

The Canadian Engineer

ESTABLISHED 1893.

WITH WHICH IS INCORPORATED

THE CANADIAN MACHINE SHOP.

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THE CANADIAN MACHINE SHOP

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AND THE MERCHANT IN
THE METAL TRADES

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ELECTRICITY FOR STEAM.

The Ontario Hydro-Electric Commission is considering the use of the Grand Trunk right-of-way for Government transmission lines from Niagara Falls to the municipalities whose enterprise is to destroy the monopoly of corporation producers of electricity. The railway, it is said, will use a considerable quantity of power, which will reduce the cost of the right-of-way to the Commission. Mr. Hays has spoken in a non-committal way of the possibilities. The time has not yet come for using electricity as a motive power on the Grand Trunk lines in Western Ontario. But the time may be nearer than is generally supposed.

Before adopting electrical motive power, the principal question a railway company will consider is whether electric locomotives will reduce operating expenses and increase earning capacity. Some of the advantages of electric locomotion it is almost impossible as yet to place an accurate monetary value upon, such as the decreased wear and tear on tracks, bridges, and roadbed, due to the absence of lateral swaying and hammering which accompany the steam locomotive. Then, again, smoke, cinders, and the gases resulting from combustion are eliminated, which makes travelling, especially in tunnels, much more pleasant, and which will more or less reduce the cost of cleaning and painting rolling stock generally. Another great advantage attained through the use of the electric locomotive is that a train may be got ready on the shortest possible notice. There are no fires to light, and no time wasted in getting up steam or coaling-up.

The electric locomotive has a much greater horsepower capacity per ton weight than the ponderous steam locomotive, which may be doubled and trebled by multiple unit control. This allows of higher accelerations, speedier running, and the hauling of heavier trains. A valuable adjunct to the electric railway is the three-phase system, which adds considerably to the service capacity by helping to maintain a given schedule independent of increased train weight or grades.

Increased earning capacity must not be taken as the final argument for the electrification of a steam railroad, since this depends largely on local conditions. Such is the competition of suburban electric railways, which in many large cities, especially in the Old World, have made local passenger traffic on the steam roads all but unremunerative.

The main point is, Will electricity reduce the cost of operating expenses sufficiently to warrant a change that involves the scrapping of enormous quantities of rolling stock?

No steam system has yet, in any considerable section, superseded steam by electricity. But elaborate investigation has shown that the operation of electric locomotives gives a considerable saving over the steam locomotive. On a double-tracked line, through fairly mountainous country, on which the passenger trains averaged 250 tons, and made a speed of about 27 miles per hour, the cost of steam locomotive operation was 36.85 cents per revenue train mile, while in the conservative estimate for the same road the cost of electric operation was only 28.94 cents per revenue train mile. The saving of 7.91 cents per mile, or 21.05 per cent. on