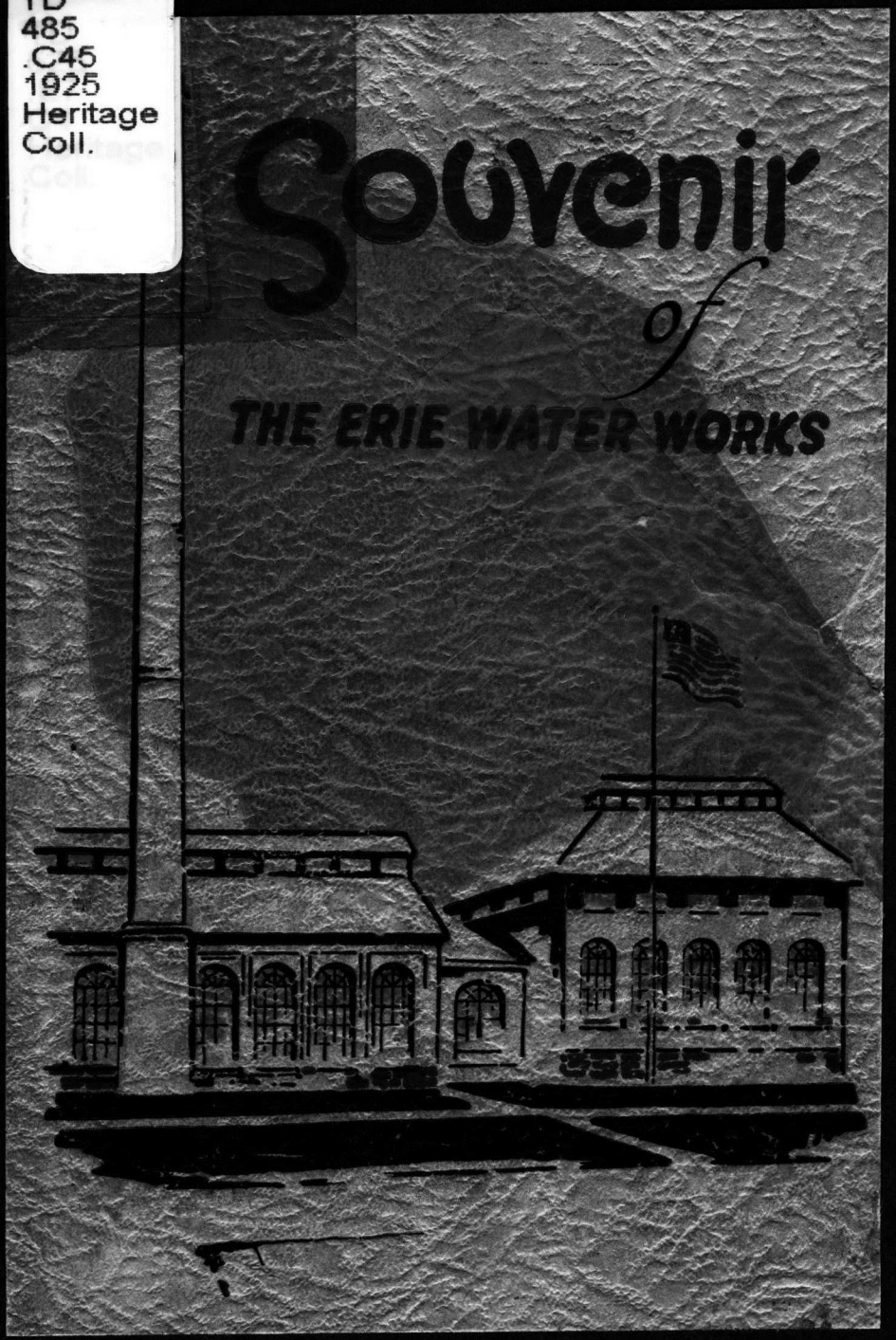
Souvenir

of

THE ERIE WATER WORKS



A SOUVENIR AND HISTORY

OF THE

ERIE WATER WORKS

Dedicated to the

Central States Water Works
Association Convention

Held in the City of Erie, Penna.

October 9th and 10th

1925

OFFICERS OF
THE COMMISSIONERS OF WATER WORKS

EDWARD HEUER
President

GEORGE C. GENSHEIMER
Secretary and Treasurer

JAMES S. DUNWOODY
General Superintendent

BERNARD J. LECHNER
Ass't Sec'y and Treas.

GEORGE R. MILLER
Chief Engineer

EDWARD A. BECK
Superintendent of Meters

COMMISSIONERS OF WATER WORKS
IN THE CITY OF ERIE, 1925

EDWARD HEUER, President
Appointed, May, 1922. Re-appointed, May, 1925

D. W. HARPER
Appointed May, 1923

A. W. MILNE
Appointed May, 1923

A Souvenir and History

of the

Erie Water Works

BETWEEN the years of 1816 and 1841 the boro of Erie obtained its meager water supply from springs in the southern section of the boro and private wells. During this period there was no water supply available for fire protection purposes.

