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Public Works of Pennsylvania.

THE AIR CROS T AND THEIR REVENUE.

The cost of the "main line" of Philadelphia and Canal from Philadelphia to Pittsburg, \$15,056,077 23

Expenditures upon the same from the commencement to the close of the fiscal year of 1853, 11,987,132 97

Whole amount expended, \$27,043,210 20

Whole amount of revenue received into the State Treasury during that period, 17,026,100 86

Total amt. still out of pocket, \$10,017,109 34

The Delaware, Susquehanna, North Branch and West Branch divisions of canal cost, 5,712,230 11

Expenditures on the same up to date, 3,164,684 67

Whole amount expended, \$8,876,914 78

Whole amount of revenue received, 4,083,579 63

Amount out of pocket, \$4,793,335 11

The above are classed as the lines in operation. We have then the French Creek and Beaver divisions, which cost \$1,330,139 79

Expenditures, 354,271 94

\$1,684,411 73

Revenue received, 44,131 87

Cousin Penn out of pocket for this \$1,640,279 80

The above comprise what is set down as "finished lines." The whole cost of which was \$22,098,447 13

Expenditures on the same, 15,507,069 58

\$37,604,536 71

Amount of revenue, 21,163,812 49

Out of pocket for finished lines, \$16,440,724 22

Then to the cost of the finished works the report adds the following items:

Cost as above, \$22,097,448 13

Unfinished improvements, 7,712,531 69

Board of Canal Commissioners, 70,782 67

Board of Appraisers, 17,581 93

Collectors, Weighers and Lock Keepers, 1,348,384 14

Exploratory Surveys, 157,731 14

Expenditures of Canal Commissioners, 70,732 66

Whole cost of the works, \$31,476,244 36

To which add the expenditures paid \$15,506,089 58

\$46,982,333 58

To this, says the report, may properly be added the interest paid on loans directly applied, 30,735,243 32

\$77,717,547 26

The amount actually paid out, from which we are to deduct the amount of revenue yielded, 21,163,812 49

Amount out of pocket for all lines, \$56,553,734 77

To which is to be added a contingent item, called "Guaranteed Interest." Democrats wish

ed to invest money in certain improvements, of benefit to themselves, but with no hopes in the way of dividends, got the State to guarantee them six per cent. interest. The amount for different improvements of this class, 406,873 19

Amount of the indebtedness of the public works to the State, \$56,960,607 96

The greatest amount of water running over Fairmount dam was 4 feet 9 inches, on Tuesday, July 23. The quantity of pipe laid in the city proper in 1853 was 5180 feet, of which 2102 was three inches in diameter; 822 four inches; 2519 six inches; and 1365 feet twelve inches. This amount, with the 458,203 feet laid previously, makes 463,383 feet, or 87 1/2 miles. In Southwark there were 6004 feet of pipe laid, and 96,495 in former years, making 103,159 feet, or a fraction less than 20 miles. In Moyamensing there were 6012 feet laid, and 68,238 1/2 feet previously, making 74,310 1/2 feet, or upwards of 14 miles. Thus it will be seen that the water from the Fairmount Works is conducted through 121 miles of pipe, varying in size from one-half to thirty inches in diameter. The number of fire-plugs in the city proper is 677; in Southwark 211; and in Moyamensing 145—an increase of 4 in Southwark, and 7 in Moyamensing.

The number of hydrant pumps in the city is 249. The amount expended on account of Fairmount Water Works, in 1853, was \$43,511 05—in previous years, from 1800 to December 31, 1852, \$3,247,894 04, making the total expenditure, from the commencement of the works to the present time, \$3,291,405 09. The water duplicates of 1853 amounted to \$161,119; the amount for 1854, \$175,230; increase, \$14,111. Mr. Frederick Graef still continues as Engineer of the works, and Mr. George W. McMahon Register. To these gentlemen we are indebted for the above information.

Schuylkill Water Works.—These works, which are owned by the Northern Liberties and Spring Garden, supply these districts and Penn. A report of a special committee, appointed to consider the subject of increasing the capacity of these works, published in the Ledger a few days since, gave the reason why their enlargement is so imperatively demanded; among the principal of which was that a proper supply cannot be obtained at any season of the year by a large number of consumers. There are but three engines in operation at these works, and the following statement, kindly furnished by Mr. J. H. Flisler, Register, will show to what extent they have been driven, as well as the consumption of water, &c.:

Month	Total number of gallons pumped each month	Average number of gallons per day	No. of hours of the operation of the three engines each month	Amount of Coal used each month	Average height of the water in the Reservoir
January	73,915,233	2,766,943	1017	207	6 A.M. - 6 P.M.
February	60,165,540	2,080,555	891	186	5 1/2
March	92,913,882	2,997,292	1086	245	5 1/2
April	93,000,010	3,296,668	1176	215	5 1/2
May	111,829,239	3,770,169	1373	215	5 1/2
June	135,750,080	4,525,002	1509	320	5 1/2
July	143,401,100	4,980,111	1716	321	5 1/2
August	141,201,900	4,661,100	1734	321	5 1/2
September	142,827,480	4,768,983	1695	321	5 1/2
October	117,409,480	3,781,986	1216	229	5 1/2
November	93,260,000	3,128,960	1125	225	5 1/2
December	1,359,614,934	16,391,329	3393	131	5 1/2

The amount expended for the support and operation of the works in 1853, including the purchase of a small strip of land to square the Reservoir lot, was \$21,060 96. The duplicates of 1854 for Spring Garden, amount to \$55,135 92; Northern Liberties, \$34,222 50; Penn District, \$3,466. Total \$97,824 42.

