

Subsection 4.—Thermal Power Generation

The incidence of immense water power resources in Canada and the brisk pace of their development has tended to overshadow the very considerable contribution being made by thermal energy in the nation's power economy. At the end of 1965, the total installed thermal capacity in Canada was 7,602,000 kw., about 26 p.c. of the total electric generating capacity in the country. The fact that energy produced in thermal plants during the year accounted for only 18 p.c. of the total may be attributed in part to the fact that a considerable amount of the capacity installed is maintained for stand-by purposes. As stated earlier, however, the current emphasis on thermal plant construction is likely to continue and to become more marked as development of the nation's water power reserves becomes more complete.

Conventional Thermal Power.—Approximately 85 p.c. of all of the conventional thermal power generating equipment in Canada is driven by steam turbines. The magnitude of the loads being carried by steam plants has led to the installation of steam units with capacities as high as 300,000 kw. Even larger units, of 500,000-kw. capacity, will go into service within the next three or four years. The remainder of the load is carried by gas turbine and internal combustion equipment. The flexibility of internal combustion engines makes this type of equipment particularly suitable for meeting power loads in smaller centres, especially in the more isolated areas.

Table 1 (p. 636) shows that the Provinces of Prince Edward Island, Nova Scotia, Saskatchewan and Alberta depend upon thermal capacity for most of their power requirements and that New Brunswick has slightly more thermal than hydro. For Ontario, where the present hydro capacity is about twice the thermal, forecasts based on present construction schedules indicate that by the early 1970s the province's total installed thermal capacity will have overtaken hydro.

With the exception of several sizable plants in St. John's and Grand Falls, most of the thermal-electric capacity in *Newfoundland* is made up of relatively small units used to supply power to small, often isolated communities. With the wealth of water power readily available in the province, it is not likely that Newfoundland will experience the need for large thermal stations for some time to come. *Prince Edward Island* depends almost exclusively on thermal sources for its power supply and almost all of the province's generating capacity is oil-fuelled. In *Nova Scotia*, most of the energy generated in thermal-electric utility plants is derived from coal, with a smaller amount from petroleum fuels, and in *New Brunswick* petroleum fuels provide slightly more than half of the thermal-electric energy.

The abundance of *Quebec's* water power wealth, much of it within economic transmission distance of existing demand areas, has so far limited the application of thermal power to specific local use. However, the growing emphasis on thermal power in other parts of Canada is also beginning to be apparent in Quebec, where thermal capacity will serve not only to help guarantee an adequate power supply in the face of increasingly heavy demands but also to render the almost exclusively hydro-electric base more flexible through integrated operation. The second unit of a large thermal plant went into operation at Tracy near Sorel in 1965 and a second large plant is planned for service in the Gaspé region by 1970.

Ontario has more thermal capacity than any other province in Canada; capacity installed in the province at the end of 1965 totalled 3,217,000 kw., which was about 42 p.c. of the national total. With another 3,200,000 kw. of conventional thermal capacity and 1,400,000 kw. of nuclear thermal capacity scheduled for service in the period 1966-71, Ontario's share of the national total promises to increase considerably. The country's largest thermal stations are Ontario Hydro's Richard L. Hearn and Lakeview generating stations at Toronto, each with a capacity of 1,200,000 kw. Four 300,000-kw. units, the largest in operation in Canada, make up the capacity at the Lakeview station, scheduled for expansion