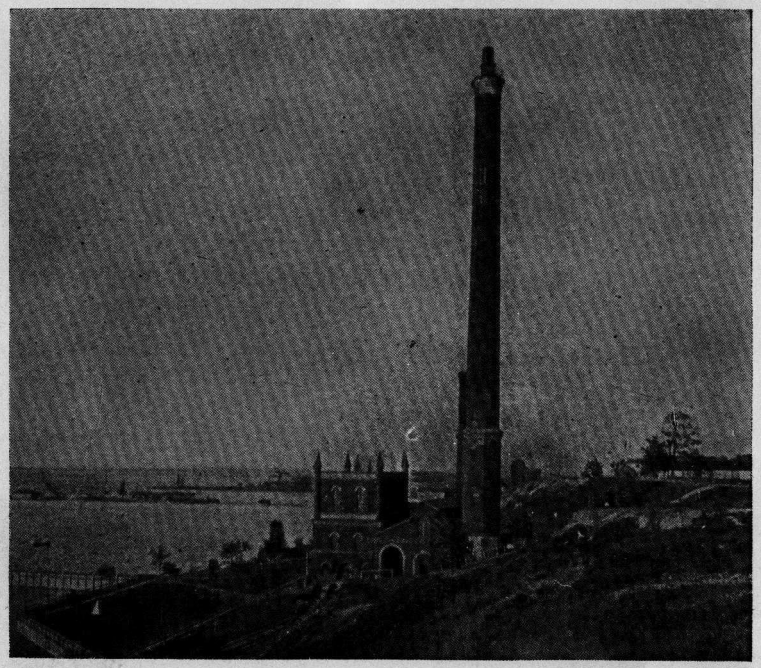
On January 24, 1840, the Mansion House, Erie's leading hotel, which occupied the present site of the Reed House, was burned to the ground. This aroused the boro authorities to action and on June 25, 1841, a committee was appointed by council with authority to award a contract for the supplying of water to the boro for fire protection. A pump log water system was installed at a cost of $442.28. This was the beginning of the Erie water works system.

This system consisted merely in conveying water from springs southeast of the boro to cisterns located at various street intersections and was for fire protection only.

At that time Perry Square was considered the southern boundary line of the boro. The log pipe system proved satisfactory for a time but did not provide adequate fire protection for the growing boro.

In 1867 the demand of the citizens for a municipal water works became so emphatic, that council appointed a committee to submit plans for sewer and water systems for the city. The estimated cost of the proposed systems seemed prohibitive and the project failed, but a contract for the supplying of water for fire protection for twenty years was let to a private company.

Later in the year, Judge Vincent, asked council to request the state legislature to pass a law authorizing the city to construct water works and to create a board of commissioners to be appointed by the judges of the Court of Common Pleas of Erie County.

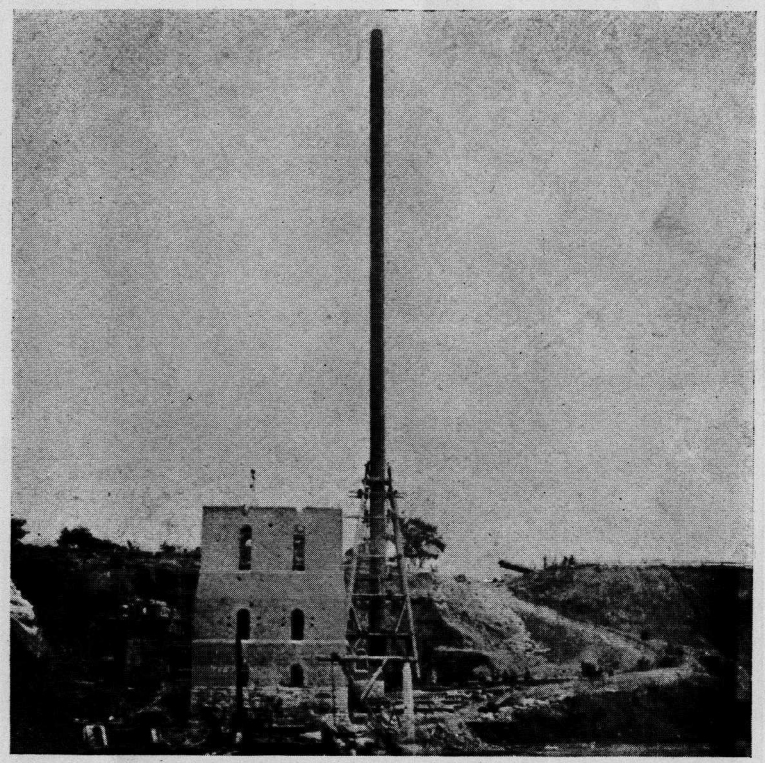


Original Pumping Station
Erected in 1868

The bill passed the legislature and was approved by the governor on April 4, 1867. Judge Vincent then appointed a board of three commissioners to serve terms of one, two and three years, a successor to be named by said court at the expiration of the term of each member. This procedure has been followed up to the present time.