City Gas Works.

The increased consumption of gas at the City Works, during the year 1853, shows an evident desire for more light. The works on Twenty-third and Market streets have been worked to their utmost capacity, and a superior article of gas has been produced from the improvements introduced by the Superintendent, Mr. John C. Cresson. Among the public lamps planted, 28 were placed in Independence Square. Through Logan and Rittenhouse Squares the pipe was laid and stakes driven for the lamps according to the plan submitted by Mr. Cresson to the committee on city property, and approved by them. Should the present determination of the committee not be changed, there will be 36 lamps planted in each of these beautiful resorts early in the approaching spring. Since the works were commenced there has been laid nearly 119 miles of gas pipe, and the statistics of the past year show a material increase over previous years, and the districts of Southwark and Moyamensing still continue to be supplied from the city works. The following statement will show their operations for the past year:

Month	Consumption in cubic ft.	Private lights added.	Public lamps added.	Meters set	Length of pipe laid in ft.
Jan'y.	56,752,000	1819	2	87	
Feb.	22,982,000	1738	2	92	
March	22,668,000	1676	6	103	393
April	18,750,000	2157	3	118	1009
May	46,777,600	1639	1	180	3393
June	55,224,000	1506	60	271	533
July	12,065,000	1506	23	83	2191
Aug.	13,715,000	1982	4	83	1993
Sept.	18,809,000	2574	2	151	2743
Oct.	54,250,000	3491	1	171	1618
Nov.	38,589,000	2382	4	179	3755
Dec.	32,500,000	3006	4	150	505
Total	249,772,000	25,950	110	1394	28,667
Prev'ly	1,414,917,000	157,170	1706	11,710	604,166
	1,664,689,000	183,100	1816	13,104	627,233

The new works in Passyunk are so far completed that but few days would be required to prepare them for the manufacture of gas, if any thing should occur to demand their immediate use. The greatest drawback would be the preparation of suitable houses in the vicinity of the works, for the workmen. This can very soon be arranged if Councils will make the necessary appropriations, which they have neglected to do thus far. The 20 inch main which is to connect the new works with the distributing main at the old works in Market street,

has nearly all been laid. The entire length is 15,470 feet—of this, 14,900 feet has been laid, leaving only 570 feet to finish it. The gasometer is 162 feet in diameter, and 90 feet high, and capable of holding 1,900,000 cubic feet of gas—a larger quantity than any other tank in the world can contain. This is supported by 12 pentagon towers, of beautiful construction, each 92 feet high and 16 feet in diameter. The retort house is 250 feet long, 56 feet wide and 50 feet high, with 21 cast iron Gothic windows on each side. It contains 220 retorts, and facilities have been introduced to increase the number as may be required. The towers were constructed by Messrs. Merrick & Son, and the gasometer or holder, which is of the telescopic pattern, by Mr. Joseph H. Amer, under the immediate superintendence of Mr. George W. Kraft. It was commenced on the 12th of January, 1853, and on the 20th of September the outer section was lowered. The inner or upper section is 155 feet 6 inches in diameter, and 45 feet deep, with hydraulic cup or seal, 20 inches deep by 6 inches wide. The side, including the cup, is composed of 22 rows of sheets of Nos. 10, 11 and 12 iron, joined together by button-head rivets, at intervals of 1 inch each. It was kept in shape by an angle iron frame, supported by 21 cast iron legs or uprights. The legs are in the form of the letter D, cast in five sections of 9 feet each, and bolted together, while a score 6 inches by 10 runs the whole depth of the side, so as to admit of loading the gas-holder, should any extra pressure be required. Each row of sheets contains 84 distinct pieces, consequently there are 1848 sheets in the section. The crown of the upper section is composed of No. 12 sheet-iron, laid in 16 circles, with upwards of 2000 sheets. It is supported by a king post of boiler iron, 7 rings of angle and bar iron, and 24 trusses of round and square iron from 1/2 to 1 1/2 inches thick. The trusses contain 2,675 pieces. On the crown of the holder are 6 manhole plates and 2 bonnets for stand-pipes, with an elevation of 4 feet. The outer or lower section is 160 feet in diameter and 45 feet deep, with a cup similar to the upper section. The side has also 22 rows (1848 sheets of iron) varying in thickness from No. 10 to No. 14, and riveted together like the other. In the two sections, 400,000 pounds of wrought iron were used, and 175,000 pounds of cast-iron—total 665,000 pounds or nearly 300 tons of iron. There were 687,934 rivets used in the construction of the holder, and for the purpose of facilitating the driving of them, the builder had all the holes bored in every sheet before a single one was removed from his works in West Philadelphia. Such is the great precision with which steam-power is applied to the mechanic arts, that for all the gas-holders which have been erected in this and other cities, by Philadelphia manufacturers, the material has been prepared at the works

Water and Gas in Spring Garden.

