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THIRD ANNUAL MESSAGE

OF

ALEXANDER HENRY,

MAYOR OF THE CITY OF PHILADELPHIA,

WITH THE

ACCOMPANYING DOCUMENTS,

January 31st, 1861.

DEPARTMENT OF SURVEYS.

DEPARTMENT OF SURVEYS, }
Philadelphia, Dec. 29th, 1860. }

HON. ALEXANDER HENRY,
Mayor of Philadelphia.

DEAR SIR:—In compliance with your circular of the 10th inst., I take great pleasure in presenting to you a full and detailed statement of the condition and affairs of this Department.

The appropriation made for the use of this
Department for 1860, amounted to, . . . \$23,695 00

Expended for General Office and	
Salaries,	\$12,484 06
For Surveys, Extending the City	
Plot,	7,834 50
For Surveys Revisions and other	
work,	1,446 00
Balance to merge Jan. 1st, 1861,	1,930 44
	\$23,695 00

SURVEYS.

The work upon Sectional Plans of the City Plot, have been prosecuted during the year to the extent of the amount appropriated, and the following is a list of plans that have been filed in the Department during the year, the greater number of which have been examined upon the ground by the Board of Surveyors, and having received their approval, are ready for confirmation by the Court.

Plan	
No. 156.	2d Sec. 23d Ward, app'd by Board, Jan. 3, '60.
" 157.	3d " " " " " " " "
" 158.	4th " " " " " " " "
" 159.	5th " " " " " Jan. 16, "
" 160.	6th " " " " " " " "
" 44.	Alteration of 32d St., approved by Board, Jan. 16, 1860.
" 166.	4th Div. W. Phila., and part of Blockley, approved by Board, Feb. 20, 1860.
" 163.	Part of 21st Ward, app'd by Board Feb. 20, '60.
" 192.	7th Sec. Ger'ntown, " " Mar. 5, "
" 68.	Regulations of Hope St., approved by Board, Mar. 5, 1860.
" 165.	3rd Sec. Chestnut Hill, approved by Board, Mar. 19, 1860.
" 171.	7th Sec. 23d Ward, app'd by Board, Ap. 16, '60.
" 172.	9th Sec. 21st " " " " " "
" 173.	10th Sec. 21st " " " " " "
" 19.	12th Sec. Blockley, " " May 7, '60.
" 167.	11th " " " " " "
" 169.	13th " " " " " "
" 72.	Revision—Green Lane, approved by Board, June 20, 1860.

- No. 175. Revision—part of 1st Ward, app'd by Board,
July 18, 1860.
“ 174. 11th Sec. 21st Ward, approved by Board, July
18, 1860.

The following is a list of plans filed during 1859, but not acted upon by the Board.

Plan No. 176. 5th Sec of Germantown.

“ “ 177. 8th “ “

“ “ 178. 3d Sec. Township of Bristol, complete.

PASSYUNK SURVEY.

The survey of the lower section of the City, the late Township of Passyunk, being still in the hands of Commissioners acting under an Act of Assembly, without regard to this Department. I am unable to furnish any information relative thereto, other than, that the City has so far paid upon that work over \$8000, and that there are bills outstanding and unpaid amounting to about \$6500, and that for this \$14,500 worth of work done, (which the City will probably have to pay,) there is no information whatever, either in shape of plan or memoranda, yet filed.

BRANCH SEWERS.

The construction of Branch Sewers, under the Ordinance of Nov. 11th, 1858, has been continued during the year, but not to the extent that we reported for the year 1859, nevertheless, the advantage of house drainage is becoming more generally understood, and the increase in the healthfulness of the City as set forth in the health statistics warrants the assertion that it is mainly attributable to the improvement in drainage, and we trust that so convincing will these results be to our citizens generally, that the further extension of both Main and Branch Sewers will be of the first importance, and the construction of drains upon every square, with the necessary house connections for abolishing the use of cess-pools, will be one of the most advantageous applications; the value of house-drainage may be seen from returns on record; one from Lancashire (England) shows an excess of deaths in streets without sewers, over those properly drained, of 8 per cent. The average proportion

of deaths in our City prior to the year 1857 was 2 to every 100 per year for 1859 it was but $1\frac{6}{10}$ per 100, with a large increase of population, or 20 per cent. reduction, which is the best argument in favor of the extension of sewers, as lately constructed, that can be offered. Accompanying this, will be found a list of sewers constructed during the past year, from which it will be seen that $5\frac{16}{100}$ miles have been completed, 10,527 feet of which have been built, not only without tax upon the City, but in fact their construction has been a source of revenue to the amount of \$832 77, irrespective of the annual rentage which increases with each sewer finished.

