

New York (City)

"

Catskill Aqueduct Celebration Publications

A Collection of Pamphlets Published in Connection with
the Celebration of the Completion of the Catskill
Aqueduct, being chiefly Catalogues of Exhibitions
held by Art, Scientific and Historical Museums and
Institutions in New York City in cooperation with the
Mayor's Catskill Aqueduct Celebration Committee
in 1917.

ARRANGED BY
GEORGE FREDERICK KUNZ, Ph.D., Sc. D.,
Chairman of the Committee on
Art, Scientific and Historical Exhibitions



The Mayor's
Catskill Aqueduct Celebration Committee
New York, 1917

Chapter IV.

Early Pipe-Line Projects

Christopher Colles' Water-Works

The earliest proposal to supply the city with water conducted underground through pipes was made by Christopher Colles just before War of the Revolution.

Colles was born in Dublin, Ireland, May 9, 1739, and came to America in 1771.‡ He was certainly a man of genius and foresight as his water-works project sufficiently attests. He was an expert in mathematics, gunnery, and drawing, upon which subjects the Common Council allowed him to lecture in the Exchange,§ and he was a chemist, as indicated by the reference hereafter to his manufacture of "fig blue." He was also a pioneer in canal development, and as early as 1784 petitioned the Legislature to connect the waters of Lake Ontario with the Hudson by a canal through the Mohawk Valley.* He was an American patriot, suffering many privations during the American Revolution, and his memory is deserving of high respect.†

On April 22, 1774, Colles proposed to erect a reservoir near the Collect or Fresh Water pond where he had reason to believe that he could get an adequate supply of fresh water, and to distribute it through the streets by means of pipes made by boring a hole longitudinally through the trunks of small trees. The water was to be pumped into his reservoir from a well by a steam engine, and to flow by gravity through the pipes.

When the proposition first came to the Common Council it was so novel that there was uncertainty as to its practicability and advisability. The Council therefore put the subject off and deliberated on it for three months. When it came up for action on July 21, opinion was still divided; but the majority were in

‡ Transcript from family Bible received from Dr. Christopher J. Colles of New York.

§ Common Council Minutes of August 22, 1787.

* Sketch of Colles by John W. Francis in "The Knickerbocker Gallery," 1855.

† Francis errs in dates. Those above are correct. Colles died October 4, 1816, in the New York Institution in Chambers street, New York, which at that time included the Academy of Arts, the Historical Society, the City Library and the American Museum. Francis says he was buried in the Hudson street (St. John's) cemetery, and others say in St. Paul's churchyard, but the Rector of Trinity Parish says the parish has no record of burial in either. Colles was a man ahead of his time. He conceived many ideas for which others received credit. His culture is reflected in living descendants who are prominently connected with the social, intellectual, art and civic life of the city. The New York Historical Society has a fine portrait of him by John W. Jarvis.

favor of the experiment and voted 8 to 2 to undertake it. At the same time, they voted to issue notes to the amount of £2,600 for the undertaking. Subsequent issues brought the amount up up to £9,100.

These notes were about the size of the "shin-plasters" of the Civil War period, being about 2 1/3 by 4 inches in size. A specimen of which we have a copy before us bore on its face the following inscription.

NEW YORK WATER WORKS

(No. 1911.)

This Note shall entitle the Bearer to the sum of
Four Shillings

current money of the Colony of New York, payable on Demand, by the Mayor, Aldermen and Commonalty of the City of New York, at the office of Chamberlain of the said City, pursuant to a Vote of the said Mayor, Aldermen and Commonalty, of this Date. Dated the Sixth Day of January, in the Year of our Lord One Thousand Seven Hundred and Seventy Six.

By order of the Corporation.

N. Bayard.

J. H. Cruger.

On the back of the note was the picture of a pumping engine and two fountains.

