



**This PDF is part of the  
Philadelphia Water Department Historical Collection  
Accession 2004.071.0001  
Frederic Graff Jr. Scrapbook, 1854-1857**

**It was downloaded from  
[www.phillyh2o.org](http://www.phillyh2o.org)**



**SECURING THE SCHUYLKILL WATER.**—A plan was sometime ago made to Councils, to take into the propriety and practicability of erecting at Fairmount a filter of sufficient capacity to filter all the water used in the city, before it enters the distributing pipes. It was believed that the increase of manufactories and of population on the Schuylkill tended materially to deteriorate the purity of the water, and consideration for the public health required that the matter should be investigated. This has been done under the direction of competent chemists, who establish the fact very conclusively, that the Schuylkill water has deteriorated in no important respects from its former excellent quality; that from the nature of its small contents of mineral matter, and its unusual freedom from organic matter, it is superior to most waters for domestic and manufacturing purposes; that from the nature and quantity of its mineral contents, it is unnecessary to adopt a system of filtration to improve its quality; and lastly, a comparison of the past and present leads to the inference, that no plan of improving the water will be required for many years to come.

Mr. Graff, who makes the report, shows that the filtered water supplied to London by the Chelsea Water Company, the purest used in the city, is three times more impure, after being filtered by one of the best filters in London, than the Schuylkill water is without filtration. Mr. G. also shows that the total area of the Fairmount reservoir is insufficient for the purposes of filtration even for the present supply of water. It contains but 322,183 square feet, while a filter bed necessary for the supply of water daily consumed in Philadelphia would require over 353,000 square feet. The expense would be enormous, without any adequate result. Our citizens have reason to congratulate themselves upon the fact that they have the purest supply of water of any city in the world.

**FAIRMOUNT WATER WORKS.**—Most of our citizens have experienced a difficulty in procuring water in their bath houses during the recent hot weather; yet the difficulty does not arise from any deficiency in the supply at Fairmount. These works supply the citizens of the first ten wards. Though a severe draught has been made on the works this month, as will be seen from the statistics given below, yet there was no material decrease in depth of water in the basins at Fairmount, nor the new basin at Twenty-second and Poplar streets. The consumption of water during two of the hot weeks of this month was as follows from the Fairmount works:

Day	Ale Gallons
Sunday, July 2	5,059,725
Monday, " 3	9,332,020
Tuesday, " 4	8,817,395
Wednesday, " 5	10,899,790
Thursday, " 6	9,798,875
Friday, " 7	8,663,415
Saturday, " 8	10,310,585
Average	8,973,096

Day	Ale Gallons
Sunday, July 16	5,019,930
Monday, " 17	8,717,785
Tuesday, " 18	8,124,710
Wednesday, " 19	11,574,420
Thursday, " 20	11,468,505
Friday, " 21	10,807,793
Saturday, " 22	10,888,183
Average	9,514,517

The amount of water supplied on Wednesday, 19th inst., as we learn from Mr. Frederick Grassl, Superintendent of the Works, was equal to 61 ale gallons of 282 cubic inches for each man, woman, and child in the old city proper, Southwark, and Moyamensing, or 353 gallons to each of the water tenants within the above-mentioned bounds. The quantity supplied on that day—11,574,420 ale gallons—would cover Washington square to the depth of nearly 6½ feet, or the amount supplied during the week ending 22nd inst.—86,601,625 ale gallons—would cover the same square to a perpendicular depth of 37½ feet.

The reservoirs at Fairmount, and the new one at Twenty-second and Poplar streets, have been kept unusually full the whole of this year thus far, so that no loss of head could be occasioned in the level of the water contained in them, should any accident occur at the works to reduce the power or quantity pumped. The greatest variation produced in the reservoirs this year was less than 10 inches, and that only one day (Saturday) when the tide interfered with the wheels, so much so as to compel a cessation of the works, and at a time when full nine-tenths of all the hydrants in the Districts supplied were in use for culinary or bathing purposes, or washing pavements. During the past week eight of the wheels were run 20 hours per day, and the Jovial Turbine wheel, 24 hours.

