building will be reinforced concrete throughout, whereas in the original station the roof over the generator room consisted of wooden purlins, 1¼ inch matched pine, and covered with several layers of asbestos felt, laid in asphalt cement, supplied and installed by the Johns-Manville Company. That part of the excavation and concrete work carried out in the fall of 1917 was done by Messrs. Wells and Gray, of Toronto. This work was held up during the severe winter season of 1917 and 1918, and in the spring it was proceeded with by the Commission's Construction Department.

A 1,600-kv-a., 300-revolutions per minute, 2,200-volt, 3-phase, 60-cycle, waterwheel type horizontal generator was purchased from the Canadian General Electric Company, who were also to deliver and erect it. A flywheel effect of 300,000 pounds feet squared was required in the rotor of this generator, and this necessitated a large diameter machine and was the reason for it being set so low in the foundations, as the generator shaft had to line up with the turbine shaft. The specifications for this generator permitted a maximum temperature rise of 40 degrees Centigrade, with a continuous load of 1,600-kv-a., at 80% power factor, normal speed and voltage. This generator was tested in the factory at an overspeed of 185 per cent. normal speed for 15 minutes. An insulation test of 10,000 volts between the armature windings and frame was withstood for one minute. The field windings and the field rheostat resistances withstood 1,500 volts for one minute.

A heat run was made on this generator in the factory, also the necessary measurements were taken to calculate the efficiencies, regulation, etc. No tests were required after installation.

This fourth unit, together with the second penstock as mentioned above, were first placed in service and power fed into the system on January 28, 1919.

When making these extensions to the station, it was decided to remodel the high tension switching room by installing duplicate 22,000-volt busses and making all 22,000-volt oil switches electrically operated. It was also decided to install equipment for one new 22,000-volt outgoing line and to remodel the 22,000-volt arresters, and to provide space for equipment for two future lines, one to Orillia and one to Waubaushene. (See diagram of connections.)

The present switchboard is to be rearranged in order to provide space for the panels to control the new and future 22,000-volt lines. New 2,200-volt electrically operated oil switches will be installed for the low tension sides of the transformers, and the present transformer switches will be used for the new generator and for station service transformers on the low tension side of each bank of transformers. A second set of disconnecting switches will be installed and the oil switch rearranged so that each bank can be connected to either bus, whereas at present each bank can be connected to only one bus. This extension includes a second transformer pocket, and one bank of transformers will be removed from No. 1 pocket to No. 2 pocket and the transformers in No. 1 pocket will be