It cannot be said that the Common Council proceeded with rash haste in this enterprise, for when Augustus and Frederick Van Cortlandt offered to sell to the city a site for the reservoir on the east side of Great George street, now Broadway, at what is now White street, at the rate of £600 an acre, they personally went to the new well sunk on the property and tasted the water. One can almost imagine these dignified gentlemen going to that then remote spot on the west side of the Fresh Water pond, adjacent to the marshy Lisenard meadows abounding in bullfrogs and game birds in season, sipping the water from the new well like connoisseurs of some rare vintage, smacking their lips, looking at each other wisely, and finally pronouncing a favorable verdict. Concluding "the same to be of very good quality," they accepted the Van Cortlandts' offer and told Mr. Colles to go ahead with his work.

On August 29, 1774, the Common Council appointed a committee of eight members to superintend the construction of the

works, and in November they contracted with Isaac Mann and Isaac Mann, Jr., of Stillwater, now in Saratoga county, to furnish 60,000 linear feet of pitch or yellow pine timber for the making of the pipes. The original contract, which is on file in the document room of the City Clerk in the Municipal building, provided that the logs should be from 14 to 20 feet long and that one-fourth of them should be 12 inches in diameter at the small end of the log "exclusive of the sap thereof" and three-fourths 9 inches in diameter at the small end, and all should be "streight and free from shakes and large knots." The contractors were to deliver one-third of the timber on July 1, 1775, one-third on August 1, and one-third on October 1, and were to receive therefor £1,250.

While waiting for the timber for the pipes, Mr. Colles went ahead diligently with the construction of his well, reservoir and pumphouse on a slight eminence on the east side of Broadway between Pearl and White streets. The reservoir had a capacity of 20,000 hogsheads. The well was 30 feet in diameter. And the engine pumped 200 gallons of water 52 feet high per minute. After the war, Josiah Hornblower was paid £12 for "attending and making report of the fire-engine for the water works about to be erected in 1775." The pump-house was a substantial structure, roofed with pantiles (curved tiles, laid alternately with the convex and concave sides upward) and the bills for iron-work, braziers work, rope, etc., which the city had to pay after the war, indicate that all the works were built in a durable manner.

But while the water-works were being built, the city was thrown into a turmoil of excitement by the news from Lexington and Bunker Hill. The work of construction, however, continued into 1776, but with the critical events of that year, the project was completely interrupted, never to be renewed. Mr. Colles with his family fled from the City and endured great privations, rather than submit to the British rule; and during the period of the war his water-works became totally ruined.

After the war, he returned to New York and soon after the Common Council assembled he presented a petition for the payment of moneys due him. His original memorial, dated October 27, 1784, is in the records room of the City Clerk in the Municipal building. It is a document of peculiar historical interest:

To the Honorable the Mayor, Aldermen and Common Council of the City of New York.

The Humble Memorial of Christopher Colles of said City Engineer Sheweth.

That your Memorialist in the year 1774 presented a proposal to this honorable corporation for erecting works for supplying this city with water for the sum of eighteen thousand pounds.

That this honorable board after sufficient enquiry concerning the practicability of the design Resolved to agree with the said proposal and directed your memorialist to proceed in the execution of the work.

That your memorialist did accordingly proceed in the execution of the work and erected a reservoir capable of containing twenty thousand hogsheads of water; dug, walled, covered and completely finished a well of thirty feet diameter at the inside, from which he pumped by means of a steam engine which he also erected, two hundred gallons of water, fifty-two feet high perpendicular per minute, into the said reservoir.

That previous to the said resolve of the corporation your memorialist furnished them with an estimate of the expense of the different parts of the work, agreeable to which the part executed amounted to the sum of three thousand six hundred pounds.

That the several sums advanced for the prosecution of the work amounted to three thousand pounds, consequently, that there remains a balance of six hundred pounds, one hundred and fifty pounds of which is due to different artificers for work and the remaining four hundred and fifty pounds is due to said Colles.

