1815 this precarious supply was replaced by a system of distribution of water pumped from the river and raised into tanks containing 240,000 gallons. In 1845 the city bought this system from a private company, after which an epoch of progress began by the construction of a reservoir containing three million gallons, and situated at that time outside of the city at a place called "Cote a Baron." This reservoir now abandoned has been turned into a fountain in St. Louis Square. The time had now arrived when the water intake in the river, in the middle of the port, and consequently exposed to all sorts of polutions, could no more be used with hygienic safety to supply a city full of future promise and anxious for the health of its inhabitants. Since 1847 it had been proposed to take water at the Lachine rapids, above the city, and to make use of these rapids to raise the water, but this scheme and others similar were not considered until 1853, when the city council concluded to confer upon T. C. Keefer, civil engineer, the duty of studying the plans for an aqueduct able to supply 5,000,000 gallons daily. The study of this project, its examination by consulting engineers, etc., brought the beginning of its execution to the year 1853, and its termination to the year 1854. The system then established included an open canal four and three-quarter miles long, having its entrance about one mile above the Lachine rapids, at an elevation of 37 feet above the level in the harbor of Montreal. The dimensions of the canal were 40 feet wide at the water surface and 8 feet deep. This canal, throughout most of its course, is actually used to supply the city at present. At the time of its construction this canal supplied more than sufficient water to develop a hydraulic force of 300-h.p., and raise 200 feet above the level of the water in the harbor, five million gallons of water, being at the rate of 40 gallons per capita for a population double what it was then (60,000). At the end of that canal were situated the settling basin and the wheel house about as they stand this day. The hydraulic motive power was utilized by two breast wheels working six pumps to raise the water to a reservoir situated on the slope of Mount Royal along McTavish street, forming the present low level reservoir, which is but an enlargement of the original one. That reservoir had then a capacity of fifteen million gallons.

The whole of this system had been well devised for the quality and quantity of water necessary for a limited future, sufficient in fact for a population double what it was then, but the rapid increase of population, which has nearly quintupled since, and the inconveniences produced by the severity of our winters on the wheels have necessarily obliged the authorities of the waterworks to substitute turbines for breast wheels, and also to construct an auxiliary steam plant, with a view to replacing hydraulic power during the low water level times, in summer and during the winter on account of ice, frazil, etc. The steam plant was also found to be necessary to provide for the insufficiency of the hydraulic force, when the consumption of the water of the city exceeded that for which provision had been made when the canal was constructed.

The growth of population necessitated the establishment of the present high level system, that is the construction of the reservoir at mid-way on the mountain slope, and of a pumping station to carry the water from the low level system to the high level distributing service, to a height of 422 feet above the level of water in the harbor. A Worthington steam pump, with a capacity of one-half million gallons, was then sufficient to supply the high level system.

As the changes were being made to the low level machinery, as mentioned above, several schemes were prepared to place the aqueduct in a way to satisfy the wants of the rapidly increasing population without necessitating the resort to the expensive use of steam. These schemes had in view two objects; the increase of hydraulic power or the supply of water by gravitation. Montreal is not advantageously situated to make use of this last scheme. Built upon an island, bordered on one side by the St. Lawrence river, whose width excludes any idea of viaduct or syphon to bring water supply on this side; on the other side it is bordered by a branch of the Ottawa river, and adjacent to another island, formed by the same river dividing itself into two branches, not so wide as the St. Lawrence river, but of sufficient width to make very expensive the bringing across of a gravitation aqueduct.

To avoid these financial difficulties, nothing was left but to find north of the city a water supply taken at a sufficient altitude, that is more than 425 feet above the St. Lawrence to be adequate to the actual and future wants of the city. The ridge of the Laurentian Mountains, whose first summit is situated at more than thirty miles from Montreal, was the only spot where a water supply could be found. Explorations and levels were made, and established the fact that a water supply could be taken from Lake Ouareau, situated at an altitude of 450 feet and at a distance of about sixty miles from Montreal. But the cost of such an undertaking prevented the further study of it. Consideration of the gravitation plan was consequently superseded by the study of a sufficient hydraulic power system. The author thinks the scheme of carrying water from the Laurentian lakes would result in difficulties other than the supposed heavy cost. The water would be contaminated in a country where the "water shed" is entirely covered with forests, where great timber cutting is constantly going on, and employing a large number of men and horses, and where numbers of creeks run dry in summer and would only supply impure water. These and many other considerations were the causes which led to preference being given to the scheme of the superintendent in office at that time, Louis Lesage. This scheme was simply to carry the entrance of the aqueduct 3,000 feet up the river, and to make it 130 feet wide at surface water, 78 feet wide at bottom and 14 feet deep. These dimensions gave sufficient power to supply thirty million gallons. In 1877 the works for the construction of this plan began, the new entrance of the aqueduct was made, and the aqueduct was dug 130 feet wide, 4,800 feet long, as it now stands to-day. The cost of the works prevented its continuation and this accounts for the periodical growth of the steam plant. However this beginning of enlargement had a favorable influence on the water in the aqueduct and the formation of ice, in such a way as to better protect the efficiency of the hydraulic pumps.

In 1878 the low level reservoir (McTavish), was enlarged so as to bring its capacity to thirty-seven million gallons. In 1889 the population fed by the high level system had increased so much that a new steam pump of two and one-half million gallons had to be provided for this district. This increase in the population is still going on, and the necessity to ensure its supply against any uncertainty led the author to have the city council provide for the installation of a pump operated by electric power, which pump of a capacity of five million gallons is at present under process of erection. When it is in operation, the old steam plant will be kept as a duplicate in case of emergency.

The question of increasing the motive power will again shortly present itself, and the competition of schemes, similar to those already spoken of will be open again, together with a scheme of water filtering, because although the water taken in the river is generally wholesome, the spring time has always a bad effect upon the waters, this being caused by the snow melting and the discharge into the river of the drainage of the lands along its banks. This inconvenience, although temporary, has led the public to wish to see a water filtering system adopted, and the municipal authorities will have to deal shortly with this question.

The present water supply, which averages twenty-four million gallons per day, is derived from the St. Lawrence river, from which the aqueduct has its entrance one and one-half miles above Lachine rapids, 38 feet above the level of water in the port. The present aqueduct, from the entrance to the junction of the old aqueduct, has a mean width of 104 feet, and a depth of 14 feet, 4,800 feet long, it is then continued by the old aqueduct, which has a mean width of 30 ft.,