

For THE CANADIAN ENGINEER.

WATER WORKS EXPROPRIATIONS IN CANADA.

BY WILLIS CHIPMAN, C.E.

The following is a list of the cities and towns in Canada that have from time to time acquired their water-works systems by purchase or by arbitration from the private companies that owned and operated the works, and the price then paid by the municipality:—

| | | | |
|---------------------|------|---------------------|-----------|
| Montreal, P.Q. | 1845 | | \$250,000 |
| St. John, N.B. | 1855 | | |
| Halifax, N.S. | 1861 | | 275,000 |
| Toronto, Ont. | 1873 | By arbitration | 220,000 |
| Kingston, Ont. | 1887 | " | 121,000 |
| Niagara Falls, Ont. | 1884 | " | 17,000 |
| Valleyfield, P.Q. | 1887 | By mutual agreement | |
| Brantford, Ont. | 1888 | " | 65,000 |
| Owen Sound, Ont. | 1890 | " | 55,000 |
| *St. Cuneonde, P.Q. | 1891 | " | |
| *St. Henri, P.Q. | 1891 | " | |
| Brockville, Ont. | 1892 | By arbitration | 138,000 |
| Vancouver, B.C. | 1894 | " | |
| Kincardine, Ont. | 1894 | By mutual agreement | 40,000 |
| Moncton, N.B. | 1894 | By arbitration | 265,000 |
| Chatham, Ont. | 1895 | By mutual agreement | 145,000 |
| Cornwall, Ont. | 1897 | By arbitration | 86,500 |
| Sherbrooke, P.Q. | 1897 | " | 116,000 |
| Barrie, Ont. | 1898 | " | 78,000 |
| Berlin, Ont. | 1898 | By mutual agreement | 102,000 |

In Ontario an Act of Parliament was passed in 1882 empowering cities and towns to acquire waterworks or gas works by purchase or by arbitration. Six towns have taken proceedings under this statute since 1891, and have acquired their works, three by arbitration and three by mutual agreement.

In the Ontario Act, the word "value" is clearly defined as structural value at the time this value is being determined. Ten per cent. is, however, to be added to this valuation by the arbitrators.

The Ontario Act prescribes two methods of procedure:—

(a) The municipality may submit a blank by-law to the ratepayers before an offer has been made or a valuation prepared, which, if carried, empowers the council to proceed with the arbitration or to acquire by purchase.

(b) The municipality may proceed with the arbitration and take up the award, then submit a money by-law to the ratepayers for the purchase of the works.

In either case if the works are not taken over, the municipality shall pay all costs of the proceedings.

Berlin is the only place in Ontario that adopted the first method.

In 1898 New Brunswick passed an Act similar to the Ontario Act of 1882, but none of the other provinces have any such legislation.

In the Moncton Act, the word "compensation" was used as well as value, but in the Campbellton Act the word "compensation" did not appear, and "value" is not so clearly defined as in the Ontario Act.

In the following cities and towns the waterworks are now owned and operated by private companies:—

Belleville, Cobourg, Ingersoll, Iroquois, Lindsay, Napanee, Perth, Peterborough, Smith's Falls, Stratford, Trenton and Waterloo, in Ontario.

Aylmer, Berthier, Chicoutimi, Cote St. Antoine, Drummondville, Granby, Huntington, La Chute, Richmond, St. Lambert, and Saint Johns, in Quebec.

Lunenburg, N.S.; St. Stephens, N.B.; Winnipeg, Man.; Calgary, N.W.T.; Esquimaux, B.C.; and Nanaimo, B.C.

*These works were purchased by the municipalities in 1891, but soon afterwards they made arrangements with the Montreal Water and Power Company for a supply of water, and it is now reported that they are owned by this Company.

THE SOULANGES CANAL.*

BY THOMAS MONRO, PAST PRESIDENT CAN. SOC. C.E.

At the close of 1888 the writer was transferred from the Welland Canal, and assigned the duty of determining the best location for a canal, having a navigable depth of fourteen feet, between Lakes St. Louis and St. Francis. After extensive surveys and examinations, he submitted a report, dated 15th June, 1889, addressed to the late John Page, M. Can. Soc. C.E., Chief Engineer of Canals, in which reasons were given why the new canal should be constructed on the north side of the St. Lawrence. Mr. Page died in 1890, and in June of that year a second report was addressed to the Secretary of the Department, confirming the views previously expressed. In that document the projected work was for the first time named the "Soulanges Canal." In a memorandum dated 25th January, 1891, prepared for the Right Hon. Sir John Macdonald, by Toussaint Trudeau, M. Can. Soc. C.E., Deputy-Minister and Chief Engineer of Canals, the scheme submitted by the writer was approved of in general terms. This view was subsequently confirmed by the Government, and, in August, 1891, a sum of \$300,000 was voted by Parliament towards the construction of the Soulanges Canal, which was then estimated to cost \$4,750,000.

Plans and specifications of the work were subsequently prepared; and in May, 1893, all the thirteen sections between Cascades Point and Coteau Landing were under contract. It is not intended to discuss in this paper the fitness or otherwise of the dimensions adopted for the Welland and St. Lawrence Canals. The writer's views on this important subject are fully set forth in his address on retiring from the office of president of this society on the 15th January, 1896. The object now proposed is to briefly describe the Soulanges Canal as it is, and to draw attention to the fact that in many essential features it differs in design from the other links of the St. Lawrence system.

It may be stated, at the outset, that more extended study of the question of the fluctuations of the St. Lawrence River led to the conclusion that it would be unsafe to accept previous records as a guide in fixing the heights of the mitre sills at each end of the canal. The lowest water at Valleyfield (1849-90) was in October, 1872; when it fell for part of one day to 10 ft 8 ins. on the mitre sill of the guard lock at the head of the Beauharnois Canal. But the mean for that month was 11 ft. 13 inches. Practically, 11 feet would therefore represent extreme low water during the navigation season. Adopting this view, the sills of the guard lock at the head of the Soulanges Canal should have been placed $3\frac{1}{2}$ feet lower to secure a fourteen feet draught. As a matter of fact, the sills of the Soulanges are 5 feet lower than those at Valleyfield; and it is due to this that, in November, 1895, when the lowest water occurred, of which there is any reliable record, there was a depth of 14.55 feet at the upper entrance, and 14.83 at the lower end of the Soulanges Canal. In the same month there was only 13.50 feet at the lower entrance of the Cornwall Canal, and 13.08 at the head of the Lachine Canal. Attention is drawn to these facts, because between the time when the estimate attached to the writer's report of June 18, 1890, was made, and the letting of the works, the bottom plane of the summit level (10½ miles long) and the foundations of the structures on it, were lowered about 1½ feet, largely increasing the quantities, and adding, at a fair valuation, about \$500,000 to the estimated cost of con-

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