the belief that the Goldstream supply was sufficient for the city up to a population of 150,000, and that the whole of the supply would be in municipal control, preventing conflict of interests in the years to come. The proposition from a business connection was advocated on account of the revenue to be derived from Victoria West, and the sale of water to the B.C. Electric Railway for power purposes. The ratepayers voted against it, however, sounding the death knell of the expropriation proposals.

Mr. Herman, of Herman & Burwell, hydraulic engineers, Vancouver, was then called in to make a survey of the Sooke line. In January, 1911, the electors were asked to express their approval of the Sooke scheme. Mr. Wynn Meredith, consulting engineer, San Francisco, was called in during the summer of 1911, and preliminary surveys were at once made. The information gathered formed the basis of the report presented to the council on November 10, 1911, which embraced the principle of using the southern route by Mount Shepherd.

The battle of the routes had been a factor for years. Humpback is a natural basin in the hills near Goldstream, and the problem was to secure a grade for a flow line to that point. The northern route by the Malahat would have involved tunnels, and the water would have been conveyed by way of Finlayson arm. Then there was the much discussed tunnel under the Sooke hills which, while it would have taken four and a half years to construct, would have provided a supply for all time, whatever dimensions of pipe were necessary.

Each of these proposed routes had one drawback. Either would involve crossing the holdings of the Esquimalt Waterworks Company, encouraging litigation of which the council had had enough in its waterworks undertakings.

With reference to power, Mr. Meredith, in his report, said: "With 16 million gallons, equal to about 30 cubic feet per second, utilized or reserved for city use, there would be available for power purposes about 70 cubic feet per second for some years to come, or until the city required it for domestic use. This would be best utilized for power purposes by carrying it from the outlet of tunnel No. 2 in a comparatively short power pipe line to Finlayson arm, where it could be delivered to the water wheels under an average effective head of about 550 feet, and this quantity of water under this head would yield continuously approximately 3,500 h.p. As the city's requirements for some years to come will not exceed the 30 cubic feet per second, it is evident that all capital expenditure required to make available the 70 cubic feet of water per second for power purposes would be properly chargeable against the power produced. A carefully compiled estimate clearly shows that the capital expenditure for power purposes on this basis would be excessive, and commercially impracticable, and therefore need not receive further consideration."

However, a practicable route by the south was found, and the council adopted the report. Tenders were invited, and the contract was awarded to the Westholme Lumber Company on December 19, 1911. The tender was $1,169,170 for construction.

The contract was subject to the consent of the ratepayers, which was given in January, 1912.

The company, however, according to the official report of Mr. Meredith, consulting engineer, backed up by the water commissioner, failed to show due expedition with the work, and they recommended in April that the council should exercise its powers of removal under the contract. However, the council declined to do so, and the work went on till the end of the year, considerable grading being done, and the land being cleared around the lake. On July 31, 1912, Mr. Boyd Ehle became engineer in charge of the work, and under him the bulk of it was carried out.

The situation went on without any satisfactory decision as to the company's position after a change was made in the position of water commissioners on November 1, 1912, when Mr. C. H. Rust took charge, and eventually on April 12, 1913, the council took over the work.

The summer of 1913 was largely occupied with organization, the city having to assume the position of contractors to purchase the plant from the receiver to carry out the work with the knowledge that it was doing the work for other people, and that an accounting with the Westholme Lumber Company would have to be made at the end of the contract. A lawsuit was commenced by the Westholme Company on April 13, 1913.

In the fall of 1913 the water commissioner recommended that the making of the pressure pipe and the conduit flow line should be done by contract, but it was not until the power of the commissioner under the act had been established by the supreme court that he was able to enter into the contracts.

The telephone line was let by contract. The Pacific Lock Joint Pipe Company received the contract for the 27½ miles of concrete flow line, the diameter of the pipe being increased from 40 to 42 inches, while the pressure pipe was awarded to the Burrard Engineering Company. The former company established a plant at Cooper's Cove, and the latter bought the Westholme plant at Thetis Cove from the receiver of the company. The city had there already a large supply of plate, which was made up and rolled by the company. The trenching was done by day labor.

Mr. Ehle stayed till the end of February, 1915, in charge of the work, having seen the pressure pipe line finished at Christmas. Since that time Mr. F. L. Young has been in charge of the work. The Pacific Lock Joint Pipe Company completed its labors during the winter.

The Humpback reservoir has been in service for more than two months, and the operation of the system in its entirety will now permit the termination of an agreement entered into May, 1913, to purchase water from Goldstream on the terms of payment as fixed by statute. The agreement expired on June 1st.

The System.—An illustrated article in *The Canadian Engineer* for July 23rd, 1914, described the system. Briefly, it is divided into four parts, the headworks at Sooke Lake, the flow line to conduct the water along the mountain side, the Humpback reservoir and the pressure line to carry the water from the reservoir into the city distributing system.

The area of the watershed is 31⅓ square miles, on which the rainfall is about 55 inches annually. The scheme follows the reports of earlier engineers, has a low dam, 12 feet high, at the lake, and the storage provided is 5,555,000,000 gallons. The later development contemplates an additional run-off from Leech River and 45-foot raise, when the capacity will be 17,360,000,000 gallons. The flow from the present dam to the reservoir has by actual test been shown to be between 21,000,000 and 20,000,000 gallons.

The conduit pipe to connect the lake with the reservoir is of reinforced concrete, 42 inches internal diameter and is placed on a grade of 1:1,000. It is carried on one steel bridge with five reinforced concrete syphons across the streams and ravines.