.*

RECAPITULATION.	
Number of lamps burning June 30, 1877.....	20,606
Number of new lamps lighted during the quarter ending September 30, 1877.....	216
Number of old lamps relighted during the quarter ending September 30, 1877.....	14
	<hr/> 230
Less lamps discontinued during the quarter ending September 30, 1877.....	49
Total number of lamps burning September 30, 1877.....	<hr/> 20,787

*Statement giving the Illuminating Power of the Gas supplied by the New York, Manhattan, and New York Mutual Gas-light Companies, as shown by the daily observations made at the Photometrical Room, southeast corner of Grand and Centre streets.*

LIABILITIES.		
New York Gas-light Co., lighting public lamps, month of September		\$4,468 56
Manhattan Gas-light Co.,	"	9,575 92
Metropolitan Gas-light Co.	"	8,844 70
New York Mutual Gas-light Co.,	"	1,446 25
Harlem Gas-light Co.,	"	5,773 59
N. Y. and N. J. Globe Gas-light Co.,	"	4,623 03
Central Gas-light Co.,	"	5,807 11
Suburban Gas-light Co.,	"	4,028 54
Yonkers Gas-light Co.,	"	199 44
Endicott & Co., maps of Harlem District.....		120 00
H. E. Bowen, thermometer, etc.....		50 00
J. W. Bartlett, repairing lamp-tops.....		75 00
W. W. Goodwin & Co., photometrical apparatus.....		783 00
J. B. & J. M. Cornell, 15 lamp-posts for piers.....		131 25
Brainerd & Foskett, granite base.....		40 00
Benjamin S. Tyndall, lettering globe lamps.....		40 25
		<hr/>
Balance available September 30, 1877.....		\$152,329 94

*Summary of the Lamp Account, showing the number of New Lamps Lighted, Old Lamps Relighted, and number Discontinued by each Gas Company, during the Quarter ending September 30, 1877.*

CITY OF NEW YORK, DEPARTMENT OF PUBLIC WORKS,  
BUREAU OF REPAIRS AND SUPPLIES,  
SUPERINTENDENT'S OFFICE, CITY HALL, ROOM 18.  
NEW YORK, October 4, 1877.

SIR—In accordance with the requirements of chapter 335, Laws 1873, section 110, and in compliance with your instructions, I herewith submit the following report of the business of this Bureau performed for the three months ending September 30, 1877 :

The statements marked "A," "B," and "C," hereto annexed, show the number and amount of certified vouchers drawn during the three months ; also when the same has been charged ; and also show the condition of the appropriations of 1876 and 1877, upon which vouchers have been drawn.

Respectfully,  
THOMAS KEECH,  
Superintendent of Repairs and Supplies.

*Showing the Number and Amount of Vouchers drawn on account of the Appropriations therein named, from July 1, 1877, to September 30, 1877, inclusive, from the Appropriations of 1876 and 1877.*

TITLE OF APPROPRIATIONS.	NUMBER OF VOUCHERS.	AMOUNT.
Supplies for and Cleaning Public Offices.....	96	\$30,792 90
Public Buildings—Construction and Repairs.....	83	14,362 10
Free Floating Baths.....	14	3,692 59
Additional Free Floating Baths.....	15	7,356 81
Contingencies—Department of Public Works.....	2	82 39
Third District Court-house Fund.....	11	3,449 86
Third District Court-house, 1877.....	9	6,908 18
<b>Totals.....</b>	<b>230</b>	<b>\$66,644 86</b>

## EXHIBIT "B,"

Showing the Amount of Expenditures for which Certified Vouchers have been drawn on account of the several Appropriations therein named, and also showing the Courts, Departments, etc., to which the same has been charged, from July 1, 1877, to September 30, 1877, both inclusive.

NAMES OF COURTS, DEPARTMENTS, ETC.	Supplies for Cleaning Public Offices.	Public Buildings—Construction & Repairs.	Free Floating Baths.	Additional Free Floating Baths.	Contingencies for Maintenance of Public Works.	Third District Court-house Fund.	Third District Court-house, 1877.	TOTALS.
Second District Police Court	\$392 60							\$392 60
Third " "	79 23							79 23
Fourth " "	24 00							24 00
Fifth " "		\$8 75						8 75
Sixth " "	3 75							3 75
Third District Civil Court..	928 25							928 25
Fourth " "	121 51	351 56						473 07
Fifth " "		4 87						4 87
Sixth " "	97 09							97 09
Eighth " "	32 95	50 58						83 53
Ninth " "	27 50							27 50
Tenth " "	54 92	48 94						103 86
Court of General Sessions..	109 15							109 15
Court of Special Sessions..	34 50							34 50
Superior Court..	27 00							27 00
Marine Court..	250 21							250 21
Court of Common Pleas..	81 00							81 00
Washington Market..		1,686 00						1,686 00
Jefferson " "		221 57						221 57
Franklin " "		373 87						373 87
Essex " "		9 62						9 62
Centre " "		263 34						263 34
Mayor's Office..	282 16							282 16
Department of Public Works					\$19 89			19 89
Chief Clerk's Office..	30 06							30 06
Contract Clerk's Office..	40 23							40 23
Bureau of Repairs and Supplies..	8,261 04	276 86			62 50			860 40
Bureau of Repairs and Supplies Pay-rolls..	17,151 56	453 00						17,604 56
Bureau of Lamps and Gas..	58 50							58 50
Bureau of Incumbrances..	3 42							3 42
Bureau of Sewers..	8 00							8 00
Bureau of Chief Engineer..	80 00							80 00
Bureau of Water Purveyor..	12 90							12 90
Department of Finance..	271 69							271 69
Department of Taxes and Assessments..	5 81	9 70						15 51
Corporation Counsel..	105 77							105 77
Corporation Attorney..	50 42							50 42
Public Administrator..	5 25							5 25
Commissioners of Accounts..	67 65							67 65
City Hall..	535 06	2,213 67						2,748 73
City Record..	20 90							20 90
City Library..	37 50							37 50
New Court-house..	130 51	1,876 49						2,007 00
Free Floating Baths..			\$3,692 59					3,692 59
Additional Free Floating Baths..				\$7,356 81				7,356 81
District Attorney's Office..	15 00							15 00
County Clerk's Office..	7 74							7 74
Brown-stone Building..	111 34	366 27						477 61
County Jail..	471 61	246 97						718 58
Board of Aldermen..	26 50							26 50
Register's Office..		90 42						90 42
Commissioner of Jurors..	90 00							90 00
Surrogate's Office..	435 47							435 47
Third District Court-house..	70 70	580 78				\$3,449 89	\$6,908 18	11,009 45
Beekman street, No. 49..		161 36						161 36
Fifty-seventh Street Court-house..		159 95						159 95
Engine-house, City Hall Park		20 40						20 40
Chatham street, No. 61..		239 00						239 00
" "		51 82						51 82
" "		21 84						21 84
" "		631 00						631 00
Dog Pound..	87 45	3,539 29						3,626 74
Spring street, No. 53..		155 00						155 00
Wooster street, No. 160..		246 18						246 18
	\$30,792 90	\$14,362 10	\$3,692 59	\$7,356 81	\$82 39	\$3,449 89	\$6,908 18	\$66,644 86

## EXHIBIT "C,"

Showing the condition of the Appropriations of 1876 and 1877, upon which Vouchers have been drawn since last report.