INSPECTOR.

Great difficulty has been experienced in the Department from the want of a duly authorized officer of the City to superintend, and give continued inspection to the works as they progress; careful specifications are prepared and attached to all contracts, but we are compelled, generally, to depend upon the contractors themselves for carrying out the minutiae; the District Surveyors are not paid for the time requisite for such inspection, nor will the accumulating business of the Department allow the time to any one employed in the general office. I would therefore recommend the appointment of an officer, whose duty it would be to inspect and certify, before payment, that all work done under either this or the Highway Department, has been completed strictly in compliance with contract and specification, or the directions of the proper Executive Office. This appointment would, without doubt, save much expenditure for repairs by securing good work.

SEWERS BUILT BY CULVERT LOAN.

The Arterial Sewers, authorized by Ordinance approved February 27th, 1858, and paid for out of Loan created for that purpose, of date Oct. 1st, 1858, entitled "Culvert Loan," have all been successfully completed, and as we held a balance unexpended, after having finished the work so authorized, there have been added to the list of sewers constructed out of that loan, the following, viz.:

The Cohocksink Extension, from Culvert Street to Girard Avenue,	1560 feet.
The Huntingdon Street from Lemon Street to Frankford Road,	1603 "
The Montgomery Street from Sixth Street to Broad Street,	3638 "
The Ninth Street from Montgomery Street to near Norris Street,	700 "
	<hr/>
	7501 feet.

Being 1875 feet of 9 feet Sewer.

" 1603 " 7 " "

" 2179 " 4 " "

" 284 " 3 " "

" 1560 " 4 : 2 \times 3 feet Sewer.

These are all now completed except the Montgomery Street Sewer, which will be finished in about thirty days, and will, we hope, yet leave a few hundred dollars of Culvert Loan unexpended.

The account with the Culvert Loan stands thus:

Amount of Loan,	\$200,000 00
Expended on Moore St. Sewer, \$11,779 45	
" Vine " "	12,232 56
Expended on Cohocksink Main Sewer,	50,132 26
Expended on Coh'ksink Branch Sewer,	22,551 51
Expended on Cohocksink Extension Sewer,	3,795 60
Expended on Twenty-Fourth Street Main Sewer,	60,118 61
Expended on Twenty-Fourth Street Branch Sewer,	10,059 15
Expended on Huntingdon St. Sewer,	5,253 25
Expended on Montgomery St. Sewer to date,	13,900 14
	<hr/>
	\$189,822 53

Bal. on hand to finish Montgomery Street Sewer, and pay ret'd per centage, \$10,177 47

These sewers have been constructed under our own supervision, and we believe the work to have been well done. The change in the appearance and value of the sections of our City, so improved, fully warrants the expenditure, as the increased tax assessed upon properties, that otherwise could not have been improved, will more than pay the interest on the Loan created for that purpose, their value in a sanitary point of view, I regret, we cannot estimate at this time in a tangible form.

The total cost of these Sewers has been, viz. :

Paid by Loan,	\$189,832 53
Paid by Assessment Bills,	36,615 52
	<hr/>
Total,	\$220,438 05

The Ninth Street Sewer is in fact an extension of the Cohocksink, being upon the line of drainage of the main branch of that stream, and prior to the commencement of our work, the natural surface was so situated, that no improvements could be made. Preparations are now in progress for extensive buildings operations in the spring. This sewer should be extended on Ninth Street 400 feet to Norris Street, and on Norris Street 230 feet to the Germantown Railroad; this at an approximate cost of \$5000, will throw into the Market the whole of the low ground north of Montgomery Street and eastward of the Germantown Railroad.

SEWER EXTENSION.