That your Memorialist in common with other citizens, friends of society and the interest of mankind, suffered the most poignant afflictions during the late war, and with the utmost difficulty procured the common necessities for his family; and being now returned to the city, where he hopes to devote the remainder of his days in promoting the welfare of the city and country, he prays the corporation to use their endeavors to pay him the balance above referred to, by which he may be enabled to support his numerous family in credit, and in some degree of comfort.

May it therefore please your honors, to take the premises into consideration, and grant him that justice and assistance, which to your judgment shall seem meet.

CHRISTOPHER COLLES.

The Common Council did not at first act on this petition and on July 20, 1785, Mr. Colles begged the Board again to give him relief declaring that "his distresses are of such a poignant nature as to compel him to request some (though small) yet

present assistance.”* In August, 1785, the Council granted him £100 on account.

On November 23, 1785, he appealed to the Council for £50 more on account. This petition gives an interesting indication of Mr. Colles' abilities. He said that he was desirous of applying part of the money “so as to enable him to support his family with credit,” and to that end “he has erected a horse-mill and other works for the purpose of carrying on in this City the Manufacture of Fig Blue, which manufacture he proposes to have carried on by his eldest son in case he shall be engaged in the prosecution of the navigation of the Mohawk River.” He said that he had already made and sold to grocers and others this product “which upon trial is proved to be fully equal in quality to any imported, although he can afford to sell it at less price.”

The foregoing petition was granted and he was given the £50 asked for. Finally, on January 16, 1788, he consented to accept £50 in settlement of all demands. Meantime, the corporation had allowed him to use the room at the Exchange to give lectures on gunnery, drawing, mathematics, etc., which indicate that the delay and apparent penuriousness in paying him were not due to any underestimate of his character and abilities.

Projects of Ogden, Livingston, Rumsey and Others

While the Common Council was still paying bills for the dead enterprise of Mr. Colles, it received successive propositions of a similar nature from other sources.

The first, dated March 24, 1785, came from Samuel Ogden. The original document, which is in the document room of the City Clerk in the Municipal building, reads as follows:

“To the Mayor, Aldermen and Commonalty of the City and County of New York in Common Council.

The Memorial of Samuel Ogden of said City
Sheweth:

That as the late war hath totally ruined the fire engine and water works which were erected for the purpose of supplying this city with water, your Memorialist begs leave to propose to the consideration of the corporation the following proposals. That he will at the expense of himself and associates erect and establish at or near the place where the former one was built† which

* Original in records office of city clerk, Municipal building.

† The word “works” evidently omitted.

shall supply the reservoir with 144,000 gallons of water per day, and that he will in pipes lead and conduct the same water through the streets of this city, in such manner as shall be hereafter explained provided such compensation and reward be secured to your Memorialist and his associates as shall hereafter be agreed upon. On the subject of which your Memorialist begs a conference at such time and place as you may think proper to appoint.

SAML. OGDEN.

New York, March 24, 1785.

This petition came before the Common Council April 5, and Aldermen John Broome and William Neilson and Assistant Alderman Daniel Phoenix were appointed a committee to confer with him.

Before any conclusion was reached on this proposition, and on January 30, 1786, Chancellor Robert R. Livingston, who later encouraged Robert Fulton in his steamboat invention and who had a considerable interest in mechanical engineering himself, made a proposition to the Board to contract to convey fresh water to the city. Aldermen John Broome and Jeremiah Wool and Assistant Aldermen William Malcom, George Janeway and Abraham Van Gelder were appointed a committee to confer with him.

On February 6, 1786, both committees made reports, but consideration was postponed, and on February 15, Chancellor Livingston and John Lawrence, who was associated with him in his proposal, appeared before the Board in support of their proposals. On the latter date, the Board decided to return the proposals previously received and to advertise for new ones, to be received prior to January 1, 1787. The latter date was subsequently changed to April 20, 1786.

