

The investigations of 1913 and subsequent years into the power possibilities of the St. Lawrence River were again continued and expanded in the area of the present proposed power development in April 1952 when Commission crews began an intensive survey of the physical structure of the river-bed and the surrounding terrain. In boats piloted by experienced rivermen, Hydro surveyors crossed the river at regular intervals, exploring its contours by means of echo-sounders, while delicate recording instruments reproduced an accurate picture of the river-bed itself. In the vicinity of the Long Sault Rapids it was not possible to use these methods to obtain the accurate information required since the small sounding boats could not navigate in the rapids. Furthermore, the turbulence of the water interfered with the operation of the echo-sounders. Hydro crews solved the difficulty by taking soundings from a marker suspended by a fine wire from a helicopter hovering over a given point. Surveyors also metered the flow of the river in key sections. By correlating these data with information previously obtained, engineers were able to construct hydraulic models of the International Rapids Section. The models accurately simulate river conditions in the 35-mile section which they reproduce, duplicating to scale the shore line, the contours of the river-bed, and the flow of the water. They also provide the opportunity to test methods of carrying out the power project, assist in determining the best type of construction for the principal structures, and serve to indicate in advance of actual construction where substantial economies can be effected.

Other studies were undertaken to reveal the dyke-building qualities of the soil in the district and to determine the most appropriate locations for the dykes themselves.

When electric power is finally obtained from the St. Lawrence development, Canada's share will be fed into the grid serving the southern and northeastern part of the Province. In this highly productive area are located many of Canada's large industrial developments and the main sources of some of the country's vital raw materials. The supply of electric power has been an important factor in the productivity of the Province and the St. Lawrence power project will undoubtedly assist in its continuing economic development.

Section 2.—The Central Electric Station Industry

Central electric stations are companies, municipalities or individuals selling or distributing electric energy, whether generated by themselves or purchased for resale. Stations are divided into two classes according to ownership, viz.: (1) commercial—those privately owned and operated by companies or individuals, and (2) municipal—those owned and operated by municipalities or governments. These are subdivided according to the kind of power used into (a) hydraulic, (b) fuel, and (c) non-generating. This last sub-class purchases practically all the power it resells; a few of these stations have generating equipment that is held for emergencies. The hydraulic stations contain water turbines and wheels with approximately 88 p.c. of the total capacity of hydro installations in all industries in Canada. The generators driven by this hydraulic equipment generate 96 p.c. of the total output of all central electric stations.