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## THE HIGH TENSION TRANSMISSION SYSTEM OF THE HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO.

### Description of the System.

The high-tension steel tower transmission system described herein is, perhaps, the most prominent example of high-tension transmission in the world. The system operates at a potential of 110,000 volts, and was designed and constructed by the Hydro-Electric Power Commission of Ontario, a government corporation appointed by the Provincial Legislature to provide for the development, generation and distribution of hydro-electric energy at cost to the various municipalities of the province.

Ultimately, the commission plans to extend its system over the entire province; particular attention being given the central and northern districts, where the available water powers have an aggregate horsepower of more than twice that of the Niagara district, although the latter district is the only one that has been developed to date by the commission.

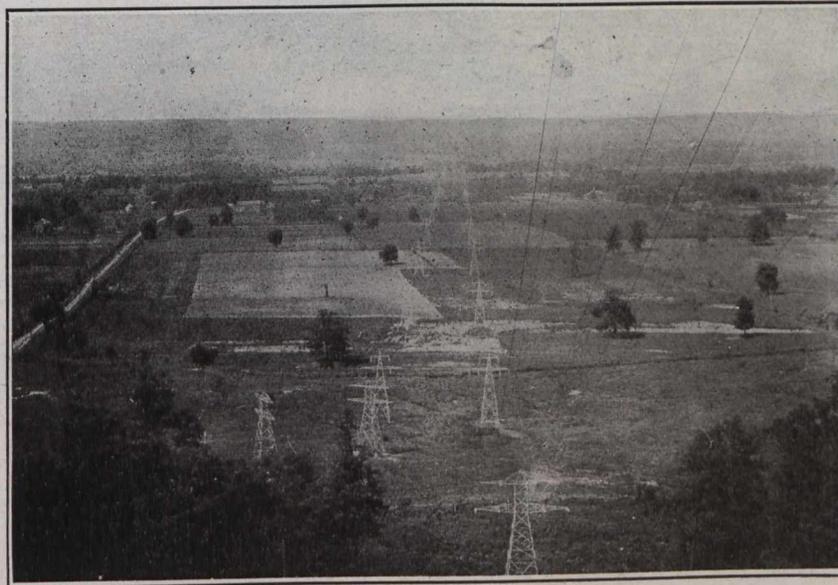
**System.**—There are 281 miles of steel tower line sectionalized as shown in Table I., and twelve transforming stations. The general map shows the extent of the system.

It will be noticed that while two circuits have been erected in Sections A and B, only one circuit has been erected throughout the rest of the system. The reason for this is apparent upon examination of the accompanying map. All the stations beyond Dundas, with the exception of Toronto and St. Thomas, are on a loop circuit and as a result may be served from Dundas in either direction around the loop. Under normal operating conditions, the direction of current flow is from Dundas to London on the south side and from Dundas to St. Marys on the north side of the loop, the line between St. Marys and London being held in reserve.

The main step-up transformer station of the system is located at Niagara Falls, Ontario, where the energy, purchased from the Ontario Power Company and supplied at 12,000 volts, 25 cycles through a 2,200-foot conduit line, is stepped-up to 110,000 volts for delivery to the three-phase high-tension lines. The present installed transformer capacity at this station is 27,000 kw.

The transmission voltage is later stepped-down to 13,200 and 6,600 volts for local and low-tension distribution at the following sub-stations, the installed transformer capacity being as follows:

|              |            |
|--------------|------------|
| Dundas,      | 2,250 kw.; |
| Toronto,     | 7,500 kw.; |
| London,      | 3,750 kw.; |
| Guelph,      | 2,250 kw.; |
| Preston,     | 2,250 kw.; |
| Berlin,      | 2,250 kw.; |
| Stratford,   | 2,250 kw.; |
| St. Marys,   | 2,250 kw.; |
| Woodstock,   | 2,250 kw.; |
| St. Thomas,  | 2,250 kw.; |
| Port Credit, | 3,750 kw.  |



General View of High Tension Transmission lines in Dundas Valley.

### Construction of Line.

**Surveys.**—The territory embraced by the high-tension transmission system was first covered by reconnaissance to determine the most feasible route for the line. The preliminary examination was performed with the primary intention, wherever possible, of adopting a route parallel to travelled roads, in order to reduce the transportation, maintenance and patrol costs to a minimum. In selecting the route care was also taken to avoid any sections of country subject to electric storms, and some projected and otherwise favorable routes were abandoned as a result of information supplied by telephone and telegraph companies already operating in these vicinities.

After the route has been selected an instrument survey was made. No profiles were, however, necessary; for the towers were located and staked in the field, and the locations