On April 19, 1786, the day before the date set for opening proposals for the water-works, a strong sentiment was shown at the Common Council meeting against letting out the water-supply to private enterprise. The Clerk reported that he had received three sealed packets containing proposals to erect the water-works; but the Board ordered that they remain unopened until further orders. Meanwhile, the aldermen and assistants were requested, "to set on foot in their respective wards representations to this Board in writing and subscribed by the citizens in order more fully to ascertain their sense whether the corporation ought to grant to individuals the privilege of supplying the city with water or whether the same ought to be undertaken by the corporation

and that the moneys necessary for the purpose should be raised by a tax on the citizens."

Nothing, however, came of these projects and the matter dragged along almost two years without any further progress or further movement on the part of the citizens. On February 27, 1788, a large number of inhabitants represented to the Common Council "the inconveniencies which arise from the present mode of supplying the city with water" and prayed the Board "to adopt such measures for supplying it with water by means of pipes agreeable to a plan or proposal set on foot by Christopher Colles or such other plan as to the Board shall appear most expedient." But this petition was as ineffectual as its predecessors. The fact was, that the city was passing through a period of reconstruction after the war. The minds of the members of the Common Council and the financial resources of the corporation were engaged to the limit with other municipal improvements—the laying out of streets, the laying of pavements, the building of sewers, the remission or settlement of rents, and the straightening out of the numerous affairs tangled by the interruption caused by the war. It is not surprising therefore that the water-works improvement was held in abeyance.

On January 30, 1789, the Common Council received a letter from Benjamin Wynkoop, Levi Hollingsworth and G. Turner, the Corresponding Committee of the Rumsian society of Philadelphia, stating that Mr. Rumsey had invented an engine superior to any other for supplying towns with water; that he had applied to the Legislature for a patent; and when it was granted, the society would come forward with proposals for supplying New York with water by contract. The Board received the suggestion with every encouragement, but declared that it had no moneys which it could use for the purpose at that time.

During the next nine years, the subject was taken up fitfully by the city government and by individuals, with no better results. In February, 1792, Zebrina Curtis and others made proposals which were referred to the Street committee and were heard of no more. In March, 1795, Amos Porter made a like proposal. This year, Samuel Crane submitted a specific plan to lead water from the Tea Water Pump through Roosevelt street; and Benjamin Taylor advanced still a different project. In February, 1796, the Common Council directed a committee to advertise for

proposals; and in December, Dr. Joseph Brown and associates offered to supply the city with water through pipes. Again in 1797, sealed proposals were advertised for, and seven or eight applications were received. One of them was from Christopher Colles. They were referred to a committee and lost sight of. In 1798, R. J. Roosevelt and Judge Cooper of Otsego made new applications; and so did Dr. Joseph Brown.

The originality of Dr. Brown's project in 1798 lay in the fact that he proposed to go to the Bronx river for the water, and this was apparently the first suggestion of going off the Island of Manhattan for this purpose. On December 17, 1798, the committee of the Common Council, which was appointed to investigate this suggestion reported in its favor, and made three specific recommendations.

First, that William Weston, who had been the engineer for the canal companies in this state and was a man of known abilities, be requested to examine the river, the grounds for the aqueduct, etc., and report his opinion;

