

Electrification of B. C. Railways.

(A LETTER BY MR. CECIL B. SMITH, C.E., TORONTO.)

One of the members of the Canadian Forestry Association residing in British Columbia wrote, asking if in view of the great destruction of timber by fires started by locomotives it would not be advisable to electrify the railways in that province, considering the large amount of waterpower now running to waste. The question was submitted to Mr. Cecil B. Smith, C.E., the well-known engineer and authority on hydro-electricity, who some years ago prepared a report on the electrification of the Timiskaming and Northern Ontario Railway for the Ontario Government. Mr. Smith's reply is as follows:—

"The electrification of any steam railway system now operating over a wide area, with its attendant standardizing of equipment and operation, is a serious step for a management to consider.

"The difficulties of handling mixed traffic, including freight, by electric locomotives have been largely surmounted, and we may consider that this will be so perfected in the near future that a railway company may select direct current, three phase alternating, or single phase alternating as the method of propulsion with equal assurance of satisfaction, it being assumed that, acting on the advice of its engineers, the company has selected the type best suited for its special conditions.

"It may be in general assumed that there must be strong inducements to cause a change to be made in the equipment of a well-established system. This inducement may be of the nature of an expected growth of business with which electric operation can best cope. The question of smoke ordinances or smoke in long tunnels may be a governing feature; or again, a dense suburban traffic may demand a remedy. On the other hand, a moderate traffic under standard conditions will not justify electrification unless coal is quite expensive, grades excessive, and water-power electric energy available at a low rate and from assured sources.

"The success of electrification in Europe has induced great activity there in this direction. In Italy, Switzerland, Bavaria, and Sweden the governments

are expending large sums on the electrification of old lines, construction of water-power generating stations, and construction of new electric lines which handle all kinds of traffic with great satisfaction. Three phase and single phase alternating currents are both used.

"In America the interurban electric is extending its sphere and its competitive influence, and in addition we have the examples of the great systems expending millions on the electrification of the New York district; and in the West the Cascade Tunnel (three-phase) and the Spokane and Inland Railway (single phase) show the tendency of the times. In Canada very little has been done beyond the use of direct current operation of city and suburban lines—which are only developed to a modest degree. The Sarnia tunnel (single phase) is a partial exception, and was forced on the Grand Trunk by a serious accident and the order of the Railway Commission. The Ontario Government considered electrifying the Timiskaming and Northern Ontario Railway from North Bay to Englehart at a time when conditions were formative and the time opportune. The traffic now handled would have fully justified the step, and the only reason apparent for abandonment was timidity. The added steam equipment now owned, and the turning over of its best adjacent water power to private parties make the question now more difficult, but not impracticable. It is to be hoped the Government will still act in this matter and cease hauling coal from Pennsylvania at a cost of \$6 per ton delivered at Englehart.

"In British Columbia, it is true, there is apparently a large amount of water power available, but aside from some of the few large rivers, such as the Kootenay and the Columbia, the water-powers of the interior of British Columbia are not attractive as they are chiefly glacier-fed and run very low in the midwinter season. On the Kootenay, even with its enormous storage areas, the low water flow is quite moderate. On the other hand coal is