

New lignum vitæ bearings were placed inside the casing, one on either side of the jaw coupling. These bearings were bolted to cast-iron supports, resting on each side of the wooden wheel casing, and as the wet wood had proved to be far from rigid, new cast-iron struts were placed so as to form knee braces from the bearings to the iron floor of the casing.

Owing to the bearings not being rigid, during the period of previous operation, the perimeter of the runners had become badly worn, causing considerable leakage. To remedy this a  $\frac{3}{4}$ -inch x  $1\frac{1}{2}$ -inch bar bent to the radius of the runner, was riveted to the inside of the cowl close up to the runner to ensure a more efficient water seal.

The thrust bearings were located near the outer edge of the new shaft, one on either side of the 58-inch drive pulley. This pulley, as also the 46-inch pulley on the generator shaft, is an iron centre wood rim split pulley with a 20-inch face. The belt is 3-ply leather 20-inch x 69 feet 3 inches, and drives the new 250-k.w., 60-cycle, 2,200-volt, 3-phase Westinghouse generator.

The plant has been operating quite satisfactorily since the change has been made.

#### Power and Storage Surveys

The third (hydraulic) volume of the annual report of the Ontario Hydro-Electric Power Commission for the past year (ninth annual report), from which the above plant descriptions were secured, also contains a report on

During 1916, surveys were carried on continuously in connection with the gathering of the detailed information necessary for the design of the Chippawa-Queenston power plant.

These surveys have necessitated the use of a comparatively large field force of engineers, and have included



Combined Power House and Residence at Cobden, Ont.

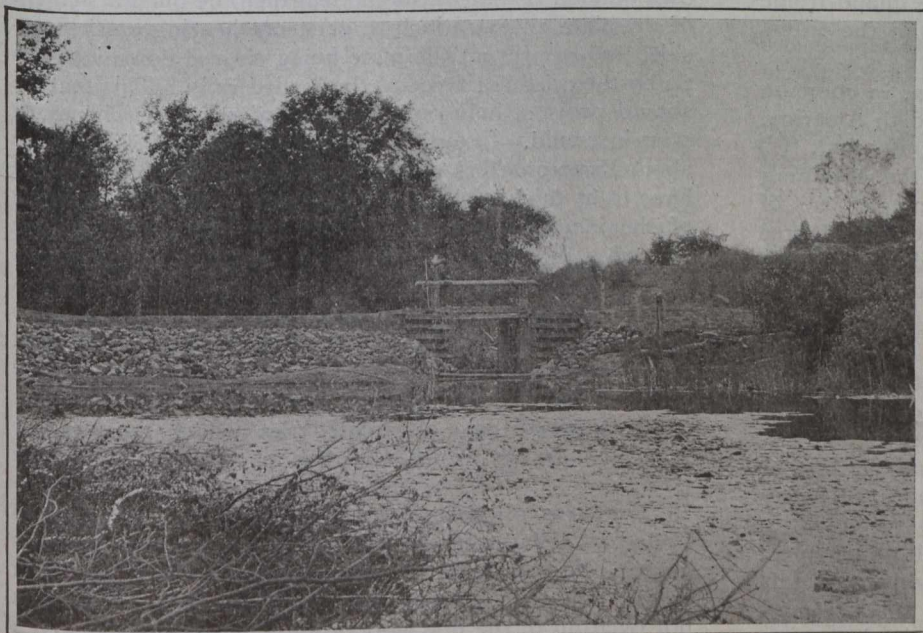
the securing of the necessary topographical information, core drill explorations of the rock surface, and hydrometric data of the Welland and Niagara Rivers. The hydrometric information covered the continuous reading of water levels along the Niagara River at essential locations, the measurements of flow in the Welland River, and at its mouth, and the study of velocities and surface filaments in the Niagara River at Chippawa, and at the power house location at Smeaton's curve.

The office staff has been increased to transcribe the above information to the drawings, and to proceed with the design of the necessary structures. Good progress has been made on the studies of the best methods of construction for the work, and the preliminary designs are well advanced.

The Nipissing Power Company, which was part of the assets of the Electric Power Company, taken over by the Provincial Government in May, 1916, is located on the South River near Powassan.

The natural flow of the stream must be augmented in the near future, by storage on its head waters. Studies were made during 1916 by the Commission on the possibilities of securing this storage at Cox's Chute, and designs of the necessary dams have been prepared.

Under the terms of water-power leases issued by the Department of Lands, Forests and Mines of the Ontario  
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Cobden Storage Dam at Olmstead Lake

power and storage surveys, Crown leases and measurement of stream flow; also about 220 pages of stream-flow data. The report on power and storage surveys is as follows:—