The necessity for the continued extension of the sewers, is daily becoming more apparent, particularly in the southeast and southwestern districts. In the southwestern, an Arterial Sewer of considerable extent will be called for, in all probability, the coming year, as the paved limits have been extending at a rapid pace, and a portion of the area is so arranged with surface gradients as to require underground drainage before improvements can be erected. I allude to that portion of our City lying west of Broad Street and south of South Street; the general elevation of this section is so uniform, as to require the adoption of basins, which, objectionable as

they are, are here rendered imperative, and until means are provided for their drainage, they will remain unimproved, but so soon as it is rendered suitable for residence by the construction of sewers, an area now in open common, will be covered with improvements that will add very greatly to the revenue from taxes.

In the southern district, extending northward as far as Federal Street, and west of the Passyunk Road, the want of drainage is a source of constant complaint. Here it will be necessary to adopt an arrangement of sewers different from our usual plan, on account of the low elevation of the general surface; and to provide an outlet, it will probably be necessary to resort to tidal sewers, *i. e.* a main sewer of large capacity extending across the low land, somewhere about the line of Oregon Avenue, and to open into both the Delaware and the Schuylkill Rivers at low water mark. It may be adjusted to have a continuous current in it, but that cannot be determined, nor can its location be fixed without careful and extensive examinations; but, it can without difficulty be arranged with flood-gates, so that they may be kept perfectly clean, by flushing at low-tide. I should recommend that this matter be a subject for examination at an early day, as at the present time we are precluded from constructing a sewer on Federal and Eleventh Streets, unless we deliver it into an area of drainage already charged to a safe limit. The Cohocksink Creek which has been, until the last year an objectionable feature of an otherwise valuable and healthful section of our City, has now been covered in entire between Front and Mifflin Streets. At Thompson and Mifflin Streets, this creek branches, the main stream coming from the north, lying upon Mifflin Street, which is covered in by a sewer to a short distance above Oxford Street, the other branch, coming from the west, being accommodated by the Thompson Street Sewer. On the main stream there is yet a portion not covered in, showing an open channel for filthy sewerage, from Oxford to Montgomery Street, a distance of 1150 feet intervening between what we term the Montgomery Street Sewer (nearly finished) and the Cohocksink Sewer totally completed. I earnestly

recommend that this be covered in at the earliest moment, for the healthfulness of that section, the approximate cost, exclusive of land drainages in opening Mifflin Street will be \$11,000. The requirements of that section of the City now demand that Columbia and Montgomery Streets crossing the open channel, should be opened for public use from Fifth to Sixth Streets.

INLETS.

I would also call your attention to the necessity of having our Street Inlets more carefully looked after. In their construction a trap is formed to prevent the stench from the sewers polluting the atmosphere we inhale, which trap, often so fills with street washings, as to render the inlet entirely useless, this has partially been obviated by the introduction of a ventilator pipe, *outside the trap*, but it is not intended to be open, except in cases of emergency; it therefore very frequently occurs that the sump of the inlets becomes so full of street detritus, as not only to reduce very greatly their capacity, but frequently close them altogether, giving an impression, to those not familiar with their construction, that the capacity of the sewer is too small. This should not be permitted, and a larger force should be employed, for the express duty of keeping the inlets in working order.

OBSTRUCTING INLETS AND SEWERS.

We should also have an ordinance making it a penal offence, for any one to deposit other than liquid matters into the inlets, or to allow substances insoluble in water to pass into the sewers through the connections allowed them by law. Another objectionable custom now permitted by ordinance, should be abolished, which is, the connections that are daily being made as drains from cess-pools or privies. This is rendering the air in our sewers most fetid, making it absolutely dangerous in every way, as the gases penetrate everywhere, extending even into the material embedding the sewer, and on account of this, it is impossible, in many instances, that any examination can be made with safety, of their interior. This liquid differs from the discharge from

water-closets, as the latter being greatly diluted passes off without injury; their use should be encouraged; in fact, could the whole system of cess-pits be discontinued, it would greatly improve the healthfulness of our City.

SEWER RECORD.

