annum. The cost of operating 3,300 arc lamps at $20 per annum is $66,000, thus making the yearly expense $532,250. This is taking Mr. Janin's own figures for operation. Mr. Cote said it cost $495,000 to do this pumping and lighting for the year 1914, but as improvements have been made in the steam pumping plant, figures given out by the city show that probably $60,000 less coal will be used in 1915 than in 1914, making present pumping and lighting cost about $435,000, or about an even $100,000 less than doing the same work with aqueduct power.

Leaving the distributing system and the operating costs out of the question, however, the mere fact that the cost of the development may be $850 per horse-power or more, is sufficient to call for an investigation into the whole scheme. The interest charges alone on such an amount would be $42.50 per horse-power per annum, even if 10,000 h.p. be developed without frazil troubles. Now, could the city get 10,000 h.p. for less than the mere interest charges on the aqueduct scheme?

Power Rates in Montreal.—Nowhere on the American continent is power being developed cheaper than around Montreal. The new Laurentide development of 125,000 h.p. is being paid for by a $6,500,000 bond issue, or $52 per horse-power. Cedars cost $90 per horse-power, and when ultimate development has been completed, this will be reduced, it is said, to $75. Shawinigan cost considerably less than $100, and the latest development there cost only $50 per horse-power. It is said that the average cost of all the developments within a transmission radius of Montreal is not much over $100 per horse-power, and the average throughout Canada, $125 per horse-power.

The cheap developments near Montreal make a low rate for power possible. The Aluminum Company of America is said on good authority to have contracted for power at $12 per horse-power per annum from Cedars, and to have been given other inducements at that. The Montreal Water & Power Company is said to have a $20 rate for 20-hour power in the winter months and $24 for 24-hour power in the summer. The city itself at present has a $20 rate for 20-hour power and a $30 rate for 24-hour power. And no steam standby would likely be necessary for the city if they contracted for the 10,000 h.p. from one of the power companies, on account of the way the various Montreal plants are tied together for emergencies, and on account of the splendid steam standby that the Montreal Light, Heat & Power Company are now constructing.

The power contract manager of the latter company states that they are prepared to sell the city 10,000 h.p. (6,000 h.p. for pumping and 4,000 for lighting) at $25 for 24-hour power or $20 for 20-hour power. He claims that the pumping could all be done with 20-hour power, and that the right would be given the city to use 24-hour power at any time without notice and without any extra charge, in case of a big fire or other emergency. Mr. Lesage, however, says that on account of small reservoir capacity, it is very doubtful if 20-hour power would suffice. The Montreal Public Service Corporation stated that they had not been approached by the city in connection with this matter, but that they would be quite willing to offer the city reasonable rates when the request is made.

It is also suggested that the city could possibly build a new, modern steam power plant to produce 10,000 h.p. at a lower cost per annum than by the aqueduct scheme.

The city also has the club that it could use on the private power companies of going to Quebec for a hydro-electric bill similar to Ontario's, in case a fair contract with the companies could not be made.

It is not suggested that any one of the alternative schemes will be found advisable in view of the large sums already spent on the aqueduct, but the question is so debatable that an investigation of the whole problem is vital.

Reports of Consulting Engineers.—Commissioner Cote and Engineer Janin have claimed that many consulting engineers have reported on this aqueduct scheme and have approved it. They name Engineers Vanier, Kennedy, Marceau, Hering, Fuller, Butler and others. All of these engineers unqualifiedly deny having made any report on the whole scheme, although they did all separately report on various parts of it, but none of them, with one exception, reported on any part of the present scheme, and he only on the aqueduct walls.

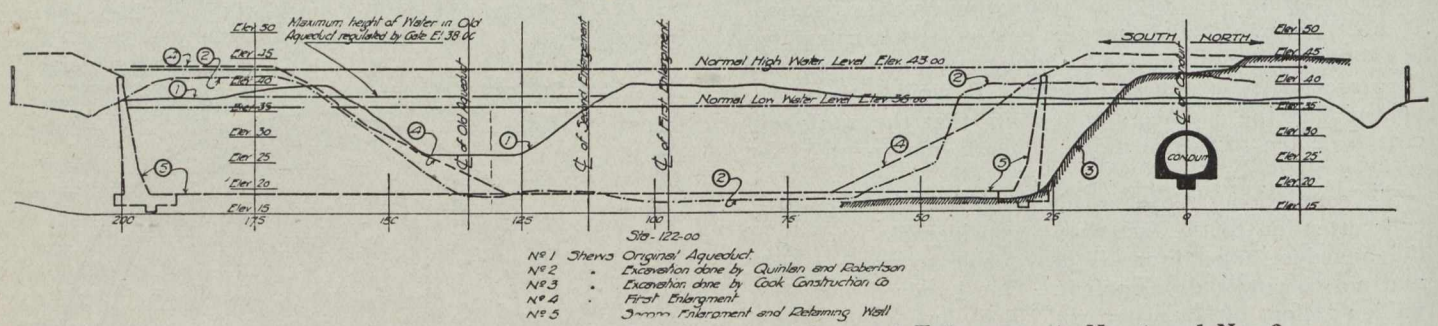

Fig. 3.—Comparative Cross-sections of Original Aqueduct and Enlargements No. 1 and No. 2.

Conclusion.—*The Canadian Engineer* does not wish to be misunderstood as condemning the aqueduct enlargement or as even adversely criticizing same, because it is not the function of an engineering paper to do so, and anyway there are not sufficient facts now available to form fair judgment on the scheme. *The Canadian Engineer* has merely attempted to present the data that are available, from which is is quite apparent that a study of the whole situation is imperative. *The Canadian Engineer* therefore fully endorses the request that has been made by the Canadian Society of Civil Engineers, and approved of by Montreal's Board of Trade, that the project be reported on by a board of independent engineers.

A triumph for the wireless telephone was achieved on October 21st, 1915, when Mr. B. B. Webb, one of the engineers of the American Telephone and Telegraph Company, stationed at Washington, D.C., spoke into a transmitter that sent his message to the Eiffel Tower, Paris, 3,800 miles distant, and to Honolulu, 4,900 miles distant, the two receiving stations being 8,700 miles apart.