

# The Canadian Engineer

A Weekly Paper for Civil Engineers and Contractors

## Hydro-Electric Development on Nipigon River

Hydro-Electric Power Commission of Ontario will Install Five Units, Totalling 60,000 H.P., at Cameron's Pool, near Port Arthur, Ont.—Concrete Dam 200 ft. Long, 43 ft. High—Scroll Cases to be Moulded in Concrete

SIXTY thousand horsepower will be developed on the Nipigon River, about sixty miles northeast of Port Arthur, by the Hydro-Electric Power Commission of Ontario, and it is expected that by June of next year two 12,000 h.p. units will be in operation. Propositions from several leading water turbine builders are now being considered, and after the contract for the "wheels" is let, which may be within the next two or three weeks, definite plans will be completed and active work will be commenced at the site of the new power house.

The Nipigon River flows from Lake Nipigon to Lake Superior, a distance of about 32 miles. The normal elevation of Lake Nipigon is 852 ft., and of Lake Superior, 602 ft. There are at least four power sites on the river, all of which will ultimately be developed by the Commission. Between Lake Nipigon and Emma Lake are Virgin Falls, Rabbit Rapids and Devil Rapids, where the total head for a development through Hannah Lake would be 42 ft. South of Emma Lake are Flat Rock Rapids, White Chute and Pine Portage Rapids, with a head of 55 ft. South of Lakes

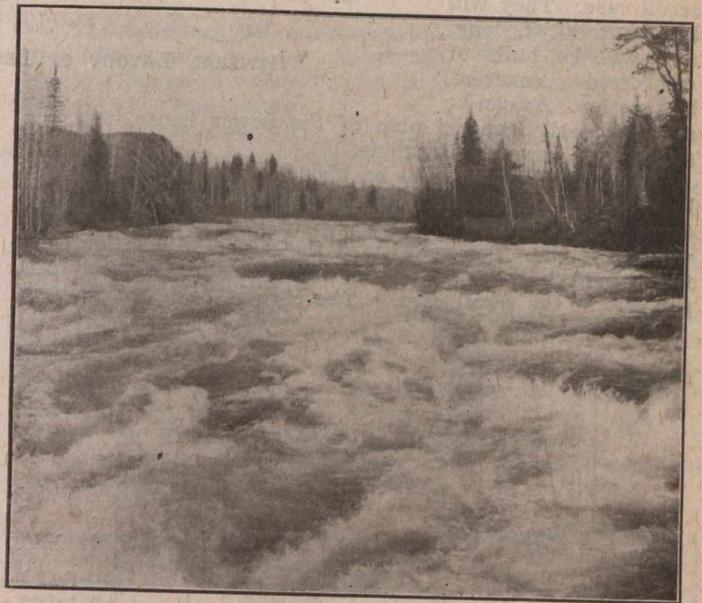
February, 1906, 5,982 c.f.s.; March, 1906, 5,878 c.f.s.; and September, 1906, 5,884 c.f.s. With a minimum flow of at least 4,550 c.f.s., 26,500 h.p. is there available as 24 hr. continuous power. The design of the proposed plant, includes a regulating dam that can raise the river level to the elevation of Lakes Maria and Jessie, which will form natural storage reservoirs. It is estimated that a peak load of 60,000 h.p. can be taken care of by the normal flow, and that is the size of the plant that will be built.



BUILDING TEMPORARY POWER-HOUSE NEAR CAMERON'S POOL TO OBTAIN POWER FOR CONSTRUCTION PURPOSES

Maria and Jessie—near Cameron's Pool—are two sites. The upper site affords 65 ft. net head and the lower, 53 ft. The upper site at Cameron's Pool is considered to be the most advantageous one on the river, and naturally will be developed first.

The drainage area of Lake Nipigon is about 9,200 square miles, and its actual area is 1,500 square miles. The discharge of the Nipigon River when measured in September, 1905, was 8,000 c.f.s.; in November, 1905, 7,014 c.f.s.;



CAMERON RAPIDS—PHOTOGRAPHED MAY 16TH, 1919, FROM TEMPORARY BRIDGE

The initial installation will be two units, each 12,000 h.p., but three more will be installed at a later date. Single-runner vertical water turbines will be direct-connected to 3-phase, 60-cycle, 12,000-volt, internal revolving field generators, each 10,600 k.v.a. (80% power factor, maximum rating). The generators will be arranged for parallel operation and will supply light, heat and industrial power on the Commission's "Nipigon System." This development is further west than any other yet undertaken by the Commission.

The railway depot nearest to the power house site is Cameron's Falls, Ont., on the C.N.R. Cameron's Pool is only about one mile south of this depot. The Commission's construction department has just completed a construction railway from the site of the proposed work to the C.N.R. A construction camp and a temporary bridge across the river are now being erected. All of the construction work will be done by the Commission's construction department.

The accompanying drawings show the general layout of the development. A dam about 200 ft. long will be built across the river above Cameron's Pool. The elevation