Supplies for and Cleaning Public Offices, 1876—	
Balance, June 30, 1877	\$7,781 51
Amount transferred by Board of Estimate and Apportionment	1,361 51
	\$6,420 00
Vouchers transmitted from July 1 to September 30, 1877	6,378 24
Balance, September 30, 1877	\$41 76
Supplies for and Cleaning Public Offices, 1877—	
Balance, June 30, 1877	\$47,097 23
Vouchers transmitted from July 1 to September 30, 1877	24,414 66
Balance, September 30, 1877	\$22,682 57
Public Buildings—Construction and Repairs—	
Balance, June 30, 1877	\$29,810 50
Vouchers transmitted from July 1 to September 30, 1877	14,362 10
Balance, September 30, 1877	\$15,448 40
Free Floating Baths, 1877—	
Balance, June 30, 1877	\$7,071 35
Vouchers transmitted from July 1 to September 30, 1877	3,692 59
Balance, September 30, 1877	\$3,378 76
Additional Free Floating Baths—	
Balance, June 30, 1877	\$25,201 92
Vouchers transmitted from July 1 to September 30, 1877	7,356 81
Balance, September 30, 1877	\$17,845 11
Third District Court-house Fund—	
Balance, June 30, 1877	\$2,626 05
Amount of surplus unexpended after settlement of certain claims	909 46
	\$3,535 51
Vouchers transmitted from July 1 to September 30, 1877	3,449 89
Balance, September 30, 1877	\$85 62
Third District Court-house, 1877—	
Amount appropriated	\$18,000 00
Vouchers transmitted from July 1 to September 30, 1877	6,908 18
Balance, September 30, 1877	\$11,091 82

DEPARTMENT OF PUBLIC WORKS,  
BUREAU OF STREET INCUMBRANCES, ROOM 13, CITY HALL,  
NEW YORK, October 4, 1877.

Hon. ALLAN CAMPBELL, Commissioner of Public Works:

I herewith submit the following report of the operations of this Bureau, for the quarter ending September 30, 1877 (months of July, August, and September):

Complaints received against obstructions and incumbrances in streets and on sidewalks, 754, which, in each case, have been attended to by the service of a notice on the offending party for the removal or abatement of the same.

Removals for non-compliance of above notices, to the Corporation yards, or other suitable place, of merchandise, trucks, wagons, stands, signs, stones, and dirt, 24. Expenses for such removals (including 321 loads of stone and dirt), \$148 60.

Received from owners for redemption of articles seized, \$45.17, which has been paid to the City Chamberlain.

Builders' permits issued..... 1,091  
Permits to cut down trees..... 13  
Special permits..... 54  
Notices to repair sidewalks..... 318  
Notices to replace dangerous vault cover..... 1

Very respectfully,  
JOSEPH BLUMENTHAL, Superintendent.

NEW YORK, October 1, 1877.

Hon. ALLAN CAMPBELL, Commissioner of Public Works:

SIR—I herewith transmit statement of moneys received for water rents, penalties, and taps, for the quarter ending September 30, 1877:

	Principal.	Penalties.	Taps.
July.....	\$615,547 64	\$540 90	\$425 00
August.....	55,318 27	1,293 15	561 50
September.....	60,376 31	1,082 60	792 00
Total.....	\$731,242 22	\$2,916 65	\$1,778 50

Total..... \$735,937 37.

Also for rent of meters, and placed to "Special Meter Deposit Fund," from July 2, 1877, to date:

July.....	\$533 00
August.....	704 00
September.....	227 00
Total.....	\$1,464 00

Respectfully submitted,  
J. H. CHAMBERS, Water Register.

DEPARTMENT OF PUBLIC WORKS,  
CONTRACT CLERK'S OFFICE, ROOM 21, CITY HALL,  
NEW YORK, October 3, 1877.

Hon. ALLAN CAMPBELL, Commissioner of Public Works:

DEAR SIR—In accordance with the provisions of chapter 335, section 110, of the Laws of 1873, and agreeably to your instructions, I have the honor to submit herewith a record of all the business transacted in this office during the months of July, August, and September of the present year.

Since my last quarterly report there have been eighteen contracts for street improvements awarded in compliance with special laws, and after due competition to the lowest responsible bidders. The estimated cost of which, when completed, is two hundred and twenty thousand and thirty-five dollars and twenty-nine cents (\$220,035.29).

During the same period thirty-four contracts of various kinds have been completed at an expenditure of two hundred and thirty-three thousand eight hundred and seventy-three dollars and sixty-nine cents (\$233,873.69). The schedule hereto annexed shows the nature and location of the different works, the names of the contractors, and the estimated or actual cost of each.

Very respectfully yours,  
AUGUSTUS T. DOCHARTY, Contract Clerk.

Contracts entered into during the three months ending September 30, 1877.

DATE.	NATURE AND LOCATION OF WORK.	CONTRACTOR.	SURETIES.	COST.
1877.				
Aug. 24	Sewer in Fifth avenue, west side, between Thirty-fifth and Thirty-sixth streets, from end of present sewer in Thirty-fifth street.....	Lawrence Rock, 459 W. 40th street....	James Slattery, 207 W. 57th street... William Hullivan, 349 W. 53d street... Michael Casey, 1523 First avenue... Robert Poyd, 350 E. 82d street....	\$646 00
" 25	Sewer in Fifty-first street, between First and Second avenues.....	Thomas H. Casey, 1543 First avenue....	Robert Poyd, 350 E. 82d street....	2,565 00
" 29	Sewer in Ninth avenue between One Hundredth and One Hundred and First streets, and One Hundred and First street, between Ninth and Tenth avenues.....	Bartholomew Noonan, 1286 Fourth avenue..	Patrick Sheehy, 251 E. 83d street.... W. H. McCarthy, 174 E. 82d street....	3,977 50
" 21	Regulating, grading, etc., Tenth avenue, from Eighty-first to Eighty-second street.....	John Mulholland, 2d avenue and 73d st.	O. T. Marshall, 141 E. 78th street... E. C. Sheehy, 1453 Third avenue... E. C. Sheehy, 1453 Third avenue... W. H. McCarthy, 194 E. 82d street....	\$1,454 92 1,796 98
Sept. 26	Regulating, grading, etc., Eighty-fifth street, from Avenue A to Avenue B	John B. Devlin, 246 E. 61st street....	W. H. McCarthy, 194 E. 82d street....	\$3,251 90
Aug. 3	Paving West Broadway, from Chambers to Canal street (including railroad tracks), and College place, from Chambers street to Barclay street, with granite pavement.....	John G. Smith, 327 W. 48th street....	Bernard Maloney, 1376 Lexington ave.. L. W. Johnson, 414 W. 34th street...	35,269 30
" 17	Paving Sixth avenue, from the southerly side of Forty-second street to the southerly side of Fifty-ninth street from curb to curb (excepting horse paths of the Sixth Avenue Railroad), with granite pavement..	Leonard W. Johnson, 414 W. 34th street...	John G. Smith, 329 W. 48th street... David Babcock, 120 E. 70th street....	48,063 40
" 25	Paving Washington street, from Liberty street to Battery place, and Pearl street, from Fulton street to Coenties slip, with Belgian pavement.....	Dennis McGrath, Weehawken, N. J....	Charles Devlin, 311 E. 57th street... B. Maloney, 1376 Lexington ave..	16,286 70
Aug. 16	Miscellaneous Contracts. Construction of retaining walls, arch, steps, railing, and for the filling and grading for the 40 feet roadway in Forty-second street, between First and Second avenues.....	Jeremiah R. Byron, 172 Greenwich street	John H. Byron, Mt. Vernon, N. Y... D. C. Hickey, Mt. Vernon, N. Y...	\$29,214 50
" 21	Cast-iron water-pipes, branch pipes, and special castings.....	B. G. Clarke, 52 Wall street.....	Moses Taylor, 52 Wall street..... Robert Winthrop, 52 Wall street.....	50,435 00
Sept. 22	Croton Water-pipe Contracts. Laying Croton-mains in Washington square, Fourth street, Wooster street, and in University place....	Francis McCabe, 725 Lexington avenue	Patrick Farley, 163 E. 64th street... John C. Dowling, 415 E. 83d street....	\$2,792 00
" 25	Laying Croton-mains in Third avenue, Kingsbridge road, from One Hundred and Fifty-eighth street to Fordham station, thence in Kingsbridge and High Bridge roads, and Croton avenue to Croton Aqueduct	James Everard, 307 and 309 E. 40th st.	Solomon Mehrbach, 155 W. 44th street... John Nesbit, 165 Lexington ave...	25,759 00
Aug. 2	Flagging Fifty-eighth street, between Eighth and Ninth avenues, four feet wide.....	George F. Doak, 418 W. 57th street...		\$255 42
" 23	Laying crosswalks across Fourth avenue at Seventy-fifth street.....	Patrick Burns, 311 E. 56th street....		210 56
" 23	Laying crosswalks across Fourth avenue at Eighty-first street.....	Patrick Burns, 311 E. 56th street....		203 04
Sept. 17	Flagging south side of Seventy-ninth street, between Ninth avenue and Boulevard.....	Lawrence Rock, 459 W. 40th street...		660 80
" 22	Flagging north side of One Hundred and Twentieth street, between Avenue A and First avenue.....	Lawrence Rock, 459 W. 40th street...		413 63
" 28	Fencing vacant lots on north side of Fifth street, between Tenth and Eleventh avenues.....	Patrick Burns, 311 E. 56th street....		31 54
			Contracts amounting to less than \$1,000 each, awarded by competition. Sureties not required.	\$1,774 99



DEPARTMENT OF PUBLIC WORKS,  
COMMISSIONER'S OFFICE, ROOM 19, CITY HALL,  
NEW YORK, November 22, 1877.

# PROPOSALS FOR FURNISHING ILLUMINATING GAS FOR PUBLIC MARKETS, BUILDINGS, AND OFFICES OF THE CITY OF NEW YORK.

PROPOSALS IN ACCORDANCE WITH ARTICLE 2, chapter 8, of the Revised Ordinances of 1859, inclosed in a sealed envelope (indorsed as above, with the name of the bidder), will be received at the office of the Commissioner of Public Works until Friday, December 7, 1877, at 12 o'clock M., at which hour they will be publicly opened and read, for furnishing illuminating gas of not less than sixteen-candle power, for lighting the following public markets, buildings and offices of the city, to wit:

Washington Market.  
Catharine Market.  
Fulton Market.  
Essex Market.  
Centre Market.  
Clinton Market.  
Union Market.  
Tompkins Market.  
Jefferson Market.  
First District Police Court.  
Second District Police Court.  
Third District Police Court.  
Fourth District Police Court.  
Fifth District Police Court.  
Second District Civil Court.  
Third District Civil Court.  
Fourth District Civil Court.  
Fifth District Civil Court.  
Sixth District Civil Court.  
Eighth District Civil Court.  
Ninth District Civil Court.  
Court of Special Sessions.  
New Court-house.  
Brown Stone (Court-room) Building.  
City Hall.  
Corporation Counsel's Office.  
Corporation Attorney's Office.  
Receiver of Taxes' Office.  
Office of Department of Buildings.  
County Jail.  
Rivington Street Pipe-yard.  
South Gate-house.  
Engine-house at Highbridge.  
Office of Engineer-in-charge of Roads and Avenues.  
Public Bath foot of Fifth street, East river.  
Public Bath foot of Betts street, North river.  
Public Bath foot of Thirty-seventh street, East river.  
Public Bath foot of Gouverneur street, East river.  
Public Bath foot of Fifty-first street, North river.  
Public Bath foot of One Hundred and Fourteenth street, East river.  
Photometrical Room, Grand and Centre street.  
Photometrical Room, Seventy-ninth street.

Each proposal must state the price per thousand cubic feet of gas furnished to any or all of the above-mentioned public markets, buildings, or offices, for the term commencing January 1, 1878, and ending December 31, 1878, both days inclusive, including the laying of service pipes from the gas-mains to the buildings, and the furnishing of proper meters for measuring the gas used.

Blank forms of proposals, the specifications and agreements, the proper envelope in which to inclose the bids, and any further information desired, can be obtained on application to the Contract Clerk, at his office.

The Commissioner of Public Works reserves the right to reject any or all proposals, if, in his judgment, the same may be for the best interests of the city.

ALLAN CAMPBELL,  
Commissioner of Public Works.

DEPARTMENT OF PUBLIC WORKS,  
COMMISSIONER'S OFFICE, ROOM 19, CITY HALL,  
NEW YORK, November 17, 1877.

## TO CONTRACTORS.

PROPOSALS, INCLOSED IN A SEALED ENVELOPE, with the title of the work and the name of the bidder inclosed thereon (also the number of the work as in the advertisement), will be received at this office until Monday, December 3, 1877, at 12 o'clock M., at which hour they will be publicly opened by the head of the Department and read, for each of the following works:

No. 1. Sewer in Sixty-ninth street, between First and Second avenues.  
No. 2. Sewer in Seventy-sixth street, between Boulevard and Eleventh avenue.  
No. 3. Sewers in Ninety-fourth street, between Third and Fourth avenues, and in Fourth avenue, east side, between Ninety-third and Ninety-fourth streets.  
No. 4. Sewers in Eleventh avenue, between Sixtieth and Sixty-fourth streets, and in Sixty-first street, between Tenth and Eleventh avenues.  
No. 5. Regulating and grading One Hundred and Ninth street, from Third to Fifth avenue.  
No. 6. Setting curb and gutter stones and flagging Sixty-third street, from the First avenue to the East river.

Blank forms of proposals, the specifications and agreements, the proper envelope in which to inclose the bids, and any further information desired, can be obtained on application to the Contract Clerk, at his office, Room 21, City Hall.

The Commissioner of Public Works reserves the right to reject any or all proposals, if, in his judgment, the same may be for the best interests of the city.

ALLAN CAMPBELL,  
Commissioner of Public Works.

## GAS COMMISSION.

DEPARTMENT OF PUBLIC WORKS,  
COMMISSIONER'S OFFICE, ROOM 19, CITY HALL,  
NEW YORK, November 22, 1877.

## PROPOSALS FOR LIGHTING THE PUBLIC LAMPS.

PROPOSALS FOR FURNISHING THE GAS OR other illuminating material for, and Lighting, Extinguishing, Cleaning, Repairing and Maintaining the Public Lamps (and supplying Gas, etc., for New Lamps when required) on the Streets, Avenues, Piers and Places in the City of New York, under the Department of Public Works, including Riverdale, but not including the Twenty-third Ward and that portion of the Twenty-fourth Ward outside of Riverdale, for the four months from January 1, 1878, to April 30, 1878, both days inclusive.