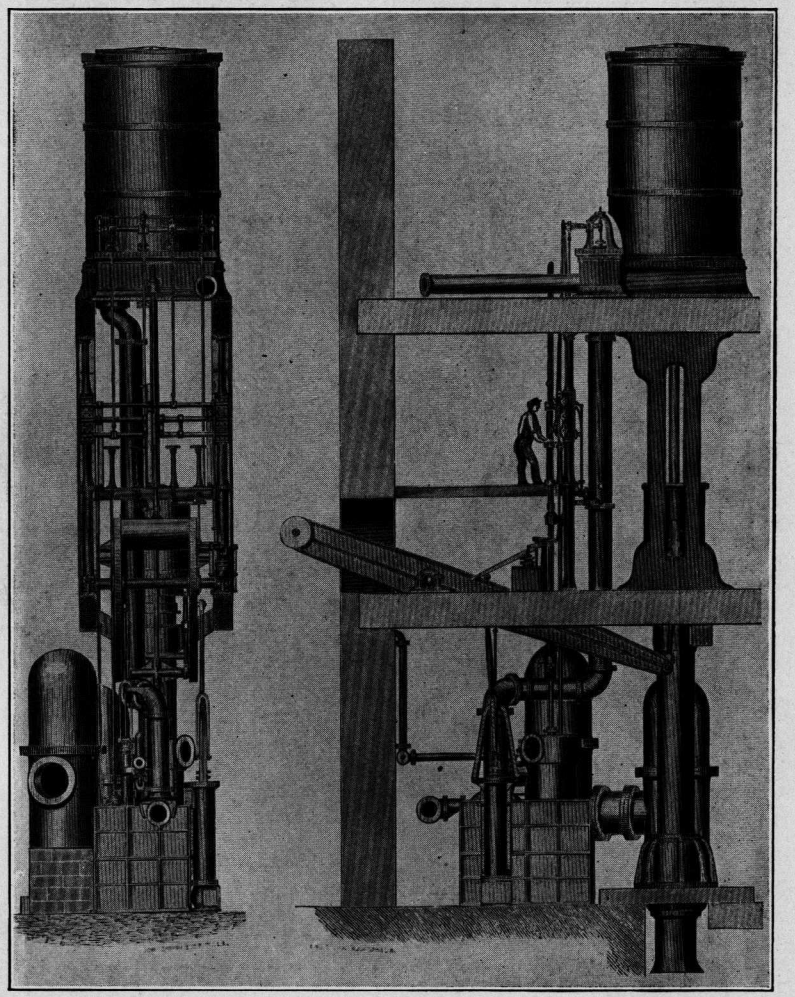
One of the first official acts of this body was the awarding of a contract in November, 1867, for the installation of two 2,000,000 gallon Cornish bull pumps. The design of the pumps

was unique in comparison with the present day pumping equipment considering that the steam cylinders were 60 inches in diameter with a pump plunger of only 20½ inches, each with a 10 foot stroke; the capacity being 165 gallons per stroke.

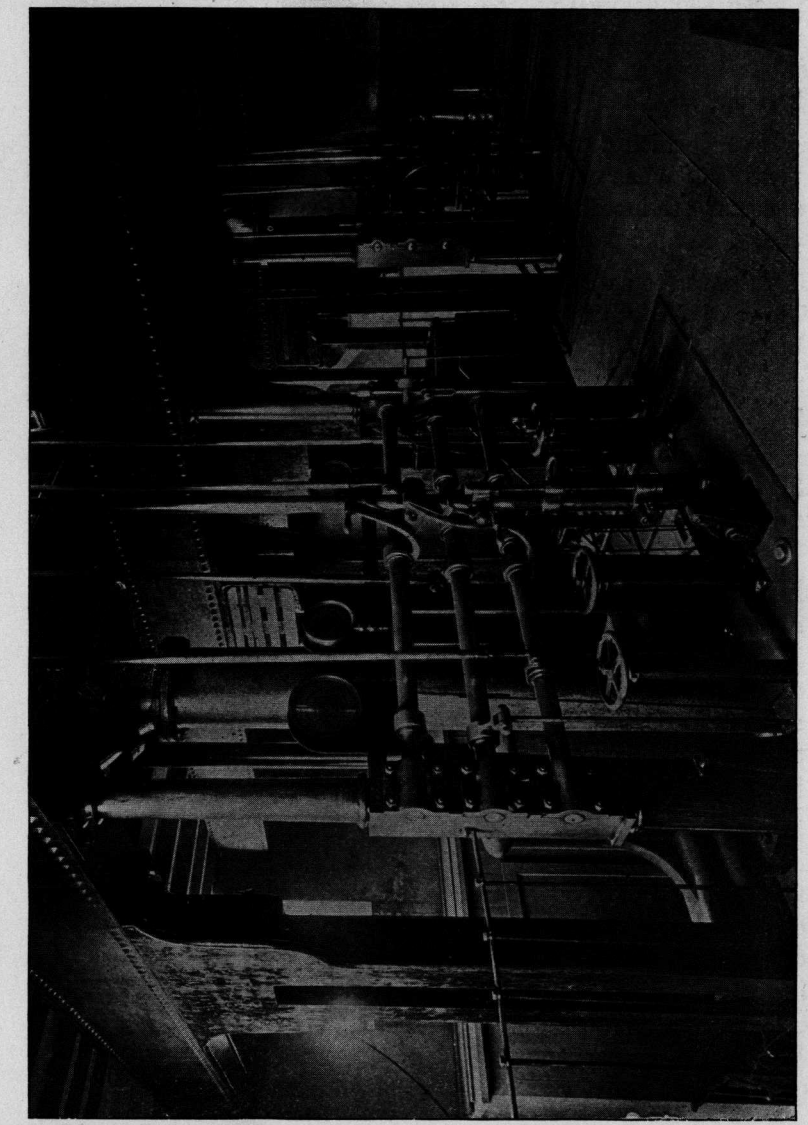


Erection of the Standpipe
Steel Stack—260' High, encased in Brick

In December contracts were let for the erection of a steel standpipe, 260 feet high, 5 feet in diameter, encased in brick, and a brick building for housing the pumps and a battery of boilers. The standpipe was erected by a local concern and the method of erection was quite unique, in that the top sections were laid up first. Each succeeding lower section being riveted at the bottom and the completed structure raised as



Old Cornish Bull Pump



Two 2-Million Gallon Cornish Bull Pumps—Erected in 1868

the work progressed. The bottom section being the last to be placed. A heavy timber derrick and a system of guy lines were used in raising in this unusual piece of engineering. The pipe was taken down in 1913 when this type of water supply became obsolete.

