

Power Supplies.—The constantly expanding power demands of the undertaking have been met by the Commission constructing its own generating plants, by the making of long-term contracts for the purchase of power from other organizations and by acquisition of existing privately-owned generating plants. The initial requirements of the undertaking were supplied under a contract with the Ontario Power Co. of Niagara Falls, which reserved to the Commission, in 1908, a maximum of 100,000 horse-power. In 1916, power was purchased from the Canadian Niagara Power Co. as well, and in the following year the Commission, through purchase, acquired the Ontario Power Co. It was at this time that the Queenston-Chippawa development was begun. In 1920, the Toronto Power Co. was purchased. In 1926-7 contracts for the supply of power up to a maximum of some 360,000 horse-power were negotiated with the Gatineau Power Co.

To supply the needs of municipalities in various parts of the province, the Commission has from time to time constructed and acquired a number of smaller generating plants, and has negotiated contracts for the purchase of power. In 1928, the bulk of its energy supplies, aggregating 4,341,498,634 kilowatt-hours, were derived from some 22 hydro-electric developments owned and operated by the Commission. Provision for the needs of the near future had been made at the end of 1928 up to an aggregate of some 1,400,000 horse-power.

The largest of the plants constructed by the Commission is the Queenston-Chippawa development on the Niagara river. Diverting water from above the rapids in the upper river and returning it to the river below the rapids in the lower gorge, this plant has the distinction of being the only one to make use of the maximum head capable of economic utilization, *viz.*, about 300 feet of the 327 feet difference in elevation between lake Erie and lake Ontario. The general scheme of development comprises an intake structure in the Niagara river at Chippawa; the deepening and enlarging of the Welland river with a reversal of its flow for 4 miles; the construction of a canal $8\frac{1}{4}$ miles long from Montrose on the Welland river to the forebay and screen house, which are situated on the cliff above the power house, where the banks on the lower Niagara river rise more than 300 feet above the water level, about one mile south of the village of Queenston. Construction work was started in 1917 and the first unit went into commercial operation in January, 1922. The total capacity of the development is 550,000 horse-power and its cost about \$76,000,000.

Hydro-Electric Power Commission Statistics.—The Canada Year Book of 1910 (p. xliii) described the turning on, Oct. 11, 1910, at Berlin (now Kitchener), Ontario, of electrical energy generated by Niagara falls. The small initial load of less than 1,000 horse-power increased rapidly and by 1915 had reached 100,000 horse-power. In 1920 the total power distributed exceeded 350,000 horse-power and in 1928 it was over 1,030,000 horse-power.

Table 8 shows in broad outline the growth of the co-operative municipal electrical undertaking of Ontario. It will be noted that the total capital of the undertaking, which includes investments of the Hydro-Electric Power Commission in power-producing and transmitting equipment, etc., and investments of the municipalities in distributing systems and other assets aggregated in 1928 \$297,000,000.