Proposals for the above, made in accordance with section 73, chapter 335, Laws of 1873, and Revised Ordinances of 1859, chapter 8, article 2, and inclosed in a sealed envelope indorsed "Proposals for furnishing the Illuminating Material, and Lighting and Extinguishing, Cleaning, Repairing and Maintaining the Public Lamps," with the name of the party making the same written thereon, will be received at the office of the Commissioner of Public Works, until 12 o'clock M. of Friday, December 7, 1877, at which place and hour they will be publicly opened and read.

Bidders are requested to state in their proposals their names and places of residence; the names of all persons interested with them; and if no other person be so interested, they shall distinctly state the fact; also that it is made without any connection with any other person making any estimate for the above supplies and work, and that it is in all respects fair, and without collusion or fraud; and also that no member of the Common Council, head of a Department, Chief of a Bureau, Deputy thereof, or Clerk therein, or other officer of the Corporation, is directly or indirectly interested therein, or in the supplies or work to which it relates, or in any portion of the profits thereof; which proposals must be verified by the oath, in writing, of the party making the estimate, that the several matters stated therein are in all respects true. Where more than one

person is interested, it is requisite that the verification be made and subscribed by all the parties interested.

Each proposal shall be accompanied by the consent, in writing, of two householders or freeholders of the City of New York, with their respective places of business or residence, to the effect that if the contract be awarded to the person or persons making the bid, they will, on its being so awarded, become bound as his or their sureties for its faithful performance; and that if he or they shall omit or refuse to execute the same, they will pay to the Corporation any difference between the sum to which he or they would be entitled on its completion, and that which the Corporation may be obliged to pay to any higher bidder to whom the contract may be awarded at any subsequent letting; the consent above mentioned shall be accompanied by the oath or affirmation, in writing, of each of the persons signing the same, that he is a householder or freeholder in the City of New York, and is worth the amount of security required for the above work, over and above all his debts of every nature, and over and above his liabilities as bail, surety, and otherwise; that he has offered himself as a surety in good faith, and with the intention to execute the bond required by article 2, chapter 8, of the Revised Ordinances of 1859, organizing the Municipal Government of the City of New York, if the contract shall be awarded to the person or persons for whom he consents to become surety. The adequacy and sufficiency of the sureties offered to be determined by the Comptroller.

Bidders are requested to state in their proposals the several streets or parts of streets in which they propose to perform the requirements herein contained, and also the illuminating or candle-power of the gas they propose to furnish, when tested at a distance of not less than one mile from the place of manufacture; and bidders proposing to furnish any illuminating material other than coal gas, must state distinctly what kind of material they propose to furnish, and the illuminating power of the burner they propose to use for the same.

Bidders are also required to state the price for which they will furnish the gas or other illuminating material for each lamp, including the lighting, extinguishing, cleaning, repairing, reglazing, and replacing the cocks, tubes, burners, crossheads, lamp-irons, and lanterns thereto, for the period from January 1, 1878, to April 30, 1878, both days inclusive; stating the price for the above named period of four months, for each lamp.

Bidders are also required to state a price for which they will repair lamp-posts, including either straightening, relining, or for each new lamp fitted up, as follows:

For each lamp-post straightened, stating the price per post.

For each column relined, stating the price per post.

For each lamp-post removed, stating the price per post.

For each lamp-post reset, stating the price per post.

For each new lamp fitted up, stating the price per post.

The bidders are required to write out the amount of their bids in their estimates, in addition to inserting the same in figures.

The number of lamps to be contracted for is about eighteen thousand.

The lamps are to burn on an average of one thousand three hundred and eighty-three hours and fifty-five minutes each, during the term.

The burners are to be of a capacity to burn three cubic feet of gas per hour under a pressure of one inch, and in case the illuminating material shall be other than coal-gas, then the burners to be used for such illuminating material shall give a light (by photometrical test, equal to the light given by the gas-burners now in use in the public lamps in the City of New York.

Should any alteration of, or any attachment be required to any portion of the lamps for which proposals are made, such alterations shall be done, and attachments placed on the lamps without expense to the city.

The amount of security required is \$25,000, but the same may be reduced at the option of the parties of the first part, if an award for a portion is made warranting a less amount of security.

The award of the contract will be made as soon as practicable after the opening of the bids.

Should the person or persons to whom the contract is so awarded neglect or refuse to accept to contract within forty-eight hours after written notice that the same has been awarded to his bid or proposal, or if he accept but does not execute the contract and give the proper security, it may be re-advertised and relet as above provided.

Bidders are informed that no deviation from the specifications will be allowed, unless a written permission shall have been previously obtained from the Mayor, Comptroller, and Commissioner of Public Works.

The right is reserved to assign and designate to any bidder the number and location of the lamps in any portion of the city for which proposals are received, and to increase or diminish the numbers.

The right is reserved to determine and designate, after the proposals are opened, what illuminating material shall be used in the public lamps, or any portion of them, during the period above mentioned; also to decline any or all proposals if deemed for the interests of the Corporation; and no proposal will be accepted from, or contract awarded to, any person who is in arrears to the Corporation, upon debt or contract, or who is a defaulter, as security or otherwise, upon any obligation to the Corporation.

If the proposal of any bidder, proposing to furnish coal-gas or similar material, shall include any lamps with which the pipes or mains of such bidders are not connected at the time of the making of the bid, and a contract for furnishing the gas for and lighting, extinguishing, cleaning, repairing, and maintaining any such lamps, shall be awarded to any such bidder, in that case, thirty days from the date of the execution of such contract, and such further time, not exceeding thirty days, as may be deemed reasonable by the Commissioner of Public Works, shall be allowed to such bidder in which to connect such pipes or mains with such lamps.

But no payment to such bidder, on account of any such lamps, will be made for the time so allowed, nor until the same shall have been connected with the mains of such bidder, nor except for the time during which all the requirements herein mentioned shall have been fully performed.

Blank forms of proposals, the specifications and agreements, the proper envelopes in which to inclose the bids, and any further information desired can be obtained at the office of the Commissioner of Public Works.

SMITH ELY, JR.,  
Mayor.

JOHN KELLY,  
Comptroller.

ALLAN CAMPBELL,  
Commissioner of Public Works.

## THE CITY RECORD.

COPIES OF THE CITY RECORD CAN BE obtained at No. 2 City Hall (northwest corner, basement). Price three cents each.

## BOARD OF EDUCATION.

SEALED PROPOSALS WILL BE RECEIVED AT the office of the Board of Education, corner of Grand and Elm streets, until SATURDAY, the 8th day of December, 1877, at 4 o'clock P. M., for printing required by the said board for the year 1878. Samples of the various documents, etc., required to be printed, may be seen at the office of the Clerk of the Board, where blank forms of proposals may also be obtained. Each proposal must be addressed to the Committee on Supplies, and indorsed "Proposals for Printing." Two sureties satisfactory to said Committee will be required for the faithful performance of the contract. The Committee reserve the right to reject any bid if deemed for the public interest.

Dated New York, November 23, 1877.  
RUFUS G. BEARDSLEE,  
JAMES M. HALSTED,  
DAVID WETMORE,  
EVERETT P. WHEELER,  
HENRY P. WEST,  
Committee on Supplies.