The Cornish pumps purchased in 1867 were in commission until 1886 when they were found to be inadequate and it was necessary to install a 5,000,000 gallon Gaskill horizontal compound pumping engine.

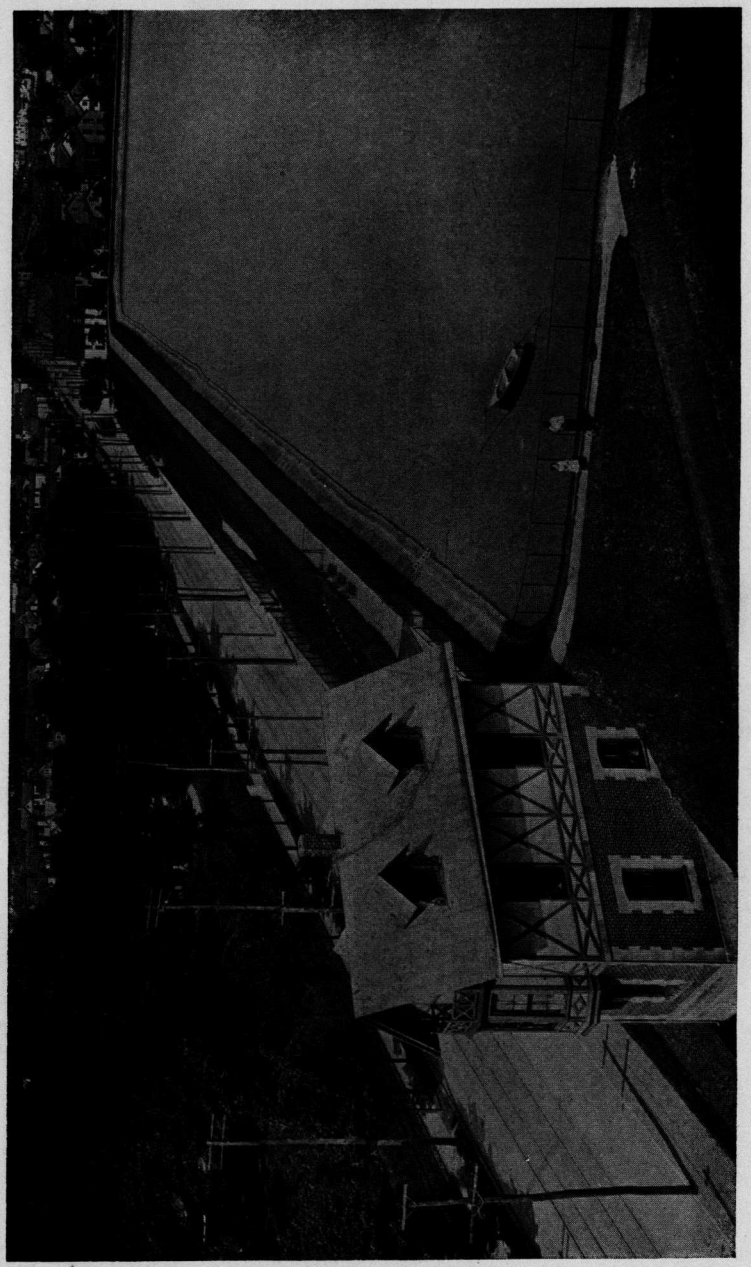
In order to assure a constant supply of water, and in the event of a shut-down at the pumping station, a reservoir was built in 1873 at Twenty-sixth and Sigsbee streets in the southern section of the city, the bottom of which is at an elevation of 210 feet above mean level of the water in the bay.

When carried to a depth of 27 feet, it has a capacity of 32,952,000 gallons of water, a supply sufficient to meet the requirements of the city for about 15 days, at that time.

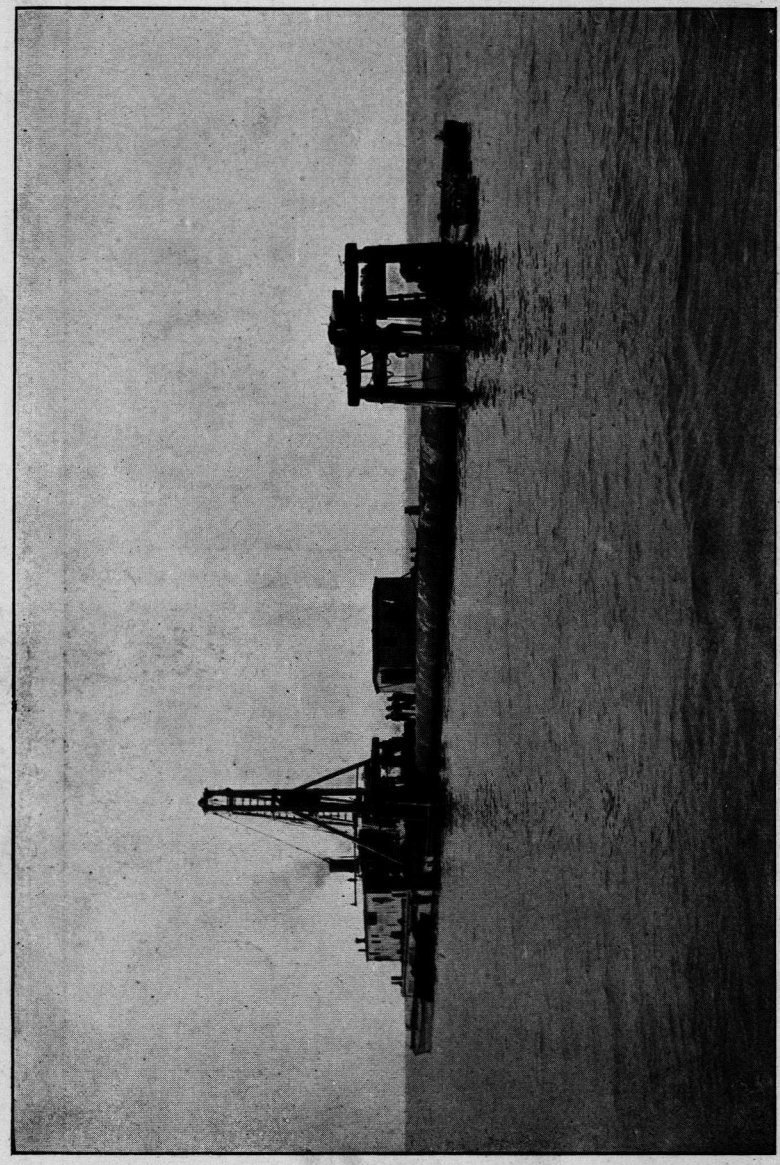
From 1868 to 1896 the water supply of the city was secured from Presque Isle Bay, through an open flume 640 feet long, supported by timber piers, three of which are still standing. This was replaced by an intake pipe which extended 975 feet northwardly from the pumping station at the foot of Chestnut street. It was of a composite construction of brick, wood and iron and was 4 feet 3 inches in diameter.