The Schuylkill works, which supply the old Districts of the Northern Liberties, Spring Garden and Penn, now the 11th, 12th, 13th, 14th, 15th, part of the 16th and 20th Wards, have been worked to their utmost capacity during the same period. The improvements making at these works are progressing vigorously, and in a short time a much better head will be afforded than has been the case for months past. The Kensington basin on Sunday contained but 4 feet of water. This is owing to some derangement at the works at the mouth of Gunner's Run.

**SECURING THE FIRE-PLUGS.**—A correspondent desires us to call the attention of the authorities to the fact that the fire-plugs should be secured immediately from frost by wrapping them in straw. The Chief Engineer of the Fire Department referred to this matter a month ago, stating that many of the fire-plugs were open and exposed, and if neglected may be productive of the most serious consequences. If the matter has not been attended to, the authorities cannot too soon set about it.

**Railroads in the United States.**

[From Dinsmore's Railway Guide, January, 1856.]

The following table gives a summary of the Railroads in the several States at the commencement of the years 1855 and 1856 respectively, and exhibits also the increase of railroads in the past year:—

States.	1855.	1856.	Inc.
	Miles.	Miles.	Miles.
Maine	467	494	27
New Hampshire	649	660	11
Vermont	516	516	—
Massachusetts	1,317	1,409	92
Rhode Island	106	145	39
Connecticut	632	699	67
New York	2,692	2,794	102
New Jersey	411	504	93
Pennsylvania	1,637	1,746	109
Delaware	49	56	7
Maryland	412	466	54
Virginia	1,123	1,395	272
North Carolina	603	634	31
South Carolina	765	846	81
Georgia	971	1,013	42
Florida	36	26	—
Alabama	302	487	185
Mississippi	150	296	146
Louisiana	173	337	164
Texas	36	35	—
Arkansas	—	37	37
Tennessee	317	455	138
Kentucky	192	204	12
Ohio	2,437	2,725	288
Indiana	1,622	1,789	167
Michigan	527	591	64
Illinois	1,892	2,315	423
Wisconsin	195	467	272
Missouri	37	139	102
Iowa	—	67	67
California	—	8	8
Total	19,834	23,242	3,408

The following table exhibits the progressive annual increase of the railroad mileage in the whole United States since the year 1825:

Years.	Miles.	Years.	Miles.
1825	3	1843	4,174
1826	23	1844	4,311
1827	41	1845	4,511
1828	54	1846	4,870
1829	131	1847	5,336
1830	576	1848	5,892
1831	762	1849	6,350
1832	918	1850	7,355
1833	1,103	1851	9,090
1834	1,421	1852	11,631
1835	1,843	1853	13,379
1836	1,920	1854	16,923
1837	2,167	1855	19,664
1838	3,319	1856	23,242
1842	3,877		

From the above tables it will be perceived that without including double and treble tracks, we have now in the Union, 23,242 miles of railroad, and we have, probably 2000 miles of double track, making in all more than 25,000 miles of iron way, or a length more than sufficient to encircle the globe at the equator. Within ten years the tripled has been quadrupled, and since 1850 alone, trebled. It will also be seen that the annual increase has been in an increasing ratio; and that this increase is to be continued in the future, it need only be stated that there are now at least 6000 miles in process of construction, that will be in use before the end of the year 1857. Truly this is a wonderful age, and what may not another quarter of a century produce, seeing the grand result of the last quarter! Valuing the completed railroads at \$30,000 per mile, the capital now invested in this interest amounts to \$697,260,000.

**Schuylkill Water Works.**—At the water works in the late district of Spring Garden, Messrs. I. P. Morris & Co. are erecting a large pumping engine, on the plan used in the mines in Cornwall, Eng. and. It is now universally admitted that these engines are the most economical used for pumping—a result brought about by a spirit of rivalry, existing between the engineers of the many mines in that great mining district, each striving to exceed the duty of the other, accomplished by the same amount of fuel. A record of the duty of all the engines being taken monthly and published by a person paid for the purpose. The duty of some of these engines has reached 120,000,000 of pounds raised one foot high with 94 pounds of coal; whilst the duty of the ordinary low-pressure engines used in this country seldom exceeds 21,000,000 of pounds, raised one foot high, with one bushel of coal.

