

HISTORY OF  
**WATERBURY**  
AND THE  
NAUGATUCK VALLEY  
CONNECTICUT

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ILLUSTRATED

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VOLUME I

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Watertown Avenue has been laid out. This, when completed, will eliminate a detour of three miles to a section that has been growing phenomenally along manufacturing and residential lines. There will be three bridges in this new street. An expensive and much-needed grade crossing is to be provided for. It is also the purpose of the city to locate the West Main Street steel bridge over the Naugatuck River. Steele's Brook bridge will necessarily be raised.

There are today approximately twenty miles of permanently paved streets in Waterbury. This reckoning includes all of those constructed of granite, vitrified brick, bitulithic asphalt and asphalt, but not macadamized streets.

#### THE CONSTRUCTION OF NEW BRIDGES

Side by side with highway construction goes the providing of bridges and Waterbury is necessarily a city of many bridges. The winding Naugatuck River with its numerous tributaries would set us apart from our neighbors if it were not for the building of bridges, large and small. This work has been particularly active during the last ten years.

In 1905 the city constructed Steele's Brook bridge. This is a reinforced concrete girder bridge, sixty feet wide, with two 20-foot spans, the axis of the bridge being at an angle of fifty-five degrees. This gave a 60-foot street where it had been only eighteen.

The Grandview Avenue bridge over Robbins Street, built in 1907, is a reinforced concrete girder bridge with a 40-foot span. It carries across an important highway what will eventually become a noble residential boulevard.

In 1907 the Liberty Street bridge was built. This is a concrete arch bridge, 50-foot span, with a width of forty feet. It was necessary to go thirty-one feet below the street surface to secure a foundation.

On September 9, 1916, the Bank Street bridge was opened, the people of Brooklyn celebrating the event. This, the finest bridge in the city and erected at a cost of \$100,000, is a three-span masonry arch bridge, 49½ feet between parapets. The old steel bridge over Bank Street was repaired, painted, fitted out with many new parts, and was re-erected over the Naugatuck River at Freight Street in 1915, giving the Brooklyn district another much needed outlet.

The four-track viaduct built by the N. Y., N. H. & H. R. R. Co. through the central part of the city with its abolition of grade crossings is a permanent guarantee against accidents.

During the past few years there have also been built the Hancock Brook bridge at Waterville, fifty feet wide, with two spans of twenty-two feet each, and a 10-foot rustic bridge, fifty feet long, built over Riverside.

A 50-foot girder bridge over the Mad River at Hamilton Avenue is now under way. Plans are also complete for a new West Main Street bridge, which is to be a three-span masonry arch bridge.

#### THE GROWTH OF THE WATER SYSTEM

Probably the most important element of the municipal plant is the water supply system, the magnitude of which is not generally realized because while its product is daily before the public eye, its parts are concealed or scattered in remote districts. Yet its development during the last twenty-five years has been so remarkable as to bespeak public attention.

It is a far cry from the spring at Willow and Grove Streets that 117 years ago supplied Waterbury's leading families with water, to the magnificent system



THE WIGWAM DAM AND RESERVOIR OF WATERBURY'S MUNICIPAL WATER SYSTEM



THE BROOKLYN BRIDGE, CARRYING BANK STREET OVER THE NAUGATUCK RIVER

which now fills the needs of a city of 100,000 population. Up to the year 1893 the city's water supply was drawn from the reservoirs which collected the drainage of about one square mile and had a storage capacity of 180,000,000 gallons.

Today, after the extensions and growth of a quarter century, the supply is as follows:

	Gallons
East Mountain Reservoirs.....	137,000,000
Wigwam Reservoirs.....	730,000,000
Morris Reservoirs.....	2,000,000,000
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	2,867,000,000
Prospective Pitch Brook Reservoir.....	1,440,220,000
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Total available in 1919 .....	4,307,220,000

It was in 1893 that City Engineer Robert A. Cairns, far-seeing and almost prophetic as to the growth of Waterbury, urged the adoption of new plans on a far larger scale than had ever before been contemplated. It was with some trepidation that the authority was finally granted and the work of giving Waterbury an adequate water supply was begun, all plans and supervision being in charge of Mr. Cairns.

The territory selected for the first gathering ground,—the Wigwam dam and reservoir,—lies to the northwest of the city among the Litchfield Hills, at a distance of about ten miles. It has an area of eighteen square miles, drained by the West Branch of the Naugatuck River.