One of the most useful records kept in this department, is that of the location, depth, size, &c., of sewers, but it is as yet very incomplete, as there are many, particularly in the old section of the City, of which we can give no information. The continuation of the examinations, authorized a few years since, would be of advantage to builders, and would, without doubt, expose many imperfections in early constructions, that if now corrected at comparatively small expense, would prevent accidents of flooding, which have been attributed to a want of capacity in the sewer, and thus prevent heavy expenditure in constructing new lines of drainage, when the existing line may be entirely sufficient, if properly arranged. This, we believe, will be the result of an exploration made in the sewer at Fifth and Parrish and Poplar Streets, as well as the line of Parrish Street, where a new sewer had been deemed essential, at an expense of tens of thousands of dollars; yet an exposure of the defects in the allignment of main sewer, and the connections of branch lines thereto, we believe will give us data to correct the trouble long-complained of, at a trifling cost. In the matter of determining the sizes of sewers, we have even now no information that may be said to be entirely satisfactory, *i. e.* that will enable us to fix upon a minimum size of sewer with perfect confidence that our work will be successful, and for a want of information, we adopt formulæ of calculation, wherein we err on the safe side, for drainage purposes, but at the same time with an apprehension that we are extravagant in expenditure. Had we authority to institute a system of observations upon our sewers now in operation, the cost would be returned ten-fold in the saving that would be made upon the first large line of sewerage constructed. We are learning daily, but it is a branch of engineering that has been but little called for in this country, until

of late years, and in our beginning we profit as much as possible by the experience of older cities; but even they vary so much in their reported results, as the circumstances in all cases cannot be reduced to a common basis, that we are thrown upon our own judgment, and this we now ask may be assisted for the benefit of our city, by such information as can only be obtained under her auspices.

CHESTNUT STREET BRIDGE.

It is a source of great regret that I cannot report more favorably in relation to the construction of the Chestnut Street Bridge. So far as municipal legislation is required, all has been done, but the conditions of payment are as yet undetermined by the difference of construction placed upon the law requiring the Philadelphia City Passenger Railroad to contribute to the expense of its erection. Yet we trust that before the winter passes all difficulties may be adjusted, and thus the time for its completion may not be unnecessarily delayed. In deciding upon the cast iron arch which was submitted by the Board of Surveyors, as a suitable plan for the bridge, some doubt was thrown upon the propriety of its adoption, from the circumstance that the bridge of Austerlitz at Paris had (as reported in a Paris guide book) proved an imperfect structure. For our own information on this subject (though the very many successful examples of similar structures gave us no anxiety) correspondence was had with M. Michael Chevallier of Paris, who with great kindness replied in full, stating "that no anxiety need be felt, from the fact that the Bridge of Austerlitz had failed, as it was constructed upon incorrect principles, and no astonishment was expressed, as the cast iron of which it was composed *was not arranged to resist a crushing force*" (the only proper form for its application), and "that it *had not*, as had been stated, caused the French engineers to discontinue the use of cast iron for bridge purposes. On the contrary several very fine cast iron arches have of late years been erected by them, such as the 'Bridge of the Holy Fathers' at Paris, and one across the Rhone, between

“Beaucaise and Tarascon, both of considerable spans, “the latter of which, built by Messrs. Talabot & Martin, “compares closely with our proposed structure.” The drawing and specifications for the masonry of our bridge have been prepared for some time, and we are now progressing rapidly with the details of the superstructure.

The Market Street Bridge is in good order, but should be weatherboarded, to prevent the rapid decay of its main supporting timbers.

The Suspension Bridge is in the same condition as reported last year. The western approach should be arranged, by raising the wing walls to grade level. The anchor pits should be built up, and the bearing points on the towers changed from a single roller to a bearing plate upon rollers, thus cutting off the vibrations of the cables more perfectly.

The Girard Avenue Bridge, though not used to the extent of the other bridges, is coming rapidly into use and is in good order.

The bridge over Gunner’s Run at Richmond street, I report as now safe. The structure that has been *hanging* there for several years was peculiar in plan, and had become so insecure as to call imperatively for a thorough repair. It has now been completed by adopting the “Whipple Truss,” using the old material as far as possible, and adding a new system of bracing with new end posts. Some of the other bridges over Gunner’s Run are in very bad order, and should be repaired as soon as possible, particularly those on the line of Cumberland and York streets. If they are not soon adjusted serious results may occur.

MARKET STREET.

