

Another trend in development designed to meet the problem of varying daily loads is the use of pumped storage. An example is the Sir Adam Beck hydro development at Niagara Falls where water taken from the Niagara River above the Falls is carried by tunnel and power canal to penstocks which supply the main generating station on the bank of the Niagara River some distance below the Falls. In off-peak hours, power from the main station is used to pump water from the power canal into a reservoir maintained at a higher level; during peak-load hours, the pumps, which are dual-purpose units, operate as generators and are driven by water released from the reservoir. The pumping-generating units at this development make available an extra 176,700 kw. of generating capacity. A pumping-generating station using the same general principle is under construction on the Brazeau River in Alberta as part of the 338,440-kw. Big Bend hydro development.

Perhaps the most promising application of the pumping-generating principle is its use in conjunction with nuclear power stations. Nuclear units, in common with the larger conventional thermal units, can be used most efficiently under conditions of continuous operation. Off-peak nuclear power can be used to operate pump-turbine units and the hydro-electric power derived from operating the units as generators is available for use during periods of peak demand.

### Subsection 2.—Utilization of Power

Table 2 shows electric power generating capacity in the provinces and territories under the categories "utilities" and "industries". The classification "utilities" refers to power-producing organizations who sell most of the power they develop. In some instances, it includes also certain subsidiary companies whose main purpose is to develop and sell power to a parent company for industrial purposes. The total of 22,392,000 kw. of capacity installed in plants operated by utilities represents 83 p.c. of Canada's total installed capacity at Jan. 1, 1965. The classification "industries" refers to power-producing organizations who develop power mainly for their own use. Although the figures indicate that industries have developed only 17 p.c. of Canada's total installed electric power capacity, it should be emphasized that, in addition to the power generated in their own plants, industries purchase large amounts of power from utilities.

**2.—Installed Electric Generating Capacity classified by Utilities and Industries, by Province, as at Jan. 1, 1965**

Province or Territory	Utilities	Industries	Total
	kw.	kw.	kw.
Newfoundland .....	492,000	34,000	526,000
Prince Edward Island .....	58,000	—	58,000
Nova Scotia .....	473,000	59,000	532,000
New Brunswick .....	423,000	106,000	529,000
Quebec .....	7,589,000	2,281,000	9,870,000
Ontario .....	8,275,000	527,000	8,802,000
Manitoba .....	1,072,000	21,000	1,093,000
Saskatchewan .....	792,000	138,000	930,000
Alberta .....	1,155,000	72,000	1,227,000
British Columbia .....	2,009,000	1,449,000	3,458,000
Yukon Territory .....	21,000	11,000	32,000
Northwest Territories .....	33,000	9,000	42,000
<b>Canada .....</b>	<b>22,392,000</b>	<b>4,707,000</b>	<b>27,099,000</b>

The pulp and paper industry in Canada, one of the world's great industrial enterprises, is a foremost user of electric energy, consuming nearly one fifth of the total electric energy generated in Canada. By far the larger portion of the energy used by this industry is derived from water power. Mill capacity for the production of newsprint is considerably greater than that of any other country in the world and in production of pulp Canada is second only to the United States. The fact that over 90 p.c. of the manufactured news-