A careful investigation showed a population of less than twenty-five persons per square mile of watershed. Probably two-thirds of the region is wooded, farming being carried on to a less extent than was the case fifty years ago. The main stream has an average inclination of about sixty feet per mile, and flows through a valley having a narrow floor and very steep side hills. Tributaries to the main stream have such inclinations as to make it out of the question to place storage reservoirs on them. Owing to these unfavorable conditions it was found advisable to limit the provision of storage to such an amount as would insure a safe uniform yield in dry seasons of 600,000 gallons a day per square mile of net land surface, or a total average daily yield of 10,500,000 gallons.

Construction was begun in the spring of 1893. It included excavation for and construction of that part of the masonry dam below the bed of the brook, as well as much stripping of the basin and grading portions of the pipe line. In the winter of 1893-4 contracts were let for all work necessary to complete the reservoir to a flow line of 410 feet, city datum, including dams, road diversion and stripping of the basin, and for the completion of a 36-inch pipe line to the city. During 1894 and 1895 these contracts were executed, and a regular supply was furnished in January, 1896. It was decided to postpone further work at the reservoir until more storage should be found necessary, but the rapid increase in consumption, due to the growth of the city and the very dry season of 1899, forbade longer delay and in the years 1901 and 1902 the dams were built up to their full height as planned. At the same time the additional flowage was thoroughly stripped of top soil and all stumps and roots taken out.

The reservoir was first filled to its maximum level in December, 1901, the water rising rapidly as a result of a severe storm. Observations since that time indicate that the work is of excellent character, leakage through the dams being

very small. On the down-stream face of the masonry dam, the sweating is so inconsiderable that on a clear, bright day it practically all evaporates.

The reservoir has an area of 105 acres, and a total capacity of 730,000,000 gallons.

In 1904 under the direction of Mr. Cairns, a high service water supply was planned and partially completed, giving the thousands who lived on high ground an adequate supply of excellent drinking water for the first time. An inlet gate house was constructed in East Mountain Reservoir and connection was made by means of a pipe line with the high ground in the northeastern and northern sections of the city. In 1907 the pipe line was extended clear across the city to the Town Plot section,—a difficult piece of construction. Since then the Silver Street pumping station and that known as the Willow Street pumping station have been constructed with a view to filling the East Mountain Reservoir from the Wigwam system and keeping up the water pressure. Both pumping stations can be utilized to send water supply from the Wigwam reservoir to the East Mountain reservoir when necessary.

The water tower on Hill Street, which has a capacity of 50,000 gallons, was finished last year to supply a small population on the higher levels of that particular district. A smaller one is now being built in the Bunker Hill district to supply Elmhurst.

In 1909 when Waterbury was estimated to have a population of 75,000, work was begun on the second of the city's larger reservoir systems.

The Morris dam is located on the same stream as the Wigwam dam, a little more than a mile farther up stream. In distinction from the latter, however, it is an earth dam with concrete core-wall, a study of the conditions and available material having proved an earth dam to be most economical. Its greatest height above the surface of the valley is about one hundred feet and its length 1,100 feet, including the waste weir. It adds a storage of 2,000,000,000 gallons to that afforded by the Wigwam reservoir.

The foundations of the core-wall rest on a ledge of solid rock extending across the entire width of the valley. On the side slopes, rock is at a depth of but a few feet from the original surface, while in the center of the valley the foundation pit had to be carried down to a depth of forty-five feet by the use of steel sheet piling.

The foundations of the head-walls, gate-house and spillway, located at the west end of the dam, also rest on solid rock. A reinforced concrete drain tunnel, about thirty-four square feet in section, is located on the ledge at the foot of the western slope. This took all the normal flow of the creek during construction. It leads into the down stream gate-house, where 24-inch pipe connections are made with a pipe leading into the present city main from the Wigwam reservoir, and with a blow-off into the lower reservoir. These gates, however, are not intended for regular use, but only for exceptional occasions when the water should become very low or when it may become necessary to draw off the reservoir.

The service gate-house is on the western end of the dam on the head-wall between the embankment and spillway. It has six 30-inch intakes leading into two intake walls. They are provided with separately operated gate valves.