SEALED PROPOSALS WILL BE RECEIVED AT the office of the Board of Education, corner of Grand and Elm streets, until SATURDAY, the 8th day of December, 1877, at 4 P. M., for supplying, for the use of the schools under the jurisdiction of said board, books, stationery, and other articles required for one year, commencing on the 1st day of January, 1878. City and country publishers of books, and dealers in the various articles required, are notified that preference will be given to the bids of principals, the Committee being desirous that commissions, if any, shall be deducted from the price of the articles bid for. A sample of each article must accompany the bid. A list of articles required, with the conditions upon which bids will be received, may be obtained on application to the Clerk of the Board. Each proposal must be addressed to the Committee on Supplies, and indorsed "Proposals for Supplies." The Committee reserve the right to reject any bid if deemed for the public interest.

Dated New York, November 23, 1877.  
RUFUS G. BEARDSLEE,  
JAMES M. HALSTED,  
DAVID WETMORE,  
EVERETT P. WHEELER,  
HENRY P. WEST,  
Committee on Supplies.

SEALED PROPOSALS WILL BE RECEIVED BY the School Trustees of the Sixteenth Ward, at the Hall of the Board of Education, corner of Grand and Elm streets, until 9 o'clock A. M., on Wednesday, December 5, 1877, for furnishing wood ceilings for certain rooms in Grammar School Building No. 45, on West Twenty-fourth street, near Eighth avenue.

MATTHEW BIRD,  
Chairman.

JAMES HARRISON,  
Secretary.

Board of School Trustees, Sixteenth Ward.

SEALED PROPOSALS WILL ALSO BE RECEIVED BY the School Trustees of the Seventeenth Ward, at the same place, until 10 o'clock A. M., on Wednesday, December 5, 1877, for furnishing wood ceilings for certain rooms in Primary School Building No. 22, corner of First avenue and Ninth street.

ROBERT A. BARRY,  
Chairman.

FREDERIC C. WAGNER,  
Secretary.

Board of School Trustees, Seventeenth Ward.

Plans and specifications may be seen, and blanks for proposals obtained at the office of the Superintendent of School Buildings, No. 146 Grand street, third floor.

Proposals will not be considered unless the following provisions are strictly complied with:

The party submitting a proposal and the parties proposing to become sureties must each sign his own name and place of residence on said proposal.

Two responsible and approved sureties, residents of this city, are required in all cases.

The Trustees reserve the right to reject any or all of the proposals submitted.

Dated New York, November 21, 1877.

## POLICE DEPARTMENT.

POLICE DEPARTMENT OF THE CITY OF NEW YORK,  
300 MULBERRY STREET,  
PROPERTY CLERK'S OFFICE, ROOM 39,  
NEW YORK, October 27, 1877.

OWNERS WANTED BY THE PROPERTY

Clerk of the Police Department, of the City of New York, 300 Mulberry street, Room 39, for the following property now in his custody without claimants:

Lot satin hat linings, black pony, boots, trunk and contents, male and female clothing, revolvers, hand cart, two cases of cloth, watch and chain, lot of sugar, two cases of tobacco, twelve boxes starch, also small amount of cash taken from prisoners and found in street.

C. A. ST. JOHN,  
Property Clerk.

## HEALTH DEPARTMENT.

HEALTH DEPARTMENT,  
OFFICE OF THE SECRETARY,  
No. 301 MOTT STREET,  
November 17, 1877.

PROPOSALS FOR THE ERECTION OF A RECEPTION HOSPITAL FOR CONTAGIOUS DISEASES, AND FOR WIDENING THE PIER ON WHICH SUCH HOSPITAL SHALL BE BUILT.

PROPOSALS, SEALED AND INDORSED AS herein required, will be received by the Commissioners of the Health Department, at their office, No. 301 Mott street, until 12 o'clock M. of the 1st day of December, 1877, at which time they will be publicly opened and read by said Commissioners, for the erection of a Reception Hospital for contagious diseases on the pier in front of Bellevue Hospital, between Twenty-sixth and Twenty-eighth streets, East river, and widening of said pier.

The proposals must be addressed to the Board of Health of the Health Department of the City of New York, be indorsed "Proposals for Building a Reception Hospital and Widening a Pier," and must contain the name and address of the parties making the same.

Two responsible sureties, freeholders in this city, will be required with each proposal, who may justify in the sum of five thousand dollars each.

The Department reserves the right to reject any of all proposals not deemed beneficial or for the public interest.

Plans may be examined and specifications and blank proposals obtained by application to the Secretary of the Board, at his office, 301 Mott street, New York, on and after November 22, 1877.

CHARLES F. CHANDLER,  
EDWARD G. JANEWAY,  
S. OAKLEY VANDERPOEL,  
WILLIAM F. SMITH,  
Commissioners.

HEALTH DEPARTMENT OF THE CITY OF NEW YORK,  
No. 301 MOTT STREET,  
NEW YORK, November 13, 1877.

AT A MEETING OF THE BOARD OF HEALTH of the Health Department of the City of New York, held at its office on the thirteenth day of November, 1877, the following resolution was adopted:

Resolved, That, under the power conferred by law upon the Health Department, the following additional sections of the Sanitary Code for the security of life and health be and the same are hereby adopted, and declared to form a portion of the Sanitary Code:

SECTION 194. That no cattle shall be unloaded from boats, or shall be driven or allowed in the streets, avenues or public places in said city, unless distinctly and legibly marked with a letter, sign or symbol plainly representing the ownership of such animals, which letter, sign or symbol shall have been previously registered in the office of the Sanitary Superintendent, approved by him, and written upon the face of the permit for driving cattle, issued from time to time to the owner of such cattle, under the rules, regulations and ordinances of this Board.

SECTION 195. That no permit for driving cattle in the City of New York shall be granted to any person save upon the condition that all such cattle shall be distinctly and legibly marked with a mark, sign or symbol, approved by the Sanitary Superintendent, so as clearly to indicate the ownership thereof, and it shall be the duty of every person applying for or using a permit to drive cattle in said city, to file with the Sanitary Superintendent a correct statement of the mark, sign or symbol employed by him under the provisions of this ordinance.

[L. S.] CHARLES F. CHANDLER,  
President.

EMMONS CLARK,  
Secretary.

HEALTH DEPARTMENT OF THE CITY OF NEW YORK,  
No. 301 MOTT STREET,  
NEW YORK, November 21, 1877.

AT A MEETING OF THE BOARD OF HEALTH of the Health Department of the City of New York, held at its office on the twentieth day of November, 1877, the following resolution was adopted:

Resolved, That under the power conferred by law upon the Health Department, the following additional sections of the Sanitary Code for the security of life and health be and the same are hereby adopted, and declared to form a portion of the Sanitary Code:

SECTION 196. That it shall be the duty of every owner, lessee, or tenant of any vacant, sunken, or excavated lot in the City of New York to keep the same at all times clean and unoffensive, and to provide around the same a proper tight board fence, not less than six (6) feet in height, so as to effectually prevent the throwing or depositing therein or thereupon of any garbage or offensive thing whatsoever, and also to prevent persons passing from falling into such excavation.

SECTION 197. That no live geese, ducks, or other fowls shall be kept in any yard, area, cellar, coop, building, or other place within the built-up portion of the City of New York, excepting in the public markets, without a permit in writing from this Department.

[L. S.] CHARLES F. CHANDLER,  
President.

EMMONS CLARK,  
Secretary.

## JURORS.

NOTICE  
IN RELATION TO JURORS FOR  
STATE COURTS

OFFICE OF THE COMMISSIONER OF JURORS,  
NEW COUNTY COURT-HOUSE,  
NEW YORK, June 1, 1877.

