

Editorial

THE ECONOMIC PROBLEM OF NIAGARA.

During the last session of the Ontario provincial legislature, an act entitled "The Water Powers Regulation Act," was passed, giving the officials of the province wide powers in the matter of providing for the proper and efficient use of waters for power purposes.

The passage of this act is particularly timely as related to the conditions now existing at Niagara Falls, and the immediate enforcement of its provisions would go far toward relieving the critical situation caused by the operations of the power companies and the limitations imposed upon the use of Niagara waters for power purposes by the Boundary Waters Treaty.

Under the terms of the treaty the province is entitled to divert 36,000 cu. ft. per second of water from the Niagara River above the falls for power purposes. So long as this treaty continues in force, therefore, the power which can be produced by 36,000 sec. ft. of water is a measure of the benefit which Ontario, and Canada as a whole, can derive from the development of power at Niagara. Its value, from the standpoint of public use and industrial application, is almost beyond computation.

By virtue of certain agreements entered into with the province, the three large power companies at Niagara Falls have the right to generate an aggregate of 405,000 h.p., and for this purpose it is understood that they will require to divert about 29,500 cu. ft. of water from the Niagara River. This means that when these power companies have developed the 405,000 h.p. to which they are entitled, 80 per cent. of the treaty allotment of 36,000 cu. ft. will have been absorbed, and only the small residue of 6,500 cu. ft. will be available for the logical and inevitable expansion of the Hydro-Electric Power Commission.

As the matter now stands, therefore, the private power companies of Niagara Falls have a prior claim on 80 per cent. of Ontario's treaty allotment. A simple computation shows that these companies will produce only about 14 h.p. from every cubic foot of water used. Furthermore, each company is so deeply committed to its present scheme of development, that it would appear impossible, with any reasonable expenditure of capital, to make any material improvement in existing methods of use except, possibly, such as might be derived from the installation of the most modern types of hydraulic and electrical machinery.

The mean difference in level between Lake Erie and Lake Ontario is 327 ft., and the Hydro-Electric Power Commission reports that at least 300 ft. of this fall can be effectively used for the development of power through the agency of its projected Chippewa-Queenston scheme. This is more than double the general average of effective head now being used by the power companies at Niagara Falls. It means that with the unallotted surplus of treaty water, the Hydro Commission can develop nearly 200,000 h.p. at Queenston. It means that from one cubic foot of water the Commission can produce 30 h.p. as against 14 h.p. which the private companies at Niagara Falls can produce.

The private companies will require 29,500 cu. ft. of water to develop 405,000 h.p. According to the above figures, this same amount of water, if used by the Com-

mission, would develop about 900,000 h.p. The significance of this fact is tremendous. It apparently means that as long as the existing private companies at Niagara Falls continue to operate, nearly half a million horsepower of Niagara's precious commodity will be lost to Canada and its citizens.

In view of the present demand for power, and the inevitable expansion of the market, it is sufficiently obvious that some means must be found to reclaim this half million horse-power of wasted capacity in the not distant future.

Pending the solution of this vital economic problem, public interest demands that the private power companies at Niagara Falls shall develop their respective quantities of power with the utmost degree of efficiency and economy in the matter of water consumption, and if the newly enacted Water Power Act can be used as a means to this end, its provisions should be enforced without delay.

Finally, assuming that the value of this wasted power is so immense that some means of reclaiming it must of necessity be found, it should be the hope of every citizen of Canada that, when preparing plans for the 200,000 h.p. development at Queenston, the engineers of the Hydro Commission will be able to design, and will design, with a view to the ultimate construction of a great central plant which will extract the last horse-power of energy from the available waters of Niagara.

MUCH RAILROAD WORK AHEAD.

One paragraph of the official summary of the Eastern freight rates decision will particularly interest the engineers who specialize on railroad work, and also those industrial plants which cater to the needs of the railroads. It was pointed out that economical financing of the Grand Trunk has been rendered extremely difficult and that appropriations of all kinds have been cut and repairs have been postponed. On December 31st, 1915, over 4,000 cars were held for repairs, notwithstanding the lighter traffic of the year.

In order to keep the equipment in proper shape it will be necessary to obtain 1,249 new freight cars at an expenditure of \$2,238,000. Normal track renewals would require 431 miles; for the period of 1913 to 1915, inclusive, the track renewals were only 45 per cent. of this standard; and for the year 1915 the renewals fell to 67 miles. The renewal work on bridges and culverts during 1915 is \$20,000 below the average yearly expenditure of the period of 1906 to 1915.

A similar position applies, to some extent, not only to the Grand Trunk but to the other railroads of the country and, as the railway board say in their finding, "The economies so made, cannot continue indefinitely without great loss and inconvenience to the public."

By the time the war ceases, a long period will have passed when practically no renewals will have been made and little new work undertaken by the railroads. They have continued destroying cars without replacement and have been doing as little as possible in the way of repairs, rebuilding of tracks and other works. With the coming of peace there will therefore be a substantial accommoda-