A 24-inch pipe line is constructed around the Wigwam reservoir connecting directly with the city service main below the Wigwam dam, so that if the city wishes to discontinue the Wigwam service for any purpose, such as cleaning the reservoir basin, it can get its supply direct from the Morris reservoir.

The third reservoir, known as the Pitch Brook reservoir, is to be built just above the Morris dam and will add 1,440,200,000 gallons to the city's supply.

The cost of this will be very heavy, owing to present building conditions. The construction of this reservoir necessitated the re-location of two highways, and plans and profiles were made for this and the work has been completed. The Wigwam Brook diversion, which means a tunnel 1,600 feet long and a small diversion dam, part of the third reservoir system, are well under way.

In a letter to the mayor, published August 15, 1917, Mr. Cairns commented on the latest phases of the situation.

In his communication, Mr. Cairns said that considerable progress had been made in the making of surveys for the new pipe line from the Wigwam reservoir and enough of the work had been done to determine the availability of the proposed line by way of Steele's Brook Valley. He added that some question had arisen as to the possibility of using Steele's Brook Valley route or paralleling the present line. The former would require two miles of tunneling. Mr. Cairns continued:

"I have made some approximate estimates with results in which you are interested. It appears that if we should decide to parallel the present 36-inch main from the Wigwam reservoir to West Main Street, with a 36-inch main, the cost of the iron pipe f. o. b. Waterbury at present prices will be about \$1,250,000. This is about five times as much as we paid for 36-inch pipe in 1894. The difference in weight between the 36-inch and the 42-inch is 30 per cent. So far as I can judge, the cost of such a pipe line will be approximately the same by either route and at present prices will be about \$2,000,000.

"The extraordinary and unprecedented costs with which we are confronted are calculated to cause hesitation in committing the city to any definite plan in regard to the proposed new reservoir and also it is evident that the work if undertaken now will cost approximately twice what it was estimated at three years ago. At that time I thought it could be constructed for \$800,000, but it is doubtful now if it can be built for less than \$1,500,000."

#### THE UNCOMPLETED SEWAGE DISPOSAL PLANT

Waterbury had expended up to September 1, 1917, \$440,345.10 on its sewage disposal plant. This is approximately \$11,000.00 more than the amount of the authorized bond issue. It includes, moreover, the full amount of damages obtained to date by the Platt Brothers Company for sewage pollution of the Naugatuck during the legally prohibited months,—June 1st to December 1st. This averages \$2,800.00 a year, and the last amount paid the concern was \$28,000.00 on April 13, 1915, covering a damage period of ten years.

The sewage disposal plant, on which work was stopped in 1908, while giving satisfactory service, is still far from complete. According to the original plan about \$300,000.00 would have built the pumping plant and the purification tanks and beds. Today City Engineer Cairns figures that the cost would be two or three times the figures as estimated in 1907 and 1908.

The history of the city's sewage disposal plant dates back officially to 1890, although its need had been apparent many years prior to that date.

In 1890 Mr. Cairns, heeding the many complaints from residents along the banks of the Naugatuck River, suggested the purchase of land so that sewage could be conveyed to it and rendered pure for discharge into the river. In this historical report the suggestion was first made for a survey and for plans for a sewage disposal plant.

It was in a way also the first expression of the discontent that ended in the long litigation with the Platt Brothers Company. In 1892 suit was brought and

the city began preparation for an elaborate defense. This litigation extended over a period of over ten years. In 1898 came the first adverse decision in the Superior Court, and the city appealed to the Supreme Court, which in 1903 awarded nominal damages to the Platt Brothers Company, but by enjoining the city from emptying its sewage into the Naugatuck River from June 1st to December 1st of each year, made the damages continuing. Thus, by agreement, the city is using its old sewage disposal system, but is paying \$2,800.00 damages yearly for the privilege.

In 1895, however, the city had concluded to begin active work on a sewage disposal plant and engaged one of the best specialists available, Rudolph Hering, of New York, to study its problem. In 1895 and 1896, under the direction of Mr. Hering and Mr. Cairns, extensive surveys were made by the engineering department. In 1896, Mr. Hering recommended two methods. One was to use a combined precipitation and filtration plant, to be established at a point on the west bank of the Naugatuck River, about opposite Platt's Mills. The other was to dispose of the sewage by filtration, also, on a field west of Beacon Falls.