The engine now erecting at the Schuylkill works has a steam cylinder of 60 inches diameter and 19 feet stroke, and a pump of 30 inch diameter and 18 feet stroke. The engine is single acting; the steam being admitted upon the top of the piston, only raises a plunger in the pump at the other end of the lever beam, which plunger is weighted just sufficiently to overcome the weight of the water and the resistance of its passage through the ascending pipe. It will therefore be seen that the steam exercises no more power than is just sufficient to do the work—there being no unnecessary power expended, as is frequently the case in ordinary engines. The steam is also cut off from the cylinder after the piston has passed, say, one eighth of its whole length—the piston being carried the remaining seven-eighths of the length of the cylinder by the expansion of the steam alone: this is one of the greatest sources of economy in this class of engines. Great attention will also be paid to having the cylinder and steam pipes protected from the air—first by a space surrounding it containing waste steam, and then by a strata of some non-conducting substance, such as saw dust, retained around the cylinder by a wooden or iron case. This precaution prevents any loss of air on account of its condensation by exposure of the cylinder to cold air. The work about this engine is characterized by great solidity and excellence, and a new boiler house and ornamental chimney has been erected to accommodate this improvement.

There are now employed at the works two vertical low-pressure engines, 36 inch cylinder, 6 feet stroke, each with double-acting vertical pumps, 18 inches diameter and 6 feet stroke. Also, one vertical, low pressure engine, 36 inch diameter, 6 feet stroke, with a horizontal pump, 22½ inch diameter and 4 feet stroke. These being insufficient to keep up a constant supply during the summer months—hence the necessity of the new engine.

In the month of July, of the present year, the average supply from these works has been 4,793,955 ale gallons daily. The new engine will, when working at her ordinary speed, raise about 3,759,520 ale gallons per day, and may be made to raise 4,139,040, should occasion require it. These improvements are now being pushed to completion, under the intelligent supervision of Mr. Graff, the Chief of the Water Department.

**PROHOMEW MAZZOLINA, No. 3 CORNHILL.**

**THE NEW CROTON WATER RESERVOIR.**  
The following letter was received by Mayor Wood from Mr. Van Schaick, President of the Croton Aqueduct Department, in answer to a communication addressed to that gentleman, relative to the new reservoir:—

New York, April 3, 1855.

HON. FERNAND WOOD, MAYOR:—  
DEAR SIR—Having recommended in 1846, and again in 1848, the subject of a new reservoir to the consideration of the Common Council, in the belief that it would in a few years become indispensable for the safety and protection of our population in their supply of water, and similar recommendations having since been frequently made by my successors in office, I proceed to answer your inquiries with the greatest pleasure and alacrity, in the hope that an exhibition of some facts may enable you to urge the Commissioners who have been appointed to take the lands to a satisfactory and final report to the Supreme Court.

In 1793, Joseph Brown, of Westchester, proposed that 300,000 gallons of water should be brought from the Bronx river, deeming that a liberal supply for every twenty-four hours. The population of the city was then about 65,000. Mr. Brown's supply would have been less than six gallons for each inhabitant, including streets, &c. Long subsequent to that period a usual calculation was seven gallons for each person. The Croton aqueduct now furnishes not less than thirty millions of gallons every twenty-four hours, which, supposing the population to be 650,000, is at the rate of more than forty-six gallons to each individual, including for streets, shipping, factories, &c.

But the department is convinced, from repeated estimates, that of the daily supply of thirty millions, not more than thirteen millions need to be actually consumed in all the purposes and business for which permits are granted, and that about seventeen millions are wasted every twenty-four hours. This most wanton and enormous waste, it may be possible to diminish by several measures, but no human power can subdue it to such a degree as to render the city safe in case of an accident, without increasing the supply of an additional reservoir.