I beg leave also to call your attention to the importance of increasing the capacity of the footways on Market street east of Eighth street. Their present width was arranged to suit the contracted cartways upon each side of the market sheds, but now that they have been removed we have one of the finest business marts that can be found in any city, and the widening, as now proposed, will greatly facilitate our business men in conducting the

extensive mercantile operations to which that portion of the street is devoted. To perfect this the elevation of the carriage way, as far at least as the tracks of the passenger railway, should be altered, and frequent inlets introduced to avoid the necessity of high curbs. This cannot be carried out until the railroad track to Dock street, belonging to the city, can be removed, as it now occupies a portion of the street that must be adjusted in surface; nor can this be disturbed until the Pennsylvania Railroad Company's trade is diverted from Dock street via Market street, after which there will be no necessity for any line of freight rails east of Eighth street.

CITY RAILROAD.

I also desire, in this connection, to call your attention to the changes that are about taking place in the railroad connections with our city that will very materially affect the revenue now derived from the City Railroad, and call for a consideration of the question, whether the interests of the city would not demand that the care and responsibility of the tracks occupying our streets for freight purposes, should not be transferred to the several companies controlling the trade which passes over them.

The changes I allude to are these: the Pennsylvania R. R. Co. are making an extension to the Delaware front by way of Washington Avenue, by which all the freight and emigrant business, now rating from Dock street, amounting, in 1859, to \$3,424.25, will be lost. They are also about changing the location of their passenger depot from Eleventh and Market streets to West Philadelphia, by which, as per the receipts of 1859, \$2,955.65 will be lost, making a total from the Penna. R. R. Co.'s business alone of \$6,379.90 annually. Again, the Reading Railroad Company intend making a connection between their road and the Pennsylvania Railroad on the western side of the Schuylkill, which will change the current of the coal trade for local distribution, and will, by force of circumstances, drive all our retail coal yards out of Broad street to the line of Washington Avenue and Willow street. This will take from South Broad street the coal

cars of the Reading road, as well as the merchandise cars that now occasionally connect with the Baltimore railroad, and will reduce the receipts at least \$1000 more, thus making a total loss of receipts of say \$8,300 annually. The condition of affairs, then, may be shown by an exhibit of the business upon our City Railroad for the past five years, which shows that the receipts from tolls, &c, during that period (and this length of time is taken to cover more accurately the cost of repairs), amounted to an average of \$12,523.23 annually; while the average expenditures during the same time, including repairs to north side of bridge, used by the railroad exclusively, was \$8,275.01 per annum; giving a yearly revenue, from 1855 to 1859 inclusive, of \$4,248.22. But as the repairs to bridge might be considered an extraordinary expenditure, and should, in averaging, run over a longer time than five years, we might fairly state the average revenue at \$5,000; and then, with the loss of \$8,300 of tolls annually, it shows that the road, *as now used*, could not be sustained without an annual loss to the city of \$3,300, which we cannot hope to be made up by any probable increase of business in local freight. We will thus be forced to abandon the tracks east of Eighth street, and on Broad street, keeping only those on Market street west of Thirteenth street for the use of Penna. R. R. Co.'s local freight, and from Thirteenth to Eighth for the transporting houses located within that limit. From the business of the Penna. R. R. Co., transacted at Thirteenth and Market streets, we received during the year 1859, in tolls, \$2,923.86; from the West Chester R. R. Co., \$1,322.58, and from the transporters about \$1000; making the total receipts due that portion of the line, between the bridge and Eighth street, \$5,246.44. To do this business, it will be necessary to keep 2.79 miles of single track, which, for repairs on that street and salaries, has heretofore cost about \$1,400 per mile, exclusive of repairs to bridge, or \$3,906 annually, leaving a balance for revenue of only \$1,340.44 per annum.

The removal of the tracks from Broad street will be of great advantage in relieving that magnificent avenue from an incubus that has prevented the erection of that

class of improvements upon its line to which its width and location justly entitle it; and it is a subject to be considered in a business light, whether the city is doing justice to herself in retaining this road upon Broad street, even with the present business. The amount of tolls received therefrom may be stated at \$2,500 annually, as estimated by the Superintendent of City Railroad, and the expense for salary and repairs at \$700 per mile of single track, amounts to \$1,471; thus leaving for the annual revenue but \$1079. Now if the tracks be removed, a large increase over this amount will be received annually, in increased taxation. This may be shown by the linear feet of building front between Vine and South streets, the assessed value upon which, for taxes, may be increased, it is believed, without objection from the owners, conditioned upon the removal of the railroad. Thus, there are between Vine and South streets, exclusive of public squares, churches, and property fronting on intersecting streets, about 6,300 linear feet of frontage; if upon this an increased valuation of \$15 per foot be assessed in capital (being only 90 cents per foot per annum advance), we have, at 2 per cent. tax rate, 30 cents per foot annually, amounting in the aggregate to \$1,890 per year.