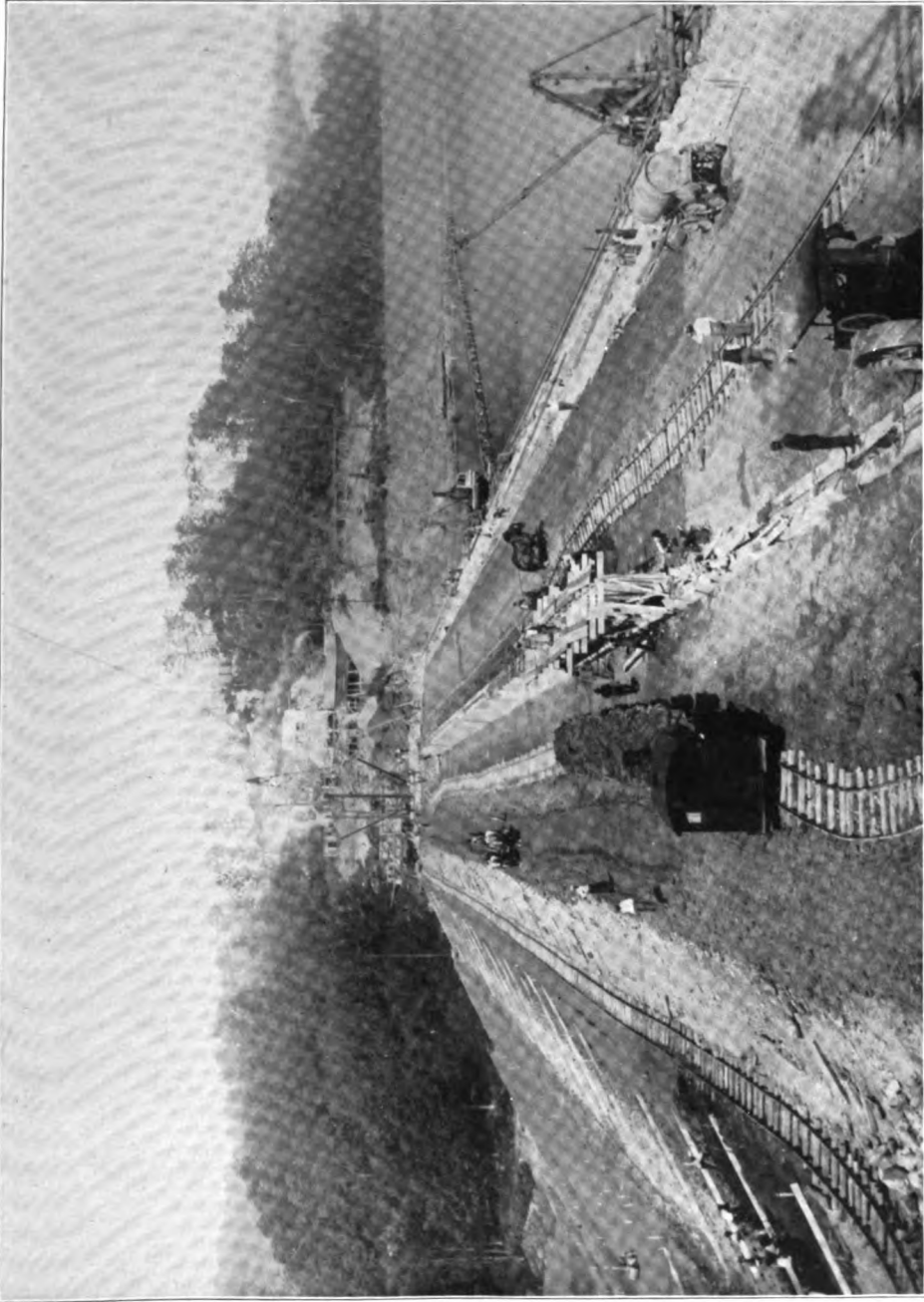
In discussing these recommendations, Mr. Cairns commented at length on the unfortunate location of Waterbury, making necessary a very long and very expensive outfall sewer. It was the construction of this outfall sewer for ten miles through a very rugged valley that made the Beacon Falls plan hopeless. In Mr. Cairns' opinion, construction would prove sufficiently expensive to Platt's Mills, only about a mile and a half below the main outfall at that time.