It was abandoned in 1896 and replaced with a 60 inch cast iron pipe which extended 8307 feet to a point in the bay commonly known as Big Bend. This was laid in a trench 13 feet below zero level of the water in the bay. In 1904 an extension of 9304 feet of 60 inch steel pipe was added to the end of the 60 inch cast iron pipe and carried through the peninsula into Lake Erie a distance of 5100 feet from the north shore of the peninsula. The total length of the intake pipe, 17,641 feet, was the longest single stretch of submerged pipe on record at that time.

George H. Fenkell, engineer in charge of the intake extension, designed this intake pipe to deliver 40,000,000 gallons



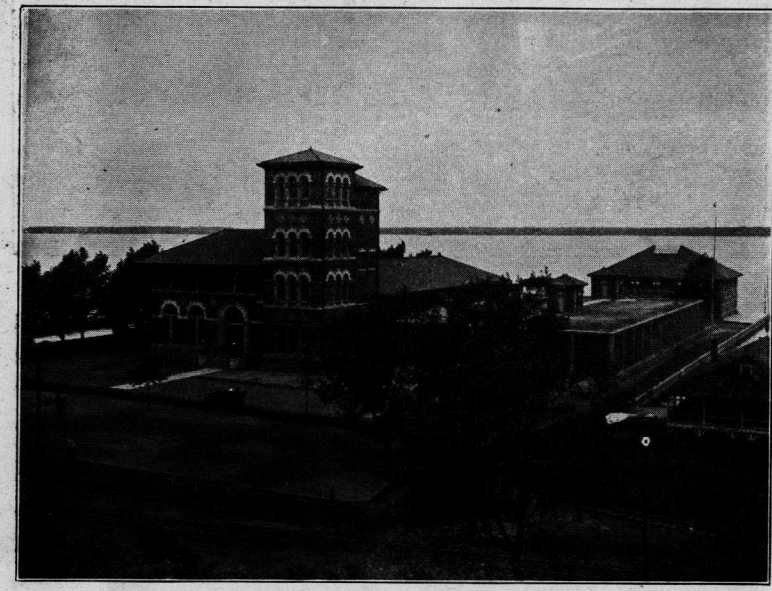
Twenty-Sixth Street Reservoir—Erected in 1873—Capacity, 33,000,000 Gallons



Section of 60" Cast Iron Intake Pipe—Being Carried to Place of Laying

daily to the pumping station. The construction of the 9304 foot extension to the intake and the settling basin mentioned hereafter, was done by the T. A. Gillespie company of Pittsburgh and New York.

A crib, 40′ x 40′ x 19′, was sunk at the end of the intake at a depth of 35 feet assuring a depth of water over the pipe of 26 feet, U. S. mean level at that time. The water obtained from the lake flows into a settling basin 657 feet by 467 feet, located on the peninsula. The basin has a capacity of 24,-



Filtration Plant—Erected in 1914

000,000 gallons, which provides a 24 hour period of natural sedimentation.

The water flows from the settling basin to the pumping station and is lifted approximately 20 feet, by two of three 20,000,000 gallon centrifugal steam driven pumping engines to the coagulating basins. From these basins the water flows by gravity through the filter beds of which there are sixteen. From the filters the water is carried by gravity to the clear wells, which are located immediately under the filters. These

Filter Gallery Lobby

Filter Gallery

wells have a capacity of 700,000 gallons and form the suction well for the high service pump units.

The filter plant was erected in 1913-1914 and consisted of twelve filter units, each having a capacity of 2,000,000 gallons per twenty-four hours. In 1925 four additional units or 8,000,000 gallons additional capacity were put into service. This gives a total capacity of 32,000,000 gallons per twenty-four hours.