A detailed statement of other reasons which exist would equally convince the most ordinary judgment, that prudence requires the construction of the new reservoir without further delay. A few particulars of recent occurrence will be sufficient. The flood of water in the Croton river in April last will be remembered. The reports concerning it, caused in the city the greatest alarm, and the stoppage of its most important concerns for a short time, and if the dam on the river had not been as solid as both nature and art could make it, there is every reason to believe that it must have been borne down by the flood.

It is believed that there is no work in the country better constructed than the Croton Aqueduct. But it necessarily runs for a considerable part of thirty-five miles along the sides of hills and over low intermediate grounds, rendering its stability less certain than if it ran over solid rock or level grounds, particularly in extreme cold weather, from the action of the frost.

On the morning of the 19th of March, of this year, a leak was discovered in the aqueduct, proceeding from a fissure 300 feet in length, in which the blade of a knife could be inserted. Upon the discovery of the leak by the superintendent on that part of the aqueduct, the most prompt measures were adopted, and to enable the engineer to repair the damage, the water was shut off at the dam forty hours. Is not this fact sufficient? Would comment upon what might have occurred had the damage been greater be of any avail?

In February last the gauge fell in the distributing reservoir nine feet in three days, because the water had been set to run day and night all over the city, to prevent its freezing in the pipes and faucets.

What discretion is to anticipate forever all events, and to steer its way successfully against opposition and opposition the most unaccountable? This department having frequently discharged its whole duty on this subject, must leave it to higher powers. In anticipation of the increase of the population and business of the city without reference to more imperative considerations, the time has arrived when another reservoir should be constructed.

If the water should shut off at the dam, the present supply, with the present waste, would last for five or six days; without any waste whatever, it might furnish the actual consumption for not exceeding fourteen or fifteen days.

Alluding to republican Rome and to a period under the Emperors, with her three millions and more of inhabitants, before my report had reduced her numbers and destroyed her power, Mr. Browne says "that she was furnished with water from the principal aqueducts at the rate of three hundred millions of gallons daily." Another summary gives the gallons in wae measure discharged in twenty-four hours from nine aqueducts, at 376,884,379. I give the exact in the author's computation, is one hundred gallons for each man, woman and child, and for all other purposes. I leave it to your own, my courageous friend, to make the contrast with our own restricted use of the purifying element, remembering that we are obliged to fine our fellow citizens, and cut off their water, to compel them to use it moderately and honestly, so that they do not exhaust our reservoirs, some diseases may find us without water sufficient to save the lives of the people until it can be repaired.

Having compressed in to the smallest possible compass what I deemed necessary to say in answer to your first question, I further reply that this department has paid the salaries of the commissioners for obtaining the lands, and of their two clerks, at \$4 a day for each, and also their expenses, amounting in all, to the 18th of January last, to the sum of \$5,789 02. The payments are made by virtue of the tenth section of the act of the Legislature, passed in June, 1853, and from an appropriation made by the Common Council for those and other services, and expenses to be incurred before and upon the commencement of the work. The payment to these commissioners formed one of the items which made up the estimate of the department that \$50,000 would be required for this year's expenditures of that amount, on the supposition that the report of the commissioners would be delivered to the Supreme Court without delay, and that this Board, upon its confirmation by the court, would be enabled to proceed in the construction of the reservoir, after reasonable time for adequate preparation. The commissioners commenced their sittings on the 5th day of May, 1854, and a charge from that date. The last quarter's bill presented by them, are stated to be correct over their signatures, in the same form as were the two which were paid before I entered anew upon the duty of President of this Department. It may be possible that, by law, the bills of the commissioners ought to have been sworn to, but I have not found any provision to that effect in the act of the Legislature, or in any ordinance of the Common Council to which my attention has been directed. With much regard, yours, &c.

M. VAN SCHAICK, President.

ABSTRACT OF A SUPPOSED BUEGLAR.  
A young man named George Eddins