In 1903 with the litigation decided against the city, orders were issued for the construction of works for the treatment of city sewage, the location to be at Platt's Mills. The city secured by condemnation the Bancroft and Upson Farms between South Leonard Street and Platt's Mills. There was little trouble in inducing the railroad to change its tracks which crossed this land. Then began the survey and mapping out of the whole territory south of Washington Avenue, preparatory to gathering the different outfall sewers into one channel and to the construction of a main carrier to the disposal fields.

The work of construction was necessarily slow. In 1907, a year of great national depression, the sale of bonds was almost impossible. But all obstacles were eventually overcome. Early in 1908, section one of the main carrier which had been under construction for two years was officially put into use, together with section two, which had been completed in 1907. These sections extend from a point a little north of Washington Bridge, southerly along the west bank of the river, through Railroad Hill Street to South Leonard Street, and again along the west bank of the river to a point just above Nichols Falls, taking all the sewage from the old Benedict Street trunk sewer, the Mad River interceptor, and the Brooklyn main sewer, and conveying it to a temporary outlet into the Naugatuck about opposite the old Smith & Griggs factory, a distance of 7,100 feet.

In his annual report for 1907, Engineer Cairns says: "The effect on the Naugatuck River of keeping out the city sewage has been marked. Since high water came and the old deposits were flushed out, the river as far as the temporary outlet presents an appearance not perceptibly different from that at points above the city."

Finally in 1908 the engineer reported that the city now had a "continuous concrete conduit from Washington Avenue to Platt's Dam, a distance of over two miles, but also a good beginning of the purification works themselves, with main carriers, the grit and screen chambers, and the controller house substructure. The next steps will be the provision of a pumping plant and the construction of tanks and beds."



CONSTRUCTION OF THE MORRIS DAM OF WATERBURY'S MUNICIPAL WATER SUPPLY SYSTEM





But there the story of the city's sewage disposal plant ends. No steps have ever been taken to complete it.

In the year 1908 Engineer Cairns suggested that "it is possible to escape violation of the court injunction by closing the temporary outlet through which sewage has been discharged into the Naugatuck River, conducting the stream through section 3 and allowing it to escape into the river below the dam."

But this suggestion, which required an appropriation to make it effective, was also ignored. While the sewage disposal plant is effective as far as its carriers are concerned, it is a disposal plant only in name.

#### A QUARTER CENTURY OF SEWER CONSTRUCTION

The problem of taking away and diverting its sewage has been one of the great problems which is now in a fair way to completion. Most of the city is sewered and construction is being pushed annually into new outlying districts. Here is the record of sewer construction for twenty-five years:

	Linear Feet		Linear Feet
1892 .....	10,280	1905 .....	8,667
1893 .....	5,791	1906 .....	7,658
1894 .....	4,074	1907 .....	5,266
1895 .....	6,456	1908 .....	6,890
1896 .....	2,068	1909 .....	3,365
1897 .....	3,703	1910 .....	10,213
1898 .....	10,389	1911 .....	7,083
1900 .....	7,052	1912 .....	14,205
1901 .....	9,169	1913 .....	11,153
1902 .....	4,412	1914 .....	6,036
1903 .....	3,455	1915 .....	7,216
1904 .....	7,822	1916 .....	6,680

This, on January 1, 1917, represented a total of 58.553 miles of trunk and lateral sewers. The history of the sewage disposal plant which provided for a main carrier to Washington Avenue will be found narrated elsewhere in this chapter. The cost of that was \$440,000.00. The city has authorized another bond issue for the extension of the present main carrier from Washington Avenue to Waterville. This will take the sewage out of the Naugatuck River from Waterville to Platt's Mills and give the northwestern portion of the city effective sanitation.

#### THE NAUGATUCK RIVER CONSERVATION PLANS

For some years the manufacturing interests of the Naugatuck Valley have felt the need of materially increasing the summer stream flow of the Naugatuck River. This need took its first practical shape fifteen years ago, when the General Assembly was petitioned by Charles F. Brooker, the late John H. Whittemore of Naugatuck, the late Alton Farrell of Ansonia, and others, for the right to generate power along the Naugatuck Valley. This, of course, was a purely private project, but it served to call attention to the possibilities of conservation throughout the valley.

The next step in this great project was a preliminary investigation covering the feasibility of a large water conservation plan in the valley.

At the request of the Naugatuck Valley manufacturing interests, this was