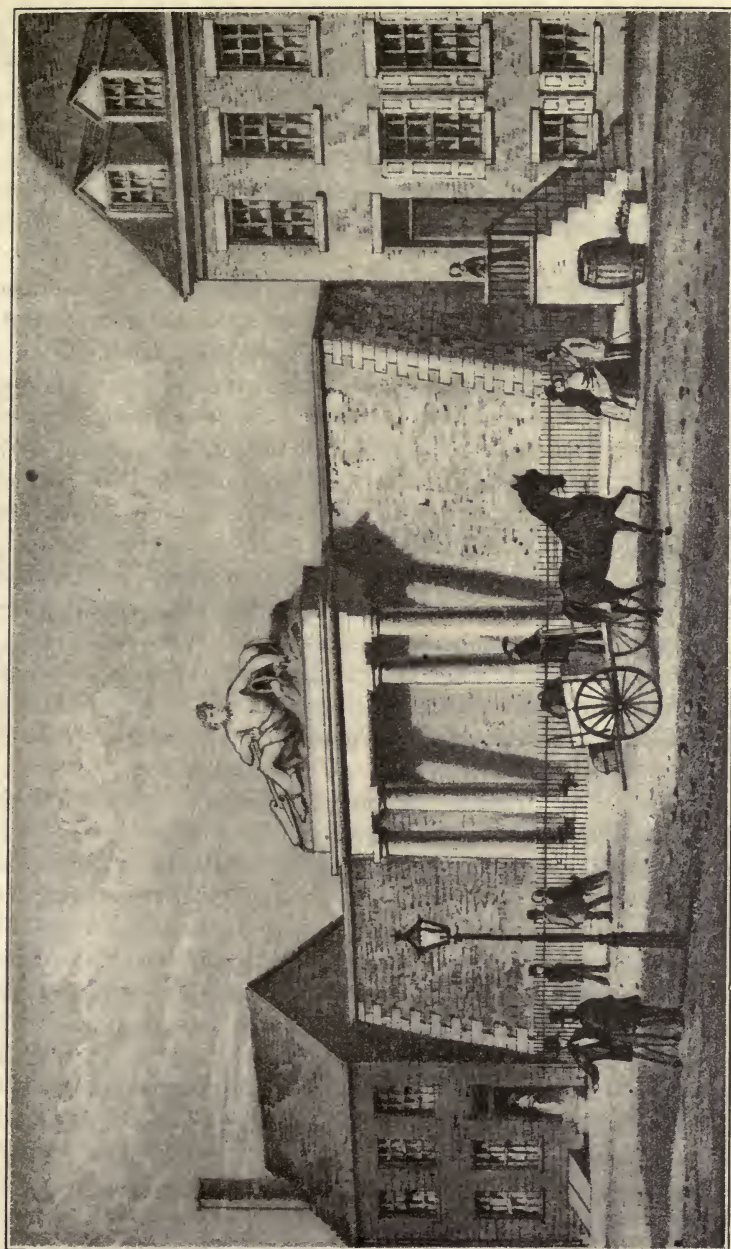
Second, that in view of the importance of the matter to the comfort and health of the inhabitants, and the fact that private parties would not undertake the enterprise except with the prospect of gain at the expense of the citizens, the water-works should be under the control of the corporation as the immediate representative of the citizens in general; and

Third, that the Legislature be requested to pass a law giving the city power to undertake the work and to raise the necessary funds by taxation.

Mr. Weston was consulted, as above suggested, and on March 14, 1799, he made a report which is of great civic and historical interest, recommending the Bronx river as a source. His report also gives an indication of the state of hydraulic science nearly a century and a quarter ago. Its full-text is to be found in Valentine's Corporation Manual for 1860, at pages 580-588.

The Manhattan Company's Water-Works

The first successful pipe-line system of water-works was that of the Manhattan company, which was incorporated in 1799. Upon the assembling of the Legislature that year, Aaron Burr and several other men applied for a charter for the purpose of "supplying the City of New York with pure and wholesome



Reservoir of the Manhattan Company in Chambers Street, 1825

water," and on April 2, 1799, the bill was passed, incorporating the Manhattan company. The capital of the corporation was \$2,000,000—a great sum for those days—and as the cost of the proposed water system could not accurately be foreseen, there was a clause in the charter permitting the company to employ its surplus capital in financial transactions not inconsistent with the constitutions and laws of the state of New York and the United States.

It has been a common tradition that the banking privilege contained in this charter, apparently as a subordinate feature, was really the main object of the projectors, and was thus introduced covertly to avoid the opposition which Burr was certain to encounter from Alexander Hamilton and the Federal party. Hamilton had organized the first banking organization in New York when in 1784 he formed the Bank of New York which was chartered in 1792. For fifteen years, Hamilton's bank and the Branch bank of the United States were the only banks doing business in the City of New York. This monopoly was of value to the political party which was then in control and with which Hamilton was allied, and consequently Burr's effort to obtain a charter, which was quickly perceived to contain a clause which permitted banking, was earnestly opposed. The opposition was unsuccessful, however, and the Manhattan company secured its charter.

