



**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)**



COMPARATIVE TABLES.

Ward	1885	1884	1885	1884	1885	1884
First Ward	697	633	602	637	\$9897	\$9347
Second Ward	527	524	518	522	4377	4111
Third Ward	527	524	518	522	4377	4111
Fourth Ward	697	633	602	637	\$9897	\$9347
Fifth Ward	527	524	518	522	4377	4111
Sixth Ward	527	524	518	522	4377	4111
Seventh Ward	527	524	518	522	4377	4111
Eighth Ward	527	524	518	522	4377	4111
Total	4938	4738	4638	4638	\$30134	\$28190

48-1

Respectfully submitted,  
ROBT. E. ROBERTS, Secretary.

**THE WEST POINT CHAIN.**—Bishop's derrick has been employed for some time past in attempts to recover the massive chain which was stretched across the Hudson river, at West Point, during the Revolution, to prevent the passage of British vessels above that place. The Newburg Telegraph has an article showing what are the results attained. It says:

Two distinct chain impediments were thrown across the river; the first being a simple massive chain which was placed across the river in the vicinity of Fort Montgomery before the passage of the British fleet up the river, and which was broken and recovered; and the second chains of different construction which were placed at West Point after the return of the British fleet, and through which a passage was never subsequently attempted.

The history of these chains is somewhat obscure; but the success which has attended the operations of Bishop's derrick, has discovered some interesting facts on the subject. The first thing raised from the bottom of the river by the derrick was a portion of the chains and floats composing the last obstruction, embracing nine of the massive links and connections, and two of the floats to which the chain was attached. This recovery shows the precise manner of the construction of this chain obstruction, which has never been historically written. The obstruction consisted of two chains across the river, connected with the bank by four other massive chains, two on each side. The chains across the river were supported by logs or floats, about two feet in diameter and nineteen feet long, with three links of the chain at each end, between the floats. A rope ladder presents the idea of the manner in which the obstruction was made, better, probably, than anything else. The weight of the chains must have been immense, as the links now, although the action of the water for seventy years has corroded and worn them away, are about two inches square in the bars. The links are about 18 inches long and 8 inches broad, and are secured to the floats by heavy iron collars around the ends. The weight of the chains—the historical idea is *chain*—must have been something like 150,000 pounds, independent of the floats. This calculation is based on the statement of Mr. Simms, above referred to, that each link averaged 162½ lbs., and that 17½ feet of chain would be required at each end of the floats.

The prospect of recovering any considerable portion of the chains is not very flattering. The portion now recovered was close in shore, but the great depth of the water in the channel (160 feet) would seem to render further efforts useless.

The portion of the chains and floats recovered have been purchased by Mr. Carter, and deposited at the Head Quarters' House, where they may be examined. They are the greatest curiosities which we have ever had brought to our attention.

**THE NEW DOME OF THE WASHINGTON CAPITOL.**—The old dome is to be taken down entirely to the roof of the Capitol, and a base constructed of 25 feet in height and 132 feet in diameter, somewhat of an octagonal plan. On this stands a noble colonnade of 123 feet in diameter, consisting of 36 columns, with appropriate entablatures, balustrades, &c., from which rises an enriched attic of 33 feet in height by 107 feet in diameter. This attic forms the base of the cupola, the diameter of which is 88 feet and the height 56 feet. The whole is crowned by a gracefully proportional lantern, supporting a colossal statue of the goddess of liberty. The entire elevation from the ground on the eastern front of the building is 300 feet. The interior is exceedingly rich, and the ornaments are of a bold and striking character. The present rotunda is preserved as high as the top of the cornice; above this will be a gallery over which a belt of sculpture nine feet high, and nearly 300 feet long, extends around the entire dome. Above this there is a succession of galleries, colonnades, entablatures, attics, and balustrades, surrounded by a hemispherical ceiling, crowned with a lantern at the height of 215 feet from the floor. The highest point of lookout is 275 feet above the ground on the eastern front, and the highest point from which the interior may be seen is 315 feet above the floor. The whole work is to be of iron, from bottom to top, inside and outside. It will be the first structure of the kind ever built entirely of this material. The design, as well as the working drawings, is by Mr. Walter, the architect of the Capitol extension, and the execution of the work is under the direction of Captain Meigs, of the topographical bureau.

