

of \$25,000,000 to \$30,000,000, and considered only on a ten-hour basis, means a saving of at least five tons of coal per horse-power-year, or 1,750,000 tons of coal per year as compared with about 4,500,000 tons annually imported. Now the near future will easily see this amount doubled or trebled if intelligent and comprehensive plans are adopted for development and distribution, and not only can a large amount of money be kept in our country, but industries and public utilities will be benefited by being supplied with electricity at reasonable rates.

Speaking generally, water-powers are valuable in proportion to the amount of water available at the periods of low water, which usually occur in August and September, and in February and early March, and it is a matter of common observation that each river is a distinct study in itself, as the variables are not only numerous, but largely beyond the control of man.

The chief features affecting the uniformity and total amount of flow are: (a) Drainage Area. (b) Shape of Area, whether compact or narrow and long. (c) Slope of country. (d) Kind of soil. (e) Rainfall. (f) Evaporation. (g) Condition of soil, whether cultivated, pasture or woodland. (h) Storage, natural or artificial. (i) Control of run-off from storage.

It will be noted that all but the last three items are natural conditions, and therefore beyond the control of man.

However, the large water-power developments which have been attempted to the present have been chiefly made on large rivers, and the pinch of low water has not been so serious as will be the case in the future when increased values will induce the development of smaller rivers to their fullest extent.

The practical problems of the control of river flow in the thickly settled parts of Ontario and Quebec Provinces group themselves naturally into three districts, which will be treated separately.

(A) SOUTHWESTERN ONTARIO. In this district we have the Nottawasaga, Saugeen, Maitland, Ausable, Thames, Grand, Credit and Humber Rivers, all possessing originally valuable water-powers, but without any natural storage for the water, except in the soil, so that as this whole area has been practically denuded of forests and given over to agriculture, the water-powers have been nearly all ruined, and as the creation of artificial storage would be very expensive, and the country is too valuable as farm land to permit of it ever reverting to forest, little can be hoped for in the way of improvement, and the district will necessarily have to rely on Niagara as its chief source of electrical power.

(B) CENTRAL OLD ONTARIO. We find here an entirely different natural condition, and owing to this an exceptional