If the city should determine to continue in the ownership and charge of the road on Market street, then the entire track retained should be remodded as a permanency, and paved with cubical blocks on each side of rails; and this should be insisted upon as part of the transferring contract, should it pass into other hands.

SURVEYS—OLD CITY.

I must again call your attention to the necessity of having proper sectional plans made of portions of the 3rd and 5th Survey Districts, *i. e.*, that part of the old city lying east of Sixth street, in part of the Fourth and the whole of the Fifth and Sixth Wards, and the old District of the Northern Liberties. Of the first we have no plans whatever, either for lines or grades; and for the last, the plans are of such early dates as to be mere skeleton drawings, of what is now probably the most densely

populated section of our city; and many of the now principal streets are not on record anywhere.

HUNTING PARK.

There is yet another matter that should at this time be presented to your consideration, which is the necessity of providing for the extension of those streets that are now intercepted by the Park upon York Avenue at Nicetown Lane. This Park is now in such condition that it may be squared without great outlay, and without injury to its plan, as it is not yet developed. Every year that this is postponed will add to the cost, and as the city extends toward it, the requirements of the public will demand that the street lines should not be interfered with. This could be done in the same manner that the lines of the Parade Ground, in the First Ward, have been adjusted, and by which the city has become possessed of valuable fronts, that in a few years will be greatly advanced in value over the amount paid.

Respectfully submitted.

STRICKLAND KNEASS,
Chief Engineer and Surveyor.

SEWERS AUTHORIZED AND BUILT DURING 1860.

LOCATION.	Built by.	Size.	Length.	Cost.	Returned to City.
Otis St., Richmond to Latimer Street.....	City.	2 ft.	522 ft.	\$485 46	\$275 42
Jefferson St. Eleventh to Marvin Street.....	"	2.6	200	256 00	
Seventh Street northward from Poplar Street.....	"	2.6	347.6	448 28	2 28
Marshall Street southward from Montgomery Street.....	"	2.10	936	1281 80	70 56
Second Street southward from Montgomery Street.....	"	10	231	242 55	73 49
Wharton Street, Fifth to Sixth Street.....	"	2.0	408.7	388 16	138 44
Susquehanna Av. and Second St. from Hancock to York St.	"	3.0	1318.0	1713 40	8 60
Coates St., Ridge Av. to Sixteenth Street.....	"	3.0	837.0	1046 25	
Second St., Norris to Berks St..	"	3.0	550.0	1544 27	12 70
Second Street, Berks to Montgomery Street	"	2.6	557.0		

LOCATION.	Built by.	Size.	Length.	Cost.	Returned to City.
Bankson Street, Melon to Wallace Street.....	"	2.0	428.0	406 60	20 70
Wharton and Woodbine Streets, from Sixth to Federal St.....	"	2.0	555.0	527 55	177 34
Eighth Street, northward from Girard Avenue.....	"	2.6	341.0	358 05	53 24
Spruce Street, Seventeenth to Eighteenth Street.....	"	2.6	475.6	689 03	
Fifteenth St., Coates to Barclay Street	"	2.6	216.0		
Ninth Street, northward from City and Poplar Street.....	Petitioner	2.0			
Lawrence St., southward from Peti- Culvert Street.....	tioners	10	60.0	no return.	
Hayes St., Sixth to Seventh St.	"	10	183.0	134 31	
Canal St., Lawrence to Thompson Street.....	"	3.0	312.0	390 00	
Pleasant Street between Tenth Street and Ridge Avenue.....	"	2.0	240.0	no return.	
Franklin Street, Girard Avenue and Poplar Street.....	"	3.0	702.3½	1 53 37	
Second Street, Callowhill and Willow Street.....	"	2.6	189.0	166 75	
Sansom St., Eighth and Ninth Street.....	"	2.0	186.6	193 00	
Louist Street and Tin Alley.....	"	10	576.0	399 00	
Hamilton St. between Twenty-Fifth and Callowhill St.....	"	1.6	140.0	93 50	
Chester St. between Race and Vine Streets.....	"	2.0	155.0	164 30	
Leithgow St., between Thompson St. and Girard Av.....	"				
Market Street between Thirty-Sixth and Thirty-Seventh St.	City.	3.0			
Market St. and Forty-Second St. bet. Fortieth and Chestnut St.	"	3.0			
Twentieth St. betw'n Callowhill St. and Pennsylvania Av.....	"	2.6		Authorized but not built.	
Wallace Street between Seventeenth and Eighteenth Sts. ..	"	2.6			
Hudson Street between Market and Chestnut Streets.....	"	2.6			
Total built under Ordinance Nov. 11, 1858, in 1860.....			10,716 4½		\$832 77
Built under Special Ordinances in 1860.....			4,472.0		
Built from Culvert Loan in 1860			12,111.0		

