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POWER DEVELOPMENT AT WASDELL'S FALLS, ONT.

A LOW-HEAD PLANT OF EXTREMELY INTERESTING DESIGN—INITIAL UNDERTAKING OF THE HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO IN THE FIELD OF POWER PRODUCTION.

THE approaching completion of the plant at Wasdell's Falls will mark the beginning of a new epoch in the history of the Ontario Hydro-Electric Commission, meaning as it does the entry of the Commission into the field of actual power production at cost as an adjunct to the policy of cost price transmission and distribution heretofore pursued.

The result of this expansion of policy in the present instance will be that connected consumers will derive the utmost economic benefit which can result from the development of a water-power.

The development project arose out of the necessity of meeting requests from a number of municipalities on

treme high water to ten feet at low water. It was determined, however, that with the forebay levels which would result from development, the head under the worst anticipated backwater conditions would never be less than 9 feet. Similarly the maximum head was determined to be 15 feet. Apart from the low head, the topographical conditions at Wasdell's Falls are most favorable for development, and the solid granite formation on which the works are founded has nowhere developed serious faults or fissures.

The drainage area of the Severn River above Wasdell's Falls is about 2,075 square miles. About 700 square miles of this area is included in the basin of the



Fig. 1 (left) View of Wasdell's Falls Power House, Showing High-tension Line Outlets. Fig. 2 (right) View Showing Dam.

the east shore of Lake Simcoe to be supplied with power through the Commission, investigation having indicated conclusively that the Wasdell's Falls site was the only source of power from which the present and immediate future needs of this district could be adequately supplied. Following the receipt of signed contracts from five of the municipalities involved, covering the supply of about 625 h.p., plans and specifications were prepared and authority to proceed with the work was obtained from the Provincial Government.

Natural Conditions.—Wasdell's Falls is located on the Severn River, about three miles below the outlet of Lake Couchiching. Owing to backwater effects the natural head was subject to considerable variation throughout the year, ranging from about six feet at ex-

Black River, which joins the Severn about midway between Wasdell's Falls and Lake Couchiching, while the remaining 1,375 square miles of watershed is practically all tributary to the immense storage basin of Lake Simcoe, 297 square miles in extent.

The maximum discharge of the Severn River at Wasdell's Falls, as so far determined by gauge records and discharge measurements, is 9,050 sec.-ft., which is equivalent to a run-off of 4.36 sec.-ft. per square mile of watershed. The minimum flow, 260 sec.-ft., is equivalent to a run-off of .13 sec.-ft. per square mile, and the average flow for 1913, 2,489 sec.-ft., corresponds to a mean annual run-off of 1.2 sec.-ft. per square mile.

Other figures relative to the flow characteristics of the river are shown in the following table: