

# The Canadian Engineer

*A weekly paper for Canadian civil engineers and contractors*

## Chippawa-Queenston Power Development

Hydro-Electric Power Commission of Ontario Will Develop 300,000 H.P. Under 305 Ft. Net Head, Using 10,000 C.F.S. from the Niagara River—Largest Hydro-Electric Power Scheme Ever Undertaken—Units Will Be of 50,000 H.P. Capacity—15,000,000 Cu. Yards of Excavation—Plant Could Be Extended to Million Horsepower

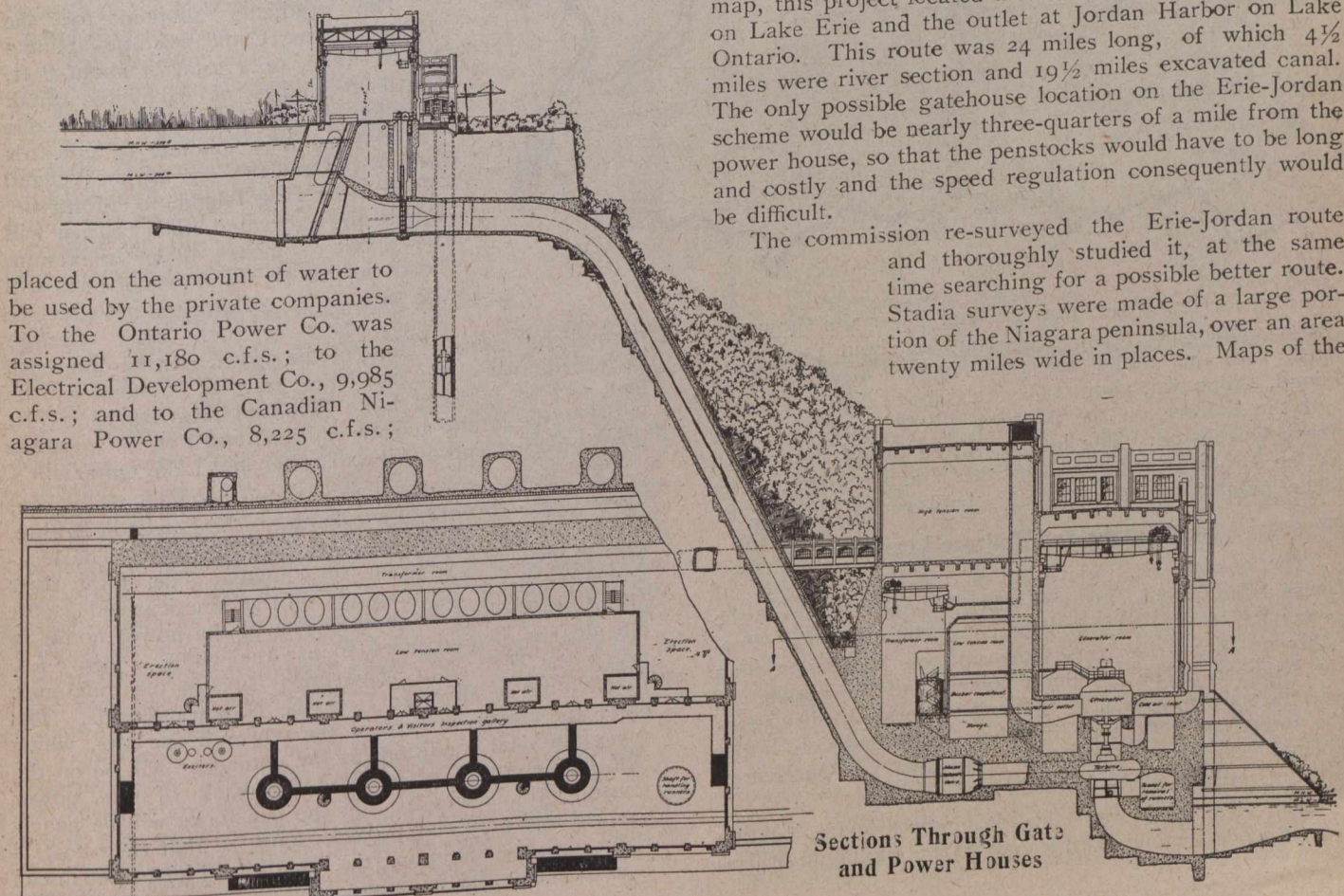
**B**ETWEEN Lake Erie and Lake Ontario, the difference in level is 330 feet; but to date the maximum net head utilized by any Canadian hydro-electric power development on the waterway joining those lakes, is about 160 feet. On account of the shortage of hydro-electric power in Ontario, and because of the comparative inaccessibility to manufacturing centres of the other undeveloped water powers, the Hydro-Electric Power Commission of Ontario realized many years ago that more economic development at Niagara would be necessary.

The treaty which was enacted by Great Britain and the United States in 1910, limits to 56,000 c.f.s. the amount of water which can be diverted for power purposes from Niagara's 220,000 c.f.s. mean flow. Of this amount, Canada is entitled to 36,000 c.f.s. By an Ontario order-in-council passed in 1915, a limit was

leaving only 6,610 c.f.s. at the disposal of the commission. The Ontario Power Co. has since been purchased by the commission, however, so that the commission now has within its control a total of 17,790 c.f.s.; and, of course, alterations in the treaty may possibly be made from time to time to meet new conditions, or the commission may purchase one or both of the remaining two private concerns.

Two of the existing Canadian plants are said to be working under net effective heads of less than 135 ft. The commission determined to use more of the 330-ft. head between the two lakes. For the past twenty years various schemes, more or less practical, had been suggested. One of the best of these was a route that had been surveyed many years previously by the consulting engineering firm of Smith, Kerry & Chace, of Toronto. This route, called the Erie-Jordan Canal, cut across the Niagara peninsula. As shown by the accompanying map, this project located the intake near Morgan's Point on Lake Erie and the outlet at Jordan Harbor on Lake Ontario. This route was 24 miles long, of which 4½ miles were river section and 19½ miles excavated canal. The only possible gatehouse location on the Erie-Jordan scheme would be nearly three-quarters of a mile from the power house, so that the penstocks would have to be long and costly and the speed regulation consequently would be difficult.

The commission re-surveyed the Erie-Jordan route and thoroughly studied it, at the same time searching for a possible better route. Stadia surveys were made of a large portion of the Niagara peninsula, over an area twenty miles wide in places. Maps of the



placed on the amount of water to be used by the private companies. To the Ontario Power Co. was assigned 11,180 c.f.s.; to the Electrical Development Co., 9,985 c.f.s.; and to the Canadian Niagara Power Co., 8,225 c.f.s.;

Sections Through Gate and Power Houses