APPLICATIONS FOR EXEMPTIONS WILL BE heard here, from 9 to 4 daily, from all persons hitherto liable or recently serving who have become exempt, and all needed information will be given.

Those who have not answered as to their liability, or proved permanent exemption, will receive a "jury enrollment notice," requiring them to appear before me this year. Whether liable or not, such notices must be answered (in person, if possible, and at this office only) under severe penalties. If exempt, the party must bring proof of exemption; if liable, he must also answer in person, giving full and correct name, residence, etc., etc. No attention paid to letters.

Persons "enrolled" as liable must serve when called or pay their fines. No mere excuse will be allowed or interference permitted. The fines, received from those who, for business or other reasons, are unable to serve at the time selected, are the expenses of this office, and if unpaid will be entered as judgments upon the property of the delinquents.

All good citizens will aid the course of justice, and secure reliable and respectable juries, and equalize their duty by serving promptly when summoned, allowing their clerks or subordinates to serve, reporting to me any attempt at bribery or evasion, and suggesting names for enrollment. Persons between sixty and seventy years of age, summer absentees, persons temporarily ill, and United States and District Court jurors are not exempt.

Every man must attend to his own notice. It is a misdemeanor to give any jury paper to another to answer. It is also punishable by fine or imprisonment to give or receive any present or bribe, directly or indirectly, in relation to a jury service, or to withhold any paper or make any false statement, and every case will be fully prosecuted.

THOMAS DUNLAP, Commissioner,  
County Court-house (Chambers street entrance.)

## DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION.

DEPARTMENT OF  
PUBLIC CHARITIES AND CORRECTION,  
CORNER OF THIRD AVENUE AND ELEVENTH ST.,  
NEW YORK, November 30, 1877.

IN ACCORDANCE WITH AN ORDINANCE OF the Common Council, "In relation to the burial of strangers or unknown persons who may die in any of the public institutions of the City of New York," the Commissioners of Public Charities and Correction report as follows:

At Charity Hospital, Blackwell's Island—Henry Smith; aged 50 years; 5 feet 8 inches high; dark hair; gray eyes. Had on when admitted, dark pants, brown flannel shirt, check shirt, dark vest, gaiters, felt hat. Nothing known of his friends or relatives.

John Ferguson; aged 36 years; 5 feet 8 inches high; dark hair; blue eyes. Had on when admitted, dark plaid coat, gray alpaca duster, blue overshirt, gray pants, black hat, boots. Nothing known of his friends or relatives.

By Order,  
JOSHUA PHILLIPS,  
Secretary.

DEPARTMENT OF  
PUBLIC CHARITIES AND CORRECTION,  
CORNER OF THIRD AVENUE AND ELEVENTH ST.,  
NEW YORK, November 20, 1877.

## PROPOSALS FOR GROCERIES, ETC.

PROPOSALS, SEALED AND INDORSED AS above, will be received by the Commissioners of Public Charities and Correction, at their office, until 9 o'clock A. M., of Tuesday, December 4, 1877, at which time they will be publicly opened and read by the head of said Department, for furnishing and delivering, at the foot of East Twenty-sixth street, free of all expense to the Department—

25,000 lbs. Brown Sugar.  
250 lbs. Corn Starch.  
20 boxes Laundry Starch.  
20 boxes Castile Soap.  
5,000 lbs. good sweet Dairy Butter, to be delivered in quantities as required.  
50 sacks Salt equal to "Worthington's."  
200 bags Coarse Meal.  
100 bags Fine Meal.  
20 bales Broom Corn.  
5,000 Broom Handles.

The quality of the goods furnished must conform in every respect to the samples of the above to be seen at this office.

The award of the contract will be made as soon as practicable after the opening of the bids.

No proposal will be considered unless accompanied by the consent, in writing, of two householders or freeholders of the City of New York, with their respective places of business or residence, to the effect that, if the contract be awarded under that proposal, they will, on its being so awarded, become bound as sureties in the estimated amount of fifty per cent. for its faithful performance, which consent must be verified by the justification of each of the persons signing the same for double the amount of surety required. The sufficiency of such security to be approved by the Comptroller.

The Department of Public Charities and Correction reserve the right to decline any and all proposals if deemed to be for the public interest, and to accept an offer for the whole bid or for any single article included in the proposal, and no proposal will be accepted from, or a contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is defaulter, as security or otherwise, upon any obligation to the Corporation.

Blank forms of proposals and specifications, which are to be strictly complied with, can be obtained on application at the office of the Department, and all information furnished.

THOMAS S. BRENNAN,  
ISAAC H. BAILEY,  
TOWNSEND COX,  
Commissioners.

DEPARTMENT OF  
PUBLIC CHARITIES AND CORRECTION,  
CORNER OF THIRD AVENUE AND ELEVENTH ST.,  
NEW YORK, November 26, 1877.

IN ACCORDANCE WITH AN ORDINANCE OF the Common Council, "In relation to the burial of strangers or unknown persons who may die in any of the public institutions of the City of New York," the Commissioners of Public Charities and Correction report as follows:

At Morgue, Bellevue Hospital, from off Battery—Unknown man; aged about 25 years; 5 feet 9 inches high; black hair and moustache; three first fingers of left hand at second joint amputated. Had on black overcoat, black frock coat, black vest and pants, white shirt, white knit undershirt and drawers, blue cotton socks, gaiters.

Unknown man, from Bellevue Hospital—Aged about 30 years; 5 feet 7 inches high; black hair; sandy moustache; chin whiskers about one month's growth. Had on black coat and pants, blue check jumper, blue hickory shirt, (stamped Work-house), black felt hat, gaiters.

At Work-house, Blackwell's Island—Catherine Fox; committed October 31, 1877. Nothing known of her friends or relatives.

At Lunatic Asylum, Blackwell's Island—Ann Garvey; aged 46 years; blue eyes; black hair. Nothing known of her friends or relatives.

By Order,

JOSHUA PHILLIPS,  
Secretary.

DEPARTMENT OF  
PUBLIC CHARITIES AND CORRECTION,  
CORNER OF THIRD AVENUE AND ELEVENTH ST.,  
NEW YORK, November 24, 1877.

IN ACCORDANCE WITH AN ORDINANCE OF the Common Council, "In relation to the burial of strangers or unknown persons who may die in any of the public institutions of the City of New York," the Commissioners of Public Charities and Correction report as follows:

At Charity Hospital, Blackwell's Island, November 22, 1877—Rose Maine; aged 27 years; 5 feet 6 inches high; light hair; gray eyes. Had on when admitted black dress, striped shawl, straw hat. Nothing known of her friends or relatives.

At Branch Lunatic Asylum, Hart's Island—Mary Hines; admitted June 23, 1877. Nothing known of her friends or relatives.

By Order,

JOSHUA PHILLIPS,  
Secretary.

DEPARTMENT OF  
PUBLIC CHARITIES AND CORRECTION,  
CORNER OF THIRD AVENUE AND ELEVENTH ST.,  
NEW YORK, November 20, 1877.

#### PROPOSALS FOR 3,000 BARRELS OF FLOUR.

PROPOSALS, SEALED AND INDORSED AS above, will be received by the Commissioners of Public Charities and Correction, at their office, until 9 o'clock A. M., of Tuesday, December 4, 1877, at which time they will be publicly opened and read by the head of said Department, for furnishing and delivering at the Bake-house, Blackwell's Island, free of all expense to the Department—

3,000 barrels of good extra Wheat Flour, to be equal in quality to samples to be seen at this office (empty barrels to be returned and deducted in proposals from the price of flour), to be delivered in quantities as required, free of all expense to the Department.

