

THE WATER WORKS.

A Great Enterprise That Supplies Two Municipalities With Water.

The Old Plants and the New, and What Has Been Done to Make the System a Success—Some Very Interesting Statistics.

The water works has become, in Kansas City, a subject somewhat stale, and but for the fact that this issue of the JOURNAL is expected to be read by people other than the citizens of this city, it would be entirely out of place to say a word about this great enterprise. The subject has been and is now so imperfectly understood, and yet of so much importance, that it is pardonable to present some data concerning it.

There are two separate municipalities known as Kansas City. They are divided by an imaginary line near the confluence of the Kansas and Missouri rivers, the whole of the Kansas river and one of the cities being within the state of Kansas and the other city in the state of Missouri.

Prior to 1874 neither city had a public water supply. In 1873, on invitation of Mayor H. H. Hunt, of Kansas City, Mo., the chief engineer of the St. Louis water department advised that the water supply be taken from the Missouri river near the town of Quindaro, in the state of Kansas, almost the identical location of the present Quindaro pumping station.

He recommended a plant of the capacity of 5,000,000 gallons per day, eighteen miles of pipe, 350 fire hydrants, standpipe and settling basins, and estimated the cost at \$1,011,832.

This was twenty years ago, and now we have the amazing spectacle of an attempt to make somebody believe that the present plant, comprising a capacity of 63,000,000 gallons per day, 143 miles of pipe, 1,400 fire hydrants and 80,000,000 gallons storage capacity, more than ten times the plant recommended by Whitman, is worth less than twice the sum estimated by him for his little plant, or \$2,000,000, and hence the misunderstanding, trouble and litigation between the city and the company.

It is not the purpose of this article to discuss these issues, but rather to speak of the water works as an important element in Kansas City's completeness as a great city.

It was when the city had a comparatively small population that the National Water Works Company of New York closed a contract with the city to construct water works. This was in 1873. The grant was for twenty years, the city reserving to itself the option to buy the works at any time, or to renew the contract, if the works should not be purchased, for another twenty years. If neither the property had been purchased nor the contract renewed at the expiration thereof, then the city should be compelled to purchase, at the company's option to enforce the sale if it so desired.

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The contract authorized the company to take water from rivers either in the state of Kansas or Missouri. The original intake was located on the Kansas River, within the state of Kansas, and on June 6, 1874, the location was expressly approved by the city authorities. Subsequently the Kansas river became threatened with pollution in consequence of the growth of the city, and in response to a very general demand, and with a desire to furnish the best water obtainable, the company purchased the property of the Wyandotte-Armourdale Water Company, in the state of Kansas, and erected a new pumping station and settling basins at Quindaro, from which, for convenience and economy, both cities are supplied with pure and wholesome water. This change was made October 18, 1887, at an enormous expense, and was hailed with delight by the press and public.

The system in both cities represents a pumping capacity of 67,000,000 gallons per day, 174 miles of pipe and 1,646 hydrants.

The works are in excellent condition, easily meeting every requirement, although performing this service under extraordinary local difficulties on account of varying topography.

The company refers with pride to the reports of the chief of the fire department for the years 1882, 1883, 1884, 1885, 1886 and 1887 and to his many public utterances to the same effect; also to the testimony of efficiency as stated by the fire chiefs composing the National Association of Fire Engineers, a session of which was held here in 1889; to the "special" report of John W. Smith, special inspector, to the national board of fire underwriters in New York in December, 1890, in which he stated that the works were excellent and the best he had ever seen, and that he had no recommendations to make to improve the service, and to the generally accepted estimate throughout the land that no city had a better system of water works than Kansas City.

To show that the company is justified in its claims tests are now being made, the results of which, to date, are as follows:

HYDRANT TESTS.

When the water works were built, certain tests were made to determine their efficiency, the accuracy of which has been disputed. Then tests were made with pressure of from 180 to 190 pounds at the pumps. For some years the company has used less pressure, that given for usual fire alarms being from 160 to 170 pounds, and it has been claimed that the works are incompetent to fulfill their guarantee.

Pending the present litigation, the water company decided to see what their real status was, and procuring hose and nozzles, employed Mr. G. W. Pearsons, formerly chief engineer of the works, to make a series of practical tests, giving him liberty to choose locations, etc., but restricting him to the usual fire pressure of 160 to 170 pounds for the uptown service, and 125 pounds in the West bottoms.

Owing to the uncertainty and delay caused by attempting to measure vertical streams, he decided to take the horizontal equivalents, as is the usual practice. This, by having several streams, enabled the making of the tests in a few minutes, thereby making the least possible annoyance to the public.

For the first test of twelve one-inch streams, four were placed on Olive street, from Ninth to Twelfth; four on Fourteenth street, from Broadway to Summit; four on Harrison, from Thirteenth to Sixteenth, locations chosen as might occur for different fires at the same time, and as being nearly all on four-inch pipe. In all these tests the different streams were thrown as nearly as could be so as to balance each other in regard to being thrown with and against the wind, and also as related to being thrown up and down grades. All these were noted by the observers for correction. On inspection it is seen that this correction will reduce the amount of difference somewhat, but will have little effect on the average results of any of the tests. To make the first test more severe, as it was made on four-inch pipe, smooth nozzles were used. The result was:

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Shortest stream, 152 feet; longest stream, 210 feet; average stream, 179 feet; corresponding to a vertical height of 132 feet.

The second test was of eight one and one-fourth inch streams—three on Grand avenue, at Ninth and Twelfth streets, and between Twelfth and Thirteenth; three on Wyandotte, at Fifth, Sixth and Seventh, and two on Campbell street, at Twelfth and Thirteenth.

Shortest stream, 184 feet; longest stream, 211 feet; average stream, 196 feet, equivalent to vertical height of 137 feet.

The third test was of four one and one-half inch streams, at Joy and Hickory, Twelfth and Hickory, Thirteenth and Hickory and Twelfth and Genesee streets.

Shortest stream, 210 feet; longest stream, 233 feet; average stream, 223 feet, equivalent to vertical height of 159 feet.

The fourth test was of twelve one inch streams from six hydrants on Main street, from Twelfth to Sixteenth streets, two streams from each hydrant.

Shortest stream, 165 feet; longest stream, 190 feet; average stream, 176 feet, corresponding to a vertical height of 130 feet.

The fifth test was of twelve one inch streams on Main, from Ninth to Eleventh streets. One hose failed, reducing test to eleven streams. This test was made at 6 to 6:30 a. m., to avoid annoyance to public.

Shortest stream, 170 feet; longest stream, 199 feet; average stream, 183 feet, equivalent to vertical height of 134 feet.

Sixth test, October 21, 1893, at 2:30 p. m., four one and one-fourth inch streams and

eight one inch streams at the same time the one and one-fourth streams on Delaware at Sixth and Seventh streets, and on Walnut at Ninth and Eleventh streets.

Average horizontal distance 101 feet, corresponding to vertical height of 138 feet.

Eight one inch streams on Independence and Brooklyn avenues, from four hydrant two streams from each hydrant. Average horizontal distance, 102 feet, corresponding to vertical height of 111 feet.