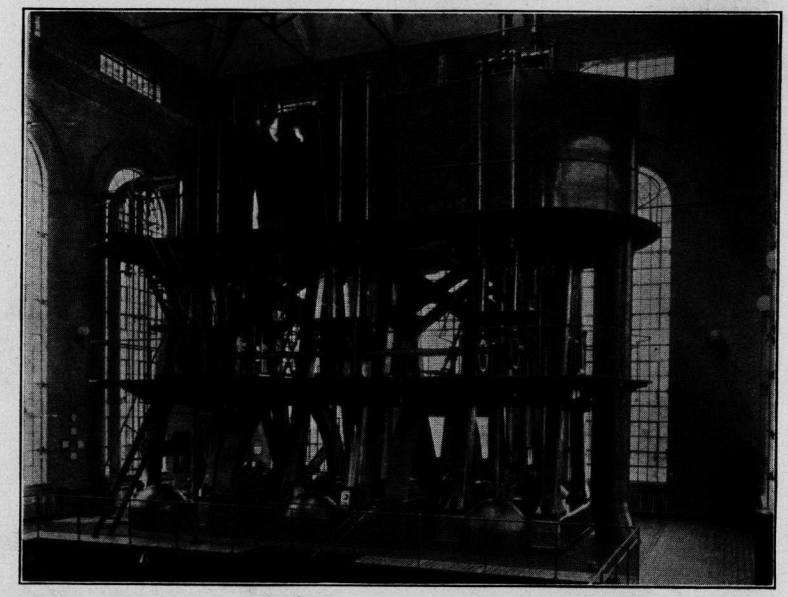
Bacteriological Labarotory

In conjunction with the plant, there is a completely equipped laboratory where bacteriological and chemical analyses of the city water are made daily under the careful supervision of the superintendent and bacteriologist, James S. Dunwoody. Tests of all coal and oils used at the pumping stations are also made.

The present pumping station was erected in 1913 to house the new 20,000,000 gallon Bethlehem triple expansion high duty pumping engine; the 5,000,000 gallon Holly Gaskill pump

and an 8,000,000 gallon Worthington pump installed in 1899. The Holly Gaskill pump was removed in 1924.

The construction work on the pumping station, filter plant and coagulating basins, and the installation of all equipment in the station, was done by the Henry Shenk Company of Erie. The filter plant equipment was installed by the Norwood Engineering Company, of Florence, Mass. The J. N.



Bethlehem Pumping Engine
20,000,000 Gallon—Erected in 1913.

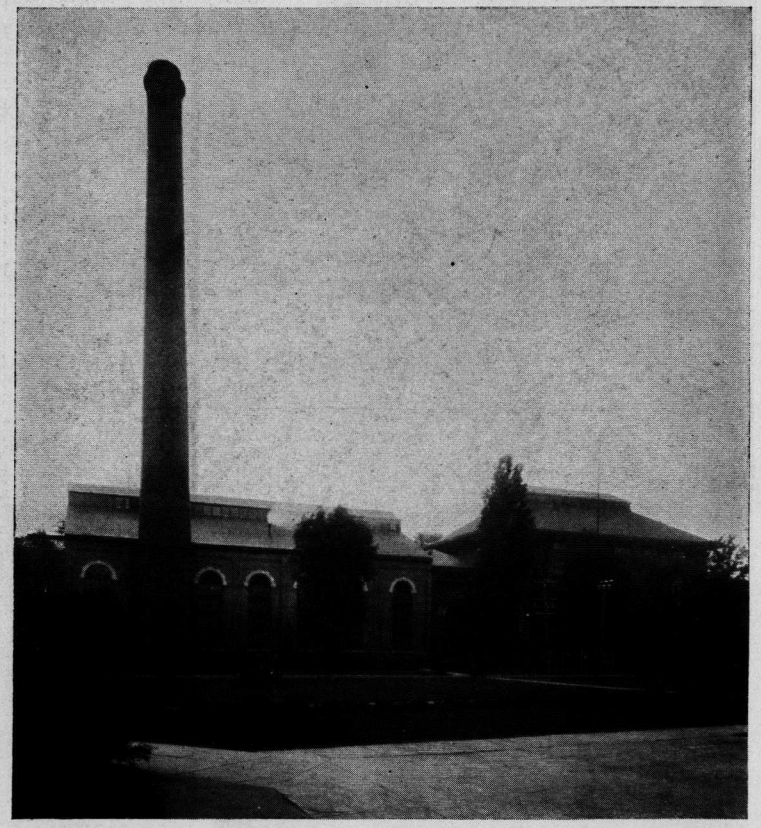
Chester Engineers were the consulting and designing engineers for the entire project.

Two 25 kilowatt generators, D. C. driven by 9 x 8 automatic engines of 40 h.p. installed in 1913, furnish current of 250 volts for driving all machinery in the boiler shop, filter plant and also light for all buildings and grounds of the station.

On the park grounds north of the pumping station, a free public swimming pool is maintained by the Commissioners of Water Works. Pool is 155′ x 75′, and from 1½ to 6½ feet

deep with thirty-four dressing cabinets 3½′ x 5′ for the use of the boys and girls who frequent this pool in large numbers daily during the bathing season.