The award of the contract will be made as soon as practicable after the opening of the bids.

No proposal will be considered unless accompanied by the consent, in writing, of two householders or freeholders of the City of New York, with their respective places of business or residence, to the effect that, if the contract be awarded under that proposal, they will, on its being so awarded, become bound as sureties in the estimated amount of fifty per cent. for its faithful performance, which consent must be verified by the justification of each of the persons signing the same for double the amount of surety required. The sufficiency of such security to be approved by the Comptroller.

The Department of Public Charities and Correction reserve the right to decline any and all proposals if deemed to be for the public interest, and to accept an offer for the whole bid or for any single article included in the proposal, and no proposal will be accepted from, or a contract awarded to, any person who is in arrears to the Corporation upon debt or contract, or who is defaulter, as security or otherwise, upon any obligation to the Corporation.

Blank forms of proposals and specifications, which are to be strictly complied with, can be obtained on application at the office of the Department, and all information furnished.

THOMAS S. BRENNAN,  
ISAAC H. BAILEY,  
TOWNSEND COX,  
Commissioners.

DEPARTMENT OF  
PUBLIC CHARITIES AND CORRECTION,  
CORNER OF THIRD AVENUE AND ELEVENTH ST.,  
NEW YORK, November 27, 1877.

IN ACCORDANCE WITH AN ORDINANCE OF the Common Council, "In relation to the burial of strangers or unknown persons who may die in any of the public institutions of the City of New York," the Commissioners of Public Charities and Correction report as follows:

At Branch Charity Hospital, Randall's Island—Margaret Kennedy; aged 30 years; dark hair and eyes. Nothing known of her friends or relatives.

By Order,

JOSHUA PHILLIPS,  
Secretary.

#### FINANCE DEPARTMENT.

WILLIAM KENNELLY, AUCTIONEER.

CORPORATION SALE OF THE BUILDING LOCATED TWENTY-FIVE FEET NORTH OF THE NORTHEAST CORNER OF ONE HUNDRED AND FORTIETH STREET AND THIRD AVENUE.

THE COMPTROLLER OF THE CITY OF NEW YORK will sell at public auction, on Wednesday, November 28, 1877, at 12 o'clock, noon, at the New County Court-house, the building located twenty-five feet north of the northeast corner of One Hundred and Fortieth street and Third Avenue, recently occupied by Hook and Ladder Company No. 17.

#### TERMS OF SALE.

Cash to be paid to the Collector of City Revenue at the time and place of sale. The successful bidder to remove such building at his own expense, within five days from the date of sale, and to leave the ground on which it stands free from all material of the building, and smoothly and evenly graded.

JOHN KELLY,  
Comptroller.

CITY OF NEW YORK,  
DEPARTMENT OF FINANCE,  
November 23, 1877.

The above sale is adjourned to Thursday, December 13, 1877, at 12 o'clock, noon, at the same place.

COMPTROLLER'S OFFICE,  
NEW YORK, November 28, 1877.

JOHN KELLY,  
Comptroller.

WILLIAM KENNELLY, AUCTIONEER.

#### SALE OF FERRY FRANCHISES.

THE FRANCHISES TO RUN THE FOLLOWING ferries and a lease of the wharf property belonging to the city, if any, set apart for ferry purposes at each of said ferries, will be sold at public auction to the highest bidder, at the office of the Comptroller of the City of New York, on Thursday, November 8, 1877, at 12 o'clock, noon, for the period of five years from November 1, 1877, except as otherwise stated:

Ferry from Peck Slip, New York City, to the foot of One Hundred and Thirtieth street at Third Avenue, Harlem, with an intermediate landing at or near Eighty-fourth street, East river.

Ferry from Fulton Market slip, New York City, to Mott Haven, with an intermediate landing at or near Eighty-fourth street, East river, until May 1, 1879.

Ferry as now established from foot of Roosevelt street, in the City of New York, East river, to South Seventh street, Brooklyn, Eastern District, together with the bulkheads and slips adjacent to and east of the wharf property at foot of Roosevelt street, East river, owned by the Bridge Company, and now occupied for said ferry.

Bidders must bid for the franchise and lease of wharf property of each ferry separately, but no bid will be received unless it includes an offer for both the ferry franchise and wharf property.

The form of the lease required to be executed by the highest bidder can be seen at the office of the Comptroller.

All bids will be regarded as made with reference to said form of lease, and in case the highest bidder shall neglect to execute a lease according to said form, for ten days after said sale, his bid will, at the option of the Comptroller and the Board of the Department of Docks, be rejected.

The leases will contain a covenant requiring the lessees to pay rent quarterly-yearly to the Comptroller.

The minimum rate for which the ferry franchise or license to operate such ferries shall be used or enjoyed has been appraised and set by the Commissioners of the Sinking Fund at five per cent. per annum upon the gross receipts for ferriage collected at the New York landing-place for the ferry as now established from the foot of Roosevelt street, New York, to South Seventh street, Brooklyn, and at two and one-half per cent. per annum upon the gross receipts collected for ferriage for the ferries from Peck slip, New York, to the foot of One Hundred and Thirtieth street, Third Avenue, Harlem; and from Fulton Market slip, New York, to Mott Haven, such percentage to be paid quarterly-yearly to the Corporation, and a covenant will be contained in each lease requiring the lessees to make and deliver to the Comptroller of the City of New York, quarterly-yearly, a statement in writing, verified by oath or affirmation of the lessee, or of such proper officer of the lessee as may be designated by the Comptroller, of the actual total gross receipts for ferriage received by such lessee during the preceding three months, and also, that the lessee shall keep regular books of account, showing the daily gross receipts of the ferry leased, and allow said Comptroller, or any person designated by him, to examine such books.

The franchise will be put up and knocked down to the person offering to pay the largest percentage.

All moneys received for the conveyance of passengers, animals, vehicles, or freight from New York to be collected at the landing place in New York, or, if collected elsewhere, to be included in the receipts upon which such percentage is to be calculated and paid.

No bid less than such percentage on such gross receipts will be entertained.

The successful bidder will be required to pay to the Collector of City Revenue the sum of fifteen hundred dollars immediately after the franchise shall have been struck down to him, as security for the execution and performance of the lease, such amount to be credited on the rent when the same becomes due.

Security, satisfactory to the Comptroller, will be required for the punctual performance by the lessees of the covenants of the lease of the franchise in their behalf.

Each purchaser of a lease will be required, at the time of the sale, and in addition to the auctioneer's fees, to pay to the Department of Docks twenty-five per cent. of the amount of the annual rent bid for the wharf property, as security for the execution of the lease, and which twenty-five per cent. will be applied to the payment of the rent for such property first accruing under the lease, when executed, or forfeited if the lessee neglects or refuses to execute the lease and bond after being duly notified that the lease is prepared and ready for signature, or, in case the bid be finally rejected, will be returned to the bidder.

Lessees will be required to pay their rent for the wharf property quarterly, in advance, in compliance with a stipulation therefor in the form of the lease adopted.

The franchise and the lease of the wharf property, if any, of each ferry will be put up and sold together to the highest bidder, subject to the condition hereinafter expressed, and subject also to the right of the Comptroller and the Board of the Department of Docks to reject any or all bids, if deemed to be for the interest of the city.

The right to reject any bid, if deemed to be to the interest of the City of New York, is reserved by the Commissioners of the Sinking Fund.