Whether the tradition before mentioned as to the leading motives of Burr and associates was well founded or not, the fact remains that the company did go ahead with the water-works undertaking, built reservoirs, and laid an extensive system of distributing pipes in the then small city. These pipes were hollow logs, many of which have been dug up in recent years in the streets south of Chambers street. The first meeting of the directors was held at the house of Edward Barden, inn-keeper,* on April 11, 1799, when there were present Aaron Burr, John Broome who was long an Alderman, John B. Church who fought a duel with Burr on September 2, 1799, John B. Coles, Richard Harrison who was Recorder of the city, William Laight, Brockholst Livingston, Daniel Ludlow, Samuel Osgood, Pascal N. Smith, John Stevens and John Watts. The only absentee was William Edgar. Mr. Ludlow was elected President.

* The Merchants Coffee House.

At the meeting of April 11, 1799, a resolution was adopted declaring that the principal object of the corporation was to obtain a supply of pure and wholesome water for the city and a committee was appointed to report means for obtaining such a supply. So rapidly did the plans mature that on May 6 following the water committee was empowered "to contract for as many pine logs as they may think necessary for pipes and also for boring the same."

Meanwhile, if the water supply was the chief object of the company, the banking privilege was not neglected, and on April 17, 1799, a committee was appointed "to consider the most proper means of employing the capital of the company." On June 3 the committee reported in favor of opening an office of discount and deposit and a house was bought on the site of the present No. 40 Wall street (then having a different number) in which, on September 1, 1799, the bank of the company began business. This venerable corporation is still doing business at No. 40 Wall street under the style of the Bank of the Manhattan company.

In prosecuting the water-works business, the company sank a number of wells, built tanks and reservoirs, and extended its distributing system generally throughout the city below Chambers street. In 1836 the system was extended northward along Broadway as far as Bleecker street, when the company had about 25 miles of mains and supplied about 2,000 houses. The maximum amount of water supplied by this company was about 700,000 gallons a day. The company continued to operate its system until about the time the Croton system came into use in 1842.

One conspicuous landmark of the old water-works was the Chambers street reservoir. It had sloping walls, similar in style to the Croton reservoir which later stood on the site of the present public library on the west side of Fifth avenue between 40th and 42d streets. It stood on the north side of Chambers street between Broadway and Center street. Its facade was unrelieved except by an entablature which was supported by four Doric columns and upon which was a figure of "Oceanus, one of the sea-gods, sitting in a reclining posture on a rising ground pouring water from an urn which forms a river and terminates in a lake." This was the physical embodiment of the device of the corporation seal of the company adopted May 8, 1799.

Another landmark of the company was the tank which stood on the northwest corner of Reade and Center streets until July, 1914, when it was demolished. This tank, which was erected over one of the earliest wells of the company, was circular in form and measured 41 feet in diameter. It had a massive stone foundation rising 23 feet above the original ground level, which was surmounted by a circular tank, 41 feet in diameter and 15 feet high, the sides and bottom of which were composed of iron plates bolted together. Later the reservoir was enclosed in a three story building. Water was originally pumped into the tank by a steam engine. When the tank was taken down in July 1914, the black sediment on the bottom of the reservoir—the accumulation of dust which had slowly settled in the tank notwithstanding it was surrounded and covered by the building,—was about one foot thick. Among the traditions which grew up around the old reservoir was one to the effect that the Manhattan company was obliged to pump water into the tank every day in order to keep alive its charter. As the reservoir is now gone and the company continues to do business, the tradition appears to be effectually set at rest. When the building and tank were torn down in 1914 to make room for a modern building and the old reservoir was exposed to view, all sorts of strange tales were circulated about it. One story alleged that it had been a fort in the war of the Revolution and another that it had been an ancient prison, neither of which legends was true.