The No. 2 pumping station which remained intact housed a 12,000,000 gallon Worthington horizontal pumping engine. This was scrapped in 1918 to provide space for a 20,000,000 gallon De Laval steam driven centrifugal pumping unit installed that year to handle any exigencies that developed through the increased draft on the water supplies made by the large manufactories engaged in war work. This pump is



Pumping Station and Boiler House
As remodeled in 1922

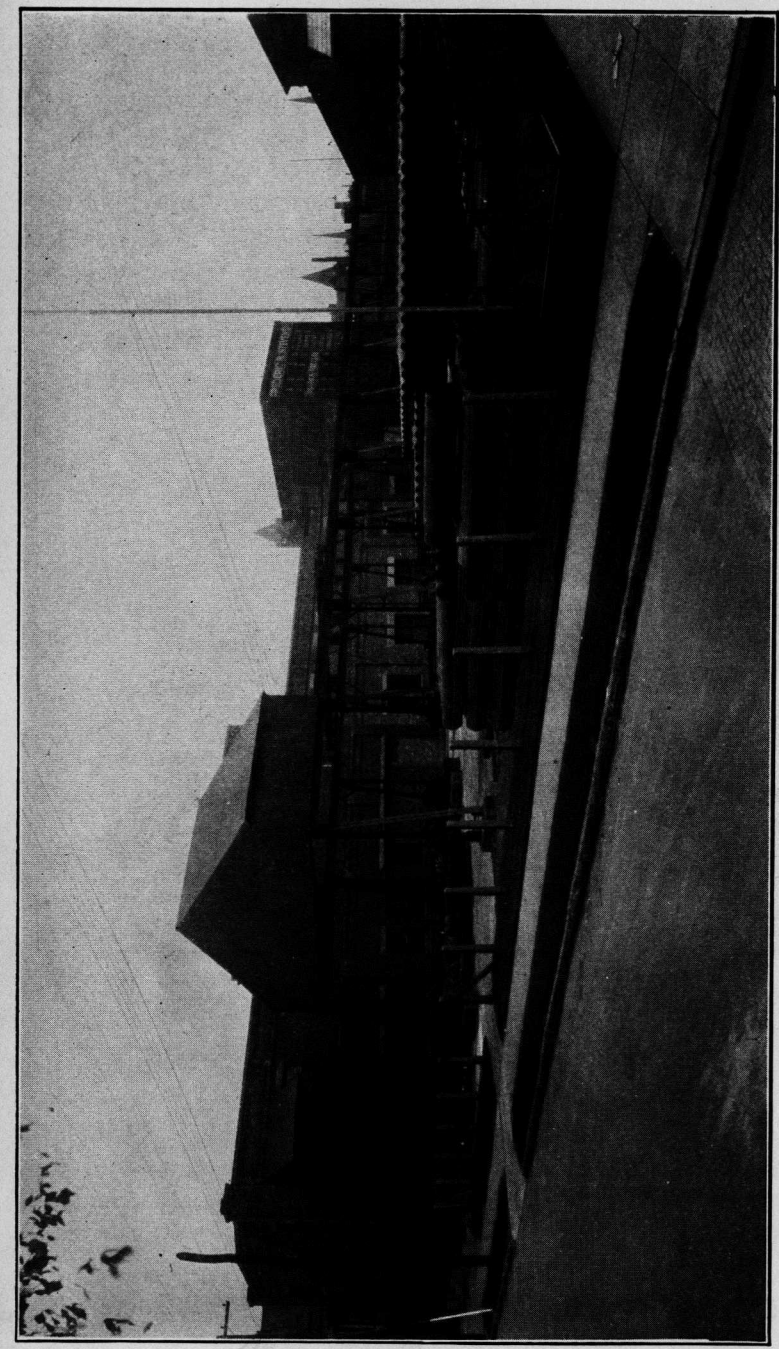
still used as a standby pump and two 20,000,000 gallon low lift centrifugal pumps were transferred to this building. Later a third low lift pump was added.

A contract was awarded to the Allis Chalmers Company in November, 1924, for the installation of a motor driven centrifugal pumping engine of 12,000,000 gallons capacity. This new electric unit has been installed as a standby pump, as occasion demands. The initial test of the new unit has

New Bethlehem Pumping Station and Swimming Pool—Erected in 1913

been delayed on account of incomplete pump connections. With the completion of this unit the pumping station will have a total pumpage capacity of 60,000,000 gallons a day.

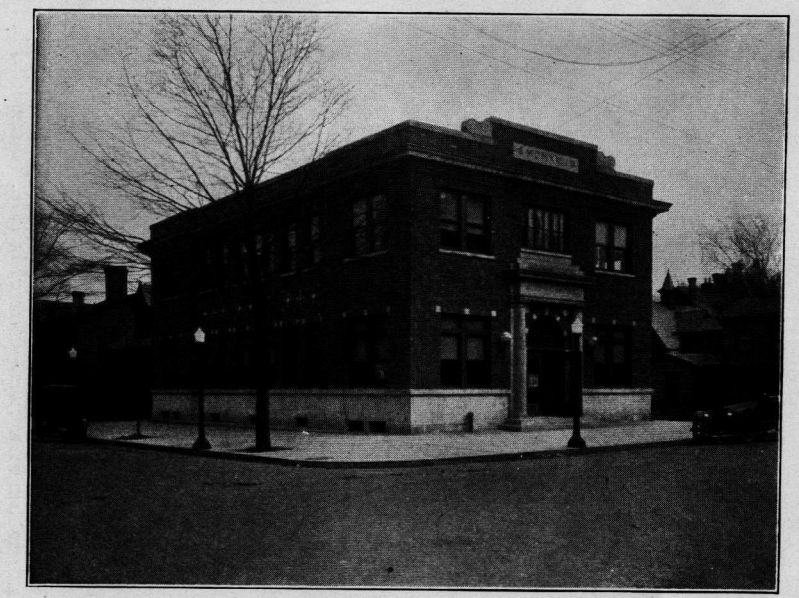
A new boiler house, 74′ x 102′ x 37½′, was erected in 1897 and remodelled in 1922 to bring it to a height of 50 feet. Four 350 h. p. water tube boilers were installed by the Heine Safety Boiler Company in 1913 and two 300 h. p. water tube boilers were installed by the Erie City Iron Works in 1918, in batteries of two each carrying 225 lbs. steam pressure.