By order of the Commissioners of the Sinking Fund.

JOHN KELLY,  
Comptroller.

JACOB A. WESTERVELT,  
HENRY F. DIMOCK,  
JACOB VANDERPOEL,  
Board of Department of Docks.

COMPTROLLER'S OFFICE,  
NEW YORK, November 1, 1877.

The above sale is adjourned to Thursday, November 15, 1877, at 12 o'clock, noon, at the same place.

COMPTROLLER'S OFFICE,  
NEW YORK, November 8, 1877.

The above sale is adjourned to Thursday, November 22, 1877, at 12 o'clock, noon, at the same place.

COMPTROLLER'S OFFICE,  
NEW YORK, November 15, 1877.

The above sale is adjourned to Thursday, December 13, 1877, at 12 o'clock, noon, at the same place.

COMPTROLLER'S OFFICE,  
NEW YORK, November 22, 1877.

JOHN KELLY,  
Comptroller.

JACOB A. WESTERVELT,  
HENRY F. DIMOCK,  
JACOB VANDERPOEL,  
Board of Department of Docks.

COMPTROLLER'S OFFICE,  
NEW YORK, November 1, 1877.

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COMPTROLLER'S OFFICE,  
NEW YORK, November 22, 1877.

JOHN KELLY,  
Comptroller.

JACOB A. WESTERVELT,  
HENRY F. DIMOCK,  
JACOB VANDERPOEL,  
Board of Department of Docks.

COMPTROLLER'S OFFICE,  
NEW YORK, November 1, 1877.

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COMPTROLLER'S OFFICE,  
NEW YORK, November 22, 1877.

JOHN KELLY,  
Comptroller.

JACOB A. WESTERVELT,  
HENRY F. DIMOCK,  
JACOB VANDERPOEL,  
Board of Department of Docks.

COMPTROLLER'S OFFICE,  
NEW YORK, November 1, 1877.

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COMPTROLLER'S OFFICE,  
NEW YORK, November 22, 1877.

JOHN KELLY,  
Comptroller.

JACOB A. WESTERVELT,  
HENRY F. DIMOCK,  
JACOB VANDERPOEL,  
Board of Department of Docks.

COMPTROLLER'S OFFICE,  
NEW YORK, November 1, 1877.

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COMPTROLLER'S OFFICE,  
NEW YORK, November 15, 1877.

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COMPTROLLER'S OFFICE,  
NEW YORK, November 22, 1877.

JOHN KELLY,  
Comptroller.

JACOB A. WESTERVELT,  
HENRY F. DIMOCK,  
JACOB VANDERPOEL,  
Board of Department of Docks.

COMPTROLLER'S OFFICE,  
NEW YORK, November 1, 1877.

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COMPTROLLER'S OFFICE,  
NEW YORK, November 15, 1877.

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COMPTROLLER'S OFFICE,  
NEW YORK, November 22, 1877.

JOHN KELLY,  
Comptroller.

to execute a lease according to said form for ten days after said sale, his bid will, at the option of the Comptroller and the Board of the Department of Docks, be rejected.

The leases will contain a covenant requiring the lessees to pay rent quarterly-yearly to the Comptroller.

The successful bidder will be required to pay to the Collector of City Revenue the sum of fifteen hundred dollars immediately after the franchise shall have been struck down to him, as security for the execution and performance of the lease, such amount to be credited on the rent when the same becomes due.

Security, satisfactory to the Comptroller, will be required for the punctual performance by the lessees of the covenants of the lease of the franchise in their behalf.

The minimum price for which the lease of said wharf property connected with the ferry from Ninety-second street, East river, to Astoria, Long Island, will be sold, has been fixed by the Board of the Department of Docks at the following sum, namely:

For bulkhead at foot of Ninety-second street, East river, and for premises at foot of Fulton street, Astoria, as now occupied for ferry purposes, at \$250 per annum.

The premises connected with the said ferry, to be taken in the condition in which they were in on the 1st day of August, 1877, and all repairs and rebuilding thereof, and dredging at said ferry during the term leased, to be done at the expense and cost of the lessees.

The purchase of the lease will be required, at the time of the sale, and in addition to the auctioneer's fees, to pay to the Department of Docks twenty-five per cent. of the amount of the annual rent bid for the wharf property, as security for the execution of the lease, and which twenty-five per cent. will be applied to the payment of the rent for such property first accruing under the lease, when executed, or forfeited if the lessee neglects or refuses to execute the lease and bond after being duly notified that the lease is prepared and ready for signature, or, in case the bid be finally rejected, will be returned to the bidder.

Lessees will be required to pay their rent for the wharf property quarterly, in advance, in compliance with a stipulation therefor in the form of the lease adopted.

The franchise and the lease of the wharf property, of said ferry will be put up and sold together to the highest bidder, subject to the condition hereinafter expressed, and subject also to the right of the Comptroller and the Board of the Department of Docks to reject any or all bids, if deemed to be for the interest of the city.

The right to reject any bid, if deemed to be to the interest of the City of New York, is reserved by the Commissioners of the Sinking Fund.

By order of the Commissioners of the Sinking Fund.

Dated New York, October 20, 1877.

JOHN KELLY,  
Comptroller.

JACOB A. WESTERVELT,  
HENRY F. DIMOCK,  
JACOB VANDERPOEL,  
Board of Department of Docks.

COMPTROLLER'S OFFICE,  
NEW YORK, October 25, 1877.

The above sale is adjourned to Thursday, November 8, 1877, at 12 o'clock, noon, at the same place.

COMPTROLLER'S OFFICE,  
NEW YORK, November 8, 1877.

The above sale is adjourned to Thursday, November 15, 1877, at 12 o'clock, noon, at the same place.

COMPTROLLER'S OFFICE,  
NEW YORK, November 8, 1877.

The above sale is adjourned to Thursday, November 22, 1877, at 12 o'clock, noon, at the same place.

COMPTROLLER'S OFFICE,  
NEW YORK, November 15, 1877.

The above sale is adjourned to Thursday, December 13, 1877, at 12 o'clock, noon, at the same place.

COMPTROLLER'S OFFICE,  
NEW YORK, November 22, 1877.

JOHN KELLY,  
Comptroller.

JACOB A. WESTERVELT,  
HENRY F. DIMOCK,  
JACOB VANDERPOEL,  
Board of Department of Docks.

COMPTROLLER'S OFFICE,  
NEW YORK, November 1, 1877.

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NEW YORK, November 15, 1877.

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COMPTROLLER'S OFFICE,  
NEW YORK, November 22, 1877.

JOHN KELLY,  
Comptroller.

JACOB A. WESTERVELT,  
HENRY F. DIMOCK,  
JACOB VANDERPOEL,  
Board of Department of Docks.

COMPTROLLER'S OFFICE,  
NEW YORK, November 1, 1877.

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COMPTROLLER'S OFFICE,  
NEW YORK, November 22, 1877.

JOHN KELLY,  
Comptroller.

JACOB A. WESTERVELT,  
HENRY F. DIMOCK,  
JACOB VANDERPOEL,  
Board of Department of Docks.

COMPTROLLER'S OFFICE,  
NEW YORK, November 1, 1877.

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COMPTROLLER'S OFFICE,  
NEW YORK, November 22, 1877.

JOHN KELLY,  
Comptroller.

JACOB A. WESTERVELT,  
HENRY F. DIMOCK,  
JACOB VANDERPOEL,  
Board of Department of Docks.

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