

place of coal in the furnace he believes lies the solution of the difficult problem of house heating during the uncertain weather of at least three months in Spring and Fall.

Local Production Necessary

Now observe the actual situation as regards the securing of wood fuel. Instead of there being a local production of wood fuel, it is brought in from Muskoka and similar distant regions. The freight charge of seven to nine dollars a cord at once places this wood out of consideration as a substitute for coal. With only about

half the heating value of coal weight for weight, and with a very much greater bulk per ton and many times as great a cost for handling to and from cars, wood can never compete with coal if both are hauled equal distances. Wood can only become a successful competitor of more concentrated, more easily handled fuel by being produced in the immediate vicinity of the consumer and delivered to him without a high charge for transportation and intermediate hauling. It is therefore utterly impractical to talk of producing wood fuel in regions not suitable for agriculture and conveying it from such regions

where necessarily the population will be sparse and the demand small, to distant agricultural regions where population is dense and demand for fuel great. The only practical solution to this problem is the production of wood fuel **in the immediate vicinity of the consumer.** This is the solution arrived at in European countries after centuries of experience and is the inevitable result of the special characteristics of wood as compared to other fuels. How the question of local wood fuel production appears to a resident of Halton County, Ontario, will be discussed in a later article.

The Effect of Forests on Water-Powers

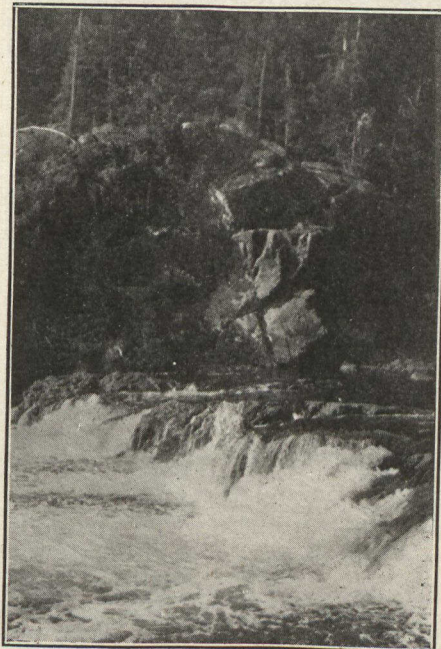
Some Further Evidence that Destruction of Forest Cover Injures the Commercial Value of Streams

By E. SCOTT RIVETT

SINCE THE publication of my article on this subject in the April issue of the "Illustrated Canadian Forestry Magazine" I have come into possession of further evidence, which bears out my main contention, viz., that deforestation has an injurious effect upon the regularization of stream-flow.

Mr. John Cowie, Harbour Engineer to the Port of Montreal, recently read a paper on the subject of "One hundred years' progress in the port of Montreal," in which he makes the following general statement: "One hundred years ago the waters of the St. Lawrence, during the normal summer season, were very much higher than they are today. The forests were then in their natural state, farms undrained, and swamps held water which did not reach the river until midsummer. Today, due to the improved drainage system, this water reaches the St. Lawrence during the early Spring, leaving dry ditches and resulting in low water mid-summer conditions on the St. Lawrence."

More precise still is the evidence set forth in a recent article in the "Revue générale d'électricité" (Paris, France.) "Investigations have been made in France since 1904 on the influence which the condensation of clouds by trees has upon the flow of streams. It is now clear that this influence is considerable. Thus in the



Water Fall "Island Rapids, Steel River"

basin of Luchon, the valley of the Pique, which is wooded to 40 per cent, produces annually 1,732,000 cubic metres of water per square kilometre (4,485,000 tons per square mile), while the basin of the One, wooded to five per cent. only, supplies only 693,000 cubic metres per square kilometre, (1,800,000 tons per square mile.) Other experiments made in the basin of the Ubaye, Lower Alps, have shown that wooded lands give 21,686 cubic metres per hectare

annually, (8,750 tons per acre), while de-wooded lands give only 5,616 cubic metres per hectare (2,270 tons per acre.) In the Furens basin, on the same river system, the discharge of the wooded right bank is double that of the left bank which is partially de-wooded."

From the above figures it would appear that in some cases reforestation would allow of the doubling of the power utilized by hydro-electric plants and in some instances, also, might render unnecessary the construction of large dams and reservoirs. So far, the evidence I have given has been all on one side—that reforestation tends toward the increase of hydraulic powers. There is one point, however, on which I should be glad of the assistance of readers of the "Forestry Magazine," viz., the effect of the transpiration of trees upon the humidity of the soil and upon rain-fall. I understand that an acre of mature deciduous trees will give off up to 350 tons of water during the growing season. The transpiration of coniferous trees is, I imagine, less than this, but it is still enough to have a drying effect upon the soil. In some of the marshy districts of France and Italy tree-planting has had the effect of drying up the marshes. I should therefore be glad to have the views of practical Canadian foresters on this point.