Repair Shop and Pipe Yard—Erected in 1912. Remodeled in 1923.

These boilers are equipped with model stokers installed by the American Foundry and Casting Company, Dayton, Ohio. The boiler house contains a coal storage bin of 1000 tons capacity, installed by W. S. Ray of Pittsburgh, in 1922 to replace a 300 ton bin which had become inadequate.

A coal and ash conveyor was also installed in the boiler house in 1913, which is used to convey coal from the hopper outside the building to the storage bin and for the removal of



New Office Building
Erected in 1918

ashes from the tunnels in front of the boilers to a loading hopper over the railroad siding.

North of the boiler house a perforated radial brick chimney 175 feet high and 8 feet in diameter at the top was erected by H. R. Heinicke, Inc., in 1905, replacing a steel plate chimney built in 1897.

A second standpipe was erected in 1912 at the reservoir at Twenty-sixth and Sigsbee streets. It was 25 feet in diameter

and 80 feet high. An addition of 40 feet was made to the pipe in 1915 by the Pittsburgh DesMoines Steel Company and it now has a capacity of 440,000 gallons.

Ground at Twelfth and Myrtle streets was purchased in 1911 as the site of a repair shop and storage yard. The following year a workshop and a storehouse were erected to expedite the handling of construction and repair work. Adequate space was provided for the storage of pipe and other materials. A railroad siding and an unloading crane were installed to properly handle all materials received in the yard. The second floor of the building was fitted up as a home for the caretaker who is on duty 24 hours a day, thus facilitating the securing of materials in case of emergency. By this arrangement all construction and repair activities were concentrated at this central location.

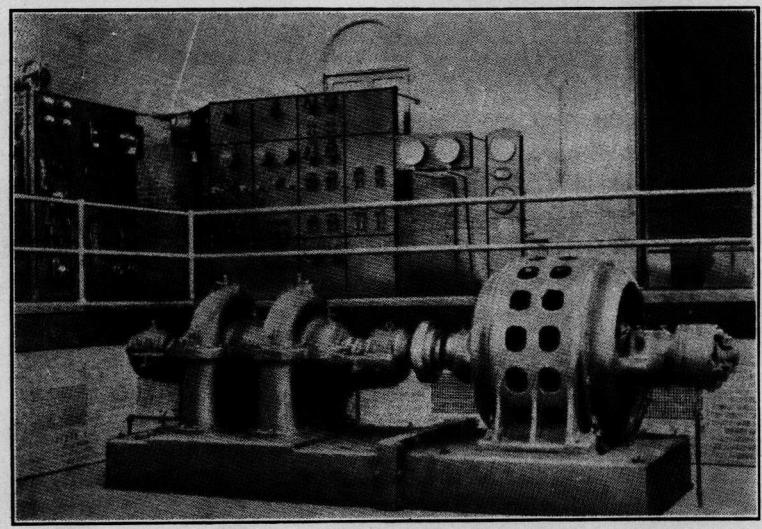
In 1916 a plot of ground, 82½′ x 85′ at the southeast corner of French street and Seventh was acquired upon which a two story office building was erected by Constable Bros. of Erie, in 1917. The lower floor is occupied for general office purposes, while the upper floor contains the rooms of the Commissioners of Water Works, engineers and inspectors quarters.

To assure a constant supply of water to the growing section of the southern part of the city, a tract of land consisting of ten and one-third acres was purchased from the Andrews Land Company in 1920 as a site for a reservoir. On this land, which is located west of Cherry street and north of Arlington road, a 5,000,000 gallon unit reservoir, 118′ x 253′, with a depth of 22 feet, was erected in 1921. The surface of the water when the reservoir is filled is 336 feet above mean lake level.

To supply water users living south of the reservoir and at an elevation higher than itself, a booster station and standpipe were erected. The standpipe is 38 feet high elevated on a tower 72 feet high, making a total height of 100 feet and at an elevation 475 feet above mean lake level, with a capacity of 100,485 gallons. The tank is supplied from the main line to the reservoir by two one-half million gallon electrically driven pumps located on the reservoir grounds.

The reservoir was constructed by the Halfhill Construction Company of Youngstown, Ohio, according to plans and under the supervision of the J. N. Chester Engineers, Pittsburgh, Pa.

The Commissioners of Water Works of Erie have under their control along the water front from Walnut street east to the H. F. Watson Company's saturating plant, 45 water lots with an approximate area of 42 acres.



Twelve Million Gallon Allis-Chalmers Electrically Driven Centrifugal Pump—Erected in 1925

The ground on which the high service reservoir stands contains ten and one-third acres, and the West Twenty-sixth reservoir contains 7.64 acres. The triangular piece of property, situated on Front street from Chestnut to Walnut, 8100 square feet together with other pieces of property, used for park purposes at the foot of Chestnut street, make up four and one-half acres. Additional property amounting to 175 acres used for settling basin and parks on the peninsula, are owned by the water board, making a total of approximately 240 acres of property under the direct control of the water commissioners.

Domestic consumers have from the beginning been served on a flat rate fixture basis and large consumers on a meter basis.

The City of Erie, with a population of 125,000 people, and about 250 miles of street, covers an area of 20½ square miles in which there are laid over 188 miles of main pipe sizes varying from 4″ to 42″, exclusive of approximately twelve miles of pipe laid outside of the boundary lines of the city.