The wooden pipes of the old Manhattan company are frequently met with in excavating for modern water-mains, gas-mains, sewers, electric conduits and subways; and sections of them are preserved at the New York Historical society building and elsewhere as great curiosities. One of the latest sections to be exhumed to the knowledge of the present writer was located at Pearl street and Coenties slip and was removed by the contractors in June, 1917.

The Municipal Water Supply of 1829.

During the first quarter of the nineteenth century, while the Manhattan company was supplying the city, there was repeated agitation of the subject of a larger water-supply, some people proposing private projects and some advocating a municipal water system. In 1804, under the mayoralty of De Witt Clinton, a

committee was appointed to report upon the practicability of supplying the city with pure and wholesome water, and especially to confer with the Manhattan company as to the terms upon which it would cede to the corporation its works and privileges of supplying water; but nothing seems to have come of it, and things ran along until March, 1816, when it was voted to ask the Legislature to give the city power to establish a municipal water-supply. Still, nothing was accomplished. In 1819 Robert Macomb memorialized the Common Council, proposing to bring water from Rye pond to a reservoir at Harlem river, and distribute it to the city. A favorable report was made on this suggestion in 1820, but it was not carried out. In 1821 and 1822, when Stephen Allen was Mayor, the subject was renewed and in the latter year Canvas White was employed to survey the whole line from the city to the main source of the Bronx river. While he was at work, in 1823, a project for bringing water from the Housatonic river to New York by canal was advanced. In 1824, Canvas White reported in favor of bringing water from the Bronx river, taking it at the Westchester cotton factory pond, but this plan was abandoned. In 1825 the New York Water-Works company was incorporated by the Legislature, but its charter proved unworkable and it was surrendered in 1827. In the latter year the New York Well company was incorporated and tried to get water from artesian wells, but the plan proved to be impracticable.

At length, in 1829, the city adopted the recommendation of Alderman Samuel Stevens to establish a reservoir in the small block between Broadway, Fourth avenue, 13th and 14th streets, for the distribution of water for fire extinguishing purposes. The reservoir was an elevated tank, with a capacity of 233,000 gallons, its surface being 104 feet above sea-level. Its water came from a well at Jefferson Market, at the intersection of Sixth and Greenwich avenues, which was supplied by conduit galleries converging from different directions at the well. In 1832, a 12-horse-power steam engine was installed at the well to force water through a main pipe to the reservoir.* The water was not good enough for domestic use; but the committee urged the laying of iron pipes, instead of the old-fashioned wooden pipes, arguing that when the long desired object of supplying the city with water for domestic purposes should be carried into effect, these same

Haswell's Reminiscences, pp. 264, 285.

pipes would serve. A reluctant assent to these recommendations was wrung from the Common Council, and a committee was empowered to provide the necessary site for a reservoir, and to contract for iron pipes. This was the feeble and economical beginning of the city-owned water supply.

The provision of 1829 was confessedly inadequate, and during the next seven years events rapidly moved toward the Croton system. In 1830, projects for bringing water from the Croton river, Rye pond, and from the Passaic river, N. J., were advanced, with the strongest drift toward the Croton.

In December, 1832, De Witt Clinton arrived at the conclusion that an adequate supply could only be obtained from the Croton. He advocated an open aqueduct or canal for that purpose.

A curious proposition was made in 1834 by Bradford Seymour of Utica who proposed to dam the Hudson river opposite Amos street and generate 30,000 horse-power of which 3,000 horse-power was to be used for pumping water to a reservoir on Manhattan island, and 27,000 horse-power for industrial purposes.

Surveys having shown a closed masonry aqueduct from the Croton river to be practicable, the people decided in 1835 by a popular vote of 17,330 to 5,963 to issue \$2,500,000 of "water stock" and go ahead with the work.

In July, 1836, the Common Council ordered pipe to be laid preparatory to the introduction of the water, and in October John B. Jervis was appointed Chief Engineer. The work of construction began early in 1837.