27,289.4½ or 5 1/100 miles.

BRIDGES.

The outlay for repairs to Bridges, as shown in the table, will no doubt appear large. It will, however, be borne in mind that in a large city like ours, covering as it does a large extent of unimproved property and farm land a very large number of Bridges are necessary for public use and need frequent repair. Many of the Bridges at this time, are in a dilapidated state and of doubtful strength, that make them almost impassable, and in danger of being washed away by an ordinary freshet. During the month of August last, when a severe rain storm took place, the Bridges in the Twenty-fourth Ward were very much damaged. In the upper part of the Twenty-first Ward scarcely a Bridge was left, while the lower part of the Ward suffered considerably. In the Twenty-second Ward, the stone Bridge over Cusham Creek was wholly washed away, and a new Bridge has been constructed at the same place at a cost of two thousand dollars. This condition of the Bridges in the above wards rendered it necessary that this department should promptly repair the damages, attention being first given to such as were most used by the public, other repairs were commenced and partially completed, while several Bridges have been left not touched, because of the appropriation to the item of Bridges, having been already exceeded. No person could form the least conception of the terrible and ruinous destruction of the roads and bridges in the above wards without having visited them.

CULVERTS.

On the subject of Culverts, designed as they are for permanent use and benefit, it may be proper to remark, that the mode and manner of giving out the contracts for their construction to the lowest bidder is most prejudicial to the strength and security of the Culvert, as it is to the economy of the City. There is no denying that the past has afforded abundant proof that contracts have often been awarded to parties to construct Culverts at prices that were ruinous to contractors, did they attempt

to make use of the best material and build them in the most substantial manner as they were required by their contract to do, and hence to save themselves from ruinous losses, imperfect material was used, and imperfect work was done. This was evidenced in several instances during the past year, where Culverts had fallen in, and especially at Fourth and Christian street, where the falling in of a Culvert carried with it an inlet and the intersection, which cost the City two thousand dollars to repair.

Then again, there is, in my opinion, a defect in the construction of branch Culverts or drains that should be remedied. Parties now petition to the Board of Surveys for a branch Culvert or drain to be made at some certain locality, parties thus petitioning becoming responsible for the payment of the same, while the City becomes thereafter the possessor. In many cases a ten-inch pipe drain is laid, while it is claimed that it will carry off as much water and offal as a two and a half feet culvert. From the experience of this office, however, I have reason to believe that this is an error, because of the frequent calls made at the office to visit localities where drains have become obstructed, and upon examination they were found to be ten-inch pipe drains, and the obstructions mostly discovered at the end of the drain pipe, leading into a culvert of three feet in diameter. It is sometimes necessary to take up the whole length of the pipe-drain, being no other means to examine it. Where an inlet is put in at the end of such drain, the dirt from the street very soon fills up the pipe, and renders both the inlet and drain of no utility. To obviate these difficulties, this Department would recommend the passage of an Ordinance to prohibit the laying of pipe drains in the street where the purposes are for drainage, and that a Culvert two feet in diameter be made that can be constructed for the same cost, while it will save to the City considerable expense for consequent repairs.