The Canadian Engineer

VOL. X.—No. 7. TORONTO AND MONTREAL, JULY, 1903. PRICE 10 CENTS $1.00 PER YEAR.

The Canadian Engineer.

ISSUED MONTHLY IN THE INTERESTS OF THE

CIVIL, MECHANICAL, ELECTRICAL, LOCOMOTIVE, STATIONARY MARINE, MINING AND SANITARY ENGINEER, THE SURVEYOR THE MANUFACTURER, THE CONTRACTOR AND THE MERCHANT IN THE METAL TRADES.

SUBSCRIPTION—Canada, Great Britain and the United States, $1.00 per year foreign, 6s. Advertising rates on application.

OFFICES—18 Court Sts. Toronto ; and Fraser Building, Montreal.
Toronto Telephone, Main 4310. **Montreal Telephone,** Main **2589.**

BIGGAR-SAMUEL, LIMITED, Publishers,

All business correspondence should be addressed to our Montreal office. Editorial matter, cuts, electros and drawings should be addressed to the Toronto Office, and should be sent whenever possible, by mail, not by express. The publishers do not undertake to pay duty on cuts from abroad. Changes of advertisements should be in our hands not later than the 15th of the preceding month or if proof is desired, 4 days earlier.

CONTENTS OF THIS NUMBER :

POWER DEVELOPMENT AT NIAGARA.

The Queen Victoria Niagara Falls Park, above Niagara Falls, is at present in a state of wild confusion with excavations, railway tracks, piles of stone, pony engines, and temporary buildings, indicating that important works are in progress. The three great power companies which have obtained concessions from the Ontario Government, have a large force of men employed on the works, which are to supply power not only to industries in the neighborhood, but through Western Ontario and to Toronto. These three companies, in the order of their obtaining concessions, are: the Canadian Niagara Power Co., the Ontario Power Co., and the Toronto and Niagara Power Co. The first is practically identical with that which has erected the plant on the New York side of the Falls, where 50,000 horse-power was developed and utilized, and where the capacity is now being doubled. This company is bound under its agreement with the Ontario Government to hold one-half whatever it may develop, for use in Canada. A full account of its projected works appeared in the Canadian Engineer for November, 1902. Since then considerable progress has been made. The tunnel is practically completed and the wheelpit, in which provision is to be made for the installation of 11 units, is well advanced. Only a visit to the works can give an adequate idea of their massive character.

The Ontario Power Co.'s works are to be of an entirely different nature. Their power house will stand under the bank below the Horse Shoe Falls, a portion of the overhanging rock being cut away to prevent any danger of pieces of rock falling away. The water will be conveyed from the inlet by a steel pipe 6,000 feet long and 18 feet in diameter, which will be placed underground in a trench, which has been excavated for it under the hill. Provision is made for two additional pipes of like capacity, when required, as only one-third of the power is to be generated at the outset. The wheels and generators will be placed side by side in the power house on the same shaft. There will be six pairs of wheels, one being spare. Each unit will have a capacity of 10,000-h.p.

The Toronto and Niagara Power Co., whose wheel pit and power-house will be situated in what is now the bed of the river, and whose outlet will be through a tunnel discharging under the Horse Shoe Fall, has its coffer dam well under way, and has just called for bids for the wheelpit, which will be the largest in the world. It will be 480 feet long, 180 feet deep, and 27 feet wide. The power to drive the excavating machinery, concrete mixers, etc., will be supplied through a flume carried from the Ontario Co.'s coffer dam at the head of the rapids, and which has dried up the channels about the Dufferin Islands while the works are in progress.

The works under way for these three companies will involve an expenditure of over $17,000,000. The amount of power to be developed is as follows: Canadian Niagara Power Co., 100,000-h.p.; Ontario Power Co., 150,000-h.p.; Toronto and Niagara Power Co., 125,000-h.p. In addition, the Ontario Power Co. has the right to take from Chippewa Creek water to generate another 150,000-h.p.

A reference to the accompanying map will show the position of the works of the three companies.

Considerable fear has been expressed lest the diversion of so much water would affect the Falls. There does not seem to be much need of apprehension on this score. Measurements covering an average of 40 years show that the flow of the Niagara river at the outlet of Lake Erie, at mean level, is 222,400 cubic feet per second. Three hundred cubic feet may be added as received below Buffalo. Of this one-tenth passes over the American Fall and nine-tenths over the Canadian Fall. The three developments, and the power-house of the Electric Railway, when running at full capacity, will require 32,000 cubic feet of water per second, so that it does not appear that any very serious inroad will be made on the quantity passing over the falls.