

the enlargement of this tail race, necessitated by the installation of the third generator, is now being completed. This excavation work has been slow and difficult on account of the nature of the rock.

There are three 3,750-kv-a., three-phase, shell-type, 6,600/44,000-volt transformers installed, with very flexible switching equipment consisting of double 6,600-volt busses, two 44,000-volt outgoing lines, a sectionalized 44,000-volt single transfer bus, with a transformer and an outgoing line forming a unit which may be operated independent of the bus. Provision is made for a fourth generator and transformer and for two additional high-tension line equipments. Excitation is provided by two 160-kw. 125-volt exciters, one being turbine-driven and one motor-driven.

The Auburn generating station is located in the north of Peterboro, on the Otonabee River, 1,200 ft. below the Auburn Dam. Water is taken to the turbines through an open head race 1,200 ft. long paralleling the river. This station was built by the Auburn Power Co. and placed in operation in 1912 and no extensions have been made. The turbines are of the four runner type in open wheel pits 40 ft. long, 16 ft. wide and 14 ft. deep. A travelling steel gate 15 ft. 3 $\frac{3}{8}$ in. by 14 ft. 3 in. is provided with motor-driven lowering and hoisting mechanism. The gate is designed to be lowered against the running water in 2 $\frac{1}{2}$ minutes. Two 90-kw., 125-volt exciters, one being turbine-driven and one motor-driven, furnish the excitation of this plant. One generator is wound for 2,400 volts and feeds a section of the bus from which 2,400-volt feeders may be taken. This section of bus is connected to the 6,600-volt section of the bus through a bank of three 200-kv-a., 2,400/6,600-volt transformers. Feeders at 6,600 volts, three phase, connect this station to the transformer station adjacent which contains two 1,875-kv-a., three-phase, core-type, 6,600/44,000-volt transformers and one outgoing 44,000-volt line connecting into the 44,000-volt network of the Central Ontario System. Some power is also delivered to Peterboro at 6,600 volts from the generating station.

The accompanying map and diagram show respectively the location of the generating stations of the Central Ontario System, and the extent of the transmission net work with sub-stations. Other power sites along the Trent Valley Canal together with those described briefly above will, when developed, provide about 60,000 electrical h.p. with a maximum capacity of 75,000 electrical h.p. The present power output of the system is used for lighting, street railway and manufacturing purposes, a considerable quantity being required at Campbellford for a pulp and paper mill, and near Belleville for cement mills. All transmission lines are constructed on wood poles. The total mileage of 44,000-volt circuits is 372, with 15 miles of 11,000-volt circuit, 16.4 miles of 6,600-volt circuits and 52 miles of 4,000-volt circuits.

(Concluded in the next issue.)

It is regretted by *The Canadian Engineer* that Mr. Dancy's name was mentioned several times in last week's issue as H. Dancy, whereas it should have been A. H. Dancy, of the firm of H. N. Dancy & Son, Toronto. Mr. Dancy is honorary secretary of the newly-formed Association of Canadian Building and Construction Industries.

The War Trade Board announces the cancellation of the resolution prohibiting the use of steel, the value of which exceeds \$2,000, in the erection of buildings and other structures. It will, therefore, no longer be necessary to obtain a permit from the board to use steel for construction purposes, however large the quantity used may be.

FEDERAL AID FOR HIGHWAYS?

FEDERAL assistance for the construction of good roads was advocated by a delegation which last Monday interviewed Sir Thomas White, Acting Prime Minister, and five other members of the Government.

It was urged that assistance be given through the provinces instead of by creating a Federal Department of Highways, in view of the necessity for early action and the likelihood that a Federal department would require considerable time for organization and might result in duplication of effort. While no specific recommendation was made, there was a suggestion that 30% of the cost of road improvements be paid by the Dominion and 70% by the province.

Sir Thomas, in view of the emphasis laid by the delegation upon the necessity for immediate action, enquired whether highway construction could be carried on during the winter. Andrew Macallum, Commissioner of Works of Ottawa, replied that much preliminary work, such as surveys and securing supplies and machinery, could be done during the winter months.

The Minister of Public Works asked whether it was the intention to abandon the idea of a national highway. S. L. Squire, president of the Canadian Good Roads Association, stated that the delegation did not advocate immediate construction of a road from coast to coast, but preferred the construction of much needed highways in the various provinces, which highways would ultimately link together to form a national route that would traverse the most populated portions of the country.

In replying, Sir Thomas White did not commit the Government to any fixed policy, but was very sympathetic with the general desires of the delegation, and stated that good roads could undoubtedly be characterized as a productive enterprise of a character in which the Dominion Government could properly take part. He referred to the appointment of C. A. Campbell, who, he said, would study the question and would probably be able to reach a conclusion at an early date.

BRITISH FORGINGS AND "THE HYDRO"

REPLYING to a number of charges recently made against the Hydro-Electric Power Commission of Ontario, Sir Adam Beck has stated that the Commission was not responsible for the establishment of the British Forgings plant at Toronto, but that the plant had been established by the Imperial Munitions Board for the purpose of utilizing the turnings from the munition plants in Toronto district, and that Sir Joseph Flavelle had approached the Commission with the request to supply the plant with 20,000 h.p.

"It was pointed out to Sir Joseph," says Sir Adam, "that the system would require the 20,000 h.p., of which it was being 'deprived' by the Ontario Power Co. As a result of misrepresentations to the government, Sir Henry Drayton was appointed power controller, although this was not what the commission had asked for. After investigating the situation, Sir Henry ordered the Ontario Power Co. to go ahead with their preparations, so that the Hydro was not any better off than before.

"The Ontario Power Co. then applied for permission to use half the water-power available under the treaty, but the Victoria Park Commission refused to allow them to generate more than a total of 180,000 h.p., or 15,000 h.p. more than they were then generating. Finally, they offered to sell to the Hydro, and the offer was accepted.

"We have also been charged with agreeing to the export of 60,000 horse-power for 99 years," continued Sir Adam. "But the facts are that a binding agreement was made by the Power Co. before we secured possession of the plant, and we could not treat it as a 'scrap of paper.' We have had the term reduced by 60 years, however."