**The West End Water Works.**—The Select and Common Council, and other officials, paid a visit yesterday afternoon to the West Philadelphia Water Works, by invitation of Messrs. Berkinbine and Trotter, the Contractors. A table, spread with the good things of life, was placed in the engine-room.

48-3

After inspecting the works, the party indulged in the collation prepared for them.

Benjamin R. Miller being called up, delivered a neat and appropriate speech, of which the following is a synopsis: After a few preliminary remarks, he said that during the summer of 1852 a resolution was passed by the Board of Commissioners of the District of West Philadelphia, authorizing the appointment of a Committee to inquire into the expediency of, and introduce a plan for the introduction of water into the District; after a thorough investigation of the Ward, this place and plan was reported, in favor of which was subsequently adopted by the Board and a contract entered into with Messrs. B. & T., to construct the work for the sum of \$120,000. In the following spring of '53 the plan of the work was somewhat changed, principally in the character of the engines, which, with the other alterations of the original plan added to the cost of the work, all of which was considered necessary by the majority of the Board then in power; this necessarily delayed the completion of the work, together with changes of administration through which we have passed the opposition of many who were opposed to the enterprise. The pressure in the money market, which was seriously felt by the Contractors, they being compelled to submit to all such inconveniences as these obstacles would necessarily present. Two years and a half have now elapsed since the commencement of the work, and as we have before us to-day as the result of the indefatigable labors of Messrs. B. & T., a Water Works that not only do credit to those gentlemen as mechanics, that should prove a lasting memorial to their energy and ability—but adds another to the thousand monuments that stand before the world indicating the universally admitted fact that Pennsylvania not only possesses the iron for the construction of machinery, and coal to raise the steam, but mechanics than can raise the water, as well as merchants to raise the wind, if our Councils will not. This enterprise has not merely been finished, but I am quite willing to admit, more than meets my most sanguine expectations, and must receive the approbation of all who enjoy the benefits and security for health and comfort, as well as for the protection it affords against conflagration.

These engines are each 100 horse power, capable of pumping 900 gallons per minute, or over two million gallons per day, sufficient with a reservoir to supply a population of 100,000 people. The Tower, or stand pipe is on an elevation of about 100 feet above the tide-water, the tower is 5 feet in diameter, 130 feet high, making the entire height above tide-water 137 feet, which gives sufficient force to carry the water over the highest steeple in the city, this fact we refer to as being an important era in the history of Philadelphia as the beginning of a system which will when carried to the extent that will ere long be adopted in this city, of a water works, of sufficient capacity and height as to protect the entire city, as this is capable of affording to this portion of it, and such point is to be found in the Twenty-fourth Ward. We have now laid ten miles of pipe, with sufficient fire plugs to throw as much water as fifteen first-class fire engines, supplying the place of fire engines wherever they extend.

We are glad to know that with these facts before the public, the opposition manifested towards this enterprise is rapidly subsiding, and those who were its opponents, were so for the reason that they supposed it would never succeed. This was a prevailing opinion, I regret to say, in the Councils, formed merely from general rumor rather than from an investigation of the facts in the case. Gentlemen, you see for yourselves, that which you witness, and what we have stated, is but an outline of the benefits we expect to accrue from this enterprise, and when you come to view this work, as applicable to the interests of this, the West End, (as I may, I think, justly term it) and consequently the interests of the entire city, now that we have become a part of this great union, you will be ready to exclaim with one of ancient time, "The half has not been told."

I have indulged in the above remarks for the purpose of giving an outline of the history of these works, and in justice to the contractors, who may well be proud of their achievement.

And in conclusion, in a glass of this pure water, offer the following sentiment, Berkinbine & Trotter, if not 2 40, are first at last.

Hon. Judge Kelley, being called upon, delivered a very happy and appropriate speech, in which he alluded to the works as a monument of enterprise, that would ever reflect credit upon the skill of the contractors, and add to the value of property and happiness of the people.

Mr. Trotter, one of the firm, briefly thanked the gentlemen for their presence upon this occasion, and the party soon after separated, gratified with the visit. The following will give an outline of the extent and power of the works:

The Twenty-fourth Ward Water Works are situated on the river Schuylkill, about one-third of a mile above the dam.

The water from the river passes through a tunnel 6 feet deep, 5 feet wide, and 65 feet long, to a chamber 10 feet deep, where it passes through strainers of different sizes, where all floating particles are prevented from passing. In this chamber is also a stop for the purpose of shutting off the communication with the river. From the stop a 3 feet tunnel and 30 inch pipes conducts the water to the subsiding reservoir, which is 156 feet long, 75 feet wide and 16 feet deep. From the subsiding reservoir it flows into the pump well, from which it is pumped, and forced in the stand pipe by two direct acting vertical Cornish Engines. Each engine has a steam cylinder of 50 inches in diameter, and 8 feet stroke of piston. The pump plunger is 17 inches in diameter, and same stroke. The steam is generated by two gangs of Cornish Boilers, each 6 feet in diameter, and 32 feet long, with internal flues 5 feet in diameter. The water when pumped into the stand pipe, which is 5 feet in diameter and 130 feet high, has an elevation of 225 feet above tide water, giving it a head varying from 120 to 220 feet throughout all parts of the district. Each engine is capable of pumping (with ease) one million gallons in 24 hours.

48-4

There are over 10 miles of pipe laid in the district, and 107 fire plugs set.

The water being raised to such a great elevation, makes Fire Engines unnecessary. One of the pumps will supply as much water as could be thrown upon a fire by 10 first class Fire Engines, and under such a pressure that it may heard to the top of the highest steeple in the Ward.

The works with the stand pipe will supply from 20 to 25,000 inhabitants with water, and when the contemplated reservoirs are constructed, from 70 to 80,000.

The Steam Engines are remarkable for the small amount of fuel they consume, being less than one half the amount used by any Engine now in operation in the city would use, to perform the same amount of work.

48-5

**Opening of the Great Railway Suspension Bridge at Niagara Falls.**

UNION OF THE UNITED STATES AND THE CANADAS.

[From the Buffalo Express, March 10.]  
A special train left Hamilton, C. W., yesterday morning, for the purpose of crossing the suspension bridge, being the first train that has passed over this magnificent triumph of engineering skill. The Managing Director of the Great Western railway, the Vice President, and the heads of the several departments, with their invited guests, arrived at the bridge about 1 o'clock. The passenger engine and tender, crowded with people, crossed over to the American side, and after returning, one of the mammoth English freight engines made its appearance on the track, gaily decorated with British and American colors—flying in honor of the union of British America and the United States—and crowded with the novelty and excitement seeking spectators. At the moment that the colossal engine entered upon the bridge, the crowd united their voice in singing "God Save the Queen!" and as it passed to the centre, three hearty cheers were given and responded to by the delighted multitude on both the American and Canadian sides of the river.

The train then proceeded to the American side where—British mingling with Yankee voices—"Hail Columbia" and "Yankee Doodle" were sung with the same heartiness and spirit that had characterized the singing of Britain's national air.

The opening of this mighty and magnificent structure—well worthy of being classed with the world's wonders—really forms an epoch in the history of the world. It unites with strong iron bands two countries—to the intelligence and enterprise of whose inhabitants the bridge owes its existence, and stands a fitting monument.

Its strength can never be fully tested—the weight of a fully laden train being but a trifle in comparison to its capacity. A train of eight cars, filled with passengers, two baggage cars, locomotive and tender, weigh but about 150 tons; this being only one-sixtieth of its immense capacity.

The influence that this union of railroads will have, both in a commercial and social point of view, can hardly be over-estimated—judging from the enormous traffic that already seeks this delightful and expeditious route under the heretofore existing want of connections of the railways terminating at the bridge.

The railway portion of the bridge is, we understand, leased and controlled by the Great Western Railway Company, and has laid upon it tracks of three different gauges, viz.:

- The New York Central, 4 feet 8½;
  - The Elmira, Canadaigua and N. Falls, 6 feet;
  - The Great Western, 5 feet 6 inches;
  - thus affording facilities for the transit of passengers and freight from all the different lines.
- The following statistics will give some idea of the great bridge and its capacity, from which some interesting calculations might be made—such as total length of wires, &c., &c.—but these must be reserved for a future occasion:
- Length of span from centre to centre of towers, 822 feet.
  - Height of tower above rock on the American side, 88 "
  - Do. do. do. Canada " 78 "
  - Do. do. do. floor of railway, 60 "
  - Number of wire cables..... 4
  - Diameter of each cable..... 10 inch.
  - Number of No. 9 wires on each cable..... 3,659
  - Ultimate aggregate strength of cables..... 12,400 tons.
  - Weight of superstructure..... 750 "
  - Do. do. and maximum loads 1,250 "
  - Maximum weight the cable and stays will support..... 7,300 "
  - Height of track above water..... 234 feet.