The authorities of the district of Spring Garden are making arrangements to extend and enlarge both the water and gas works located therein. In order to carry the water plans into effect, the consent of the committee of the Northern Liberties Board has been obtained. At an early day in the Spring operations will be commenced. An increased demand renders greater force and quantity necessary; besides, upon some days in the week, when water is much used for household purposes, some of the residents in Penn and the Northern part of the district are entirely deprived of water. Some persons are of the opinion that this is owing to the basin of the works not being sufficiently high, but this is a mistake. Its height is above that of any piece of ground within the entire territory in which the pipes are laid. The true cause is an insufficiency of water—consequently the water becomes exhausted before it reaches its level, which it will always do if not directed from its course. To obviate this, another capacious basin is to be constructed, adjoining the present reservoirs. A thirty inch main is to be laid down, as far as Schuylkill Fourth street. The mains now in use are fifteen inches, and it will readily be seen that a vastly greater supply and increased force can be acquired by the one proposed to be introduced. Diverging from the above point, in lesser pipes of conduit, it is thought that every house will then get a full supply of water at all times. Another engine is also to be added to the three already in use at the works. A proposition has been made by an experienced inventor and mechanic to build one of as much power as the three in operation; but this we believe has not been decided upon. In consequence of the complaints from some localities in the district of a poor supply of gas, it is also proposed to extend the gas works, and arrangements to that effect will be made at an early day. It is often asked why a greater head of gas is not added at the works, so that the gas will be forced into places which lie low. This is another mistake. The difficulty is owing to a want of capacity in conducting the gas over a vast extent of territory. The cost of these improvements will not be short of \$100,000; but they are said to be indispensable, and must be made with as little delay as possible. From both works a large revenue is derived. By making these expenditures, it is supposed that the profits will be considerably increased, and the wants of the people, both as to water and gas, fully satisfied.

Weather Statistics.

The following interesting statistics in relation to the temperature and the quantity of rain that fell during the year 1853, is obtained through the courtesy of Dr. John Conrad, being compiled from the journal kept by him, with great care, at the Pennsylvania Hospital.

Mean temperature of each month of 1853, and the highest and lowest temperature of each month.

Month	Mean	Highest	Lowest	Mo. range
January	33.13	53	6	12.33
February	37.35	59	17	13.80
March	45.06	72	18	16
April	52.44	78	36	16.22
May	63.46	87	45	17.24
June	73.77	94	52	18.56
July	75.50	91	62	14.77
August	74.58	93	55	15.77
September	68.53	91	41	16.22
October	53.48	75	31	16.70
November	47.89	68	23	13.77
December	34.98	53	15	12.22

Mean of Year, 54.84

Mean daily range of thermometer for Year, 15.34

Mean temperature for each month, at 9 A.M.

Month	Temperature
January	31 80 deg.
February	36 46 "
March	43 03 "
April	52 66 "
May	61 32 "
June	73 56 "
July	76 10 "
August	75 14 "
September	68 11 "
October	53 61 "
November	47 50 "
December	33 39 "

Mean temp. 51 65

Philadelphia, Monday, January 2, 1854.

STATISTICS OF PHILADELPHIA.

Water-Works.

Fairmount.—The supply of water from these works, was more satisfactory to the consumers in the City proper, Southwark and Moyamensing, during 1853, than at any previous period since the works were first constructed, notwithstanding the consumption was so much greater than ever before. This is accounted for in a great measure, by the additional pump, the Jovial Turbine, and the new reservoir on Twenty-second and Parrish streets. The capacity of the works is now fully equal to the demand, and such will be the case for years to come. The total consumption of the year, was upwards of two thousand two hundred millions of gallons. The daily average throughout the whole year, was 6,231,395 ale gallons, and the largest quantity pumped in any one day, was 11,451,790 ale gallons. The following statement shows the quantity pumped, and the working of the pumps:

Month	Total ale gallons pumped in each month.	Average ale gals. per day	No. hours the pumps worked in each month.
January	132,064,510	4,289,177	2,164
February	116,700,085	4,187,860	1,865
March	151,552,665	4,888,795	2,432
April	174,302,740	5,810,091	2,807
May	205,473,135	6,625,165	3,396
June	232,641,625	7,754,720	3,732
July	241,644,555	7,791,985	3,867
August	245,941,960	7,933,612	3,908
September	227,560,425	7,555,347	3,662
October	201,557,075	6,609,260	3,238
November	176,609,985	5,886,999	2,863
December	161,150,410	5,018,721	2,630
Total	2,274,459,230		36,559