# Editorial

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#### THERE IS WORK FOR MORE ROAD ENGINEERS.

We read the other day, in a paper delivered recently at a good roads convention in Ohio, that in the last hundred years there has been little or nothing done toward improving our methods of locating and constructing earth roads. The statement will hardly pass without a challenge, and will be accepted with a good deal of reservation and amendment, if accepted at all. It may apply in but a few instances. Still it is worth a thought.

Methods of country road location have not undergone much substantial improvement in the past century. There are places where the old system of locating by viewer is still in vogue. It met the requirements of the early 19th century fairly well. Engineers were few, the population was sparse, labor and funds were not available to build roads of the character needed to-day. The system served the purpose in those days, just as did the flail and scythe and sickle, but should have passed with them. The present age demands the abandonment of primitive methods of road location. The work should surely be put as squarely on an engineering basis as is the location of railroads and traction lines. There would, of course, be differences in detail but none in principle.

It is again a matter demanding the services of the road engineer. Because the roadbed of a modern highway requires the same care and judgment in its location, construction and maintenance as does the roadbed of the railroad. The road engineer not only has the problems of alignment, grades and drainage to contend with, but in order to produce the best results he must thoroughly understand the properties of different materials encountered in road construction and maintenance, how they can be combined satisfactorily and how to use these combinations after they have been made. While the above comprises but a few words, the carrying out of the ideas involves a large amount of intelligent and patient study.

We have in Canada some capable and efficient road commissioners. We have others that have only a general idea of what is being done on the roads, and while they may be gentlemen who stand high in their particular callings, these callings have nothing to do with engineering or road building, and their actual services along these lines are of little value. To argue that an engineer is not necessary to advise and counsel with the commissioners in the matter of roads and bridges, that they as good business men will suffice, is not logical. One would at once see the absurdity of having a commission of shoemakers to stamp out an epidemic of scarlet fever. Then why a commission of business men without engineering advice to direct the expenditure of thousands of dollars annually on our country roads?

A great deal of the work on our country roads is being done by men without technical training; few of them being close students of economy, methods, or cost, and some with little conception of the work they are trying to accomplish. Under an engineer they could be instructed and advised in the various phases of road work. A grading outfit thoroughly equipped for all classes of road work could be organized, thereby greatly reducing the cost of concrete and other classes of bridges. This outfit could be kept busy almost continuously, and well drained and graded roads could be had on mail routes and between towns, at a small cost; also a system of cost data could be compiled in a few years which would be of great value.

The road engineer, in his preparation as such, becomes familiar with the design and construction of the different classes of bridges, the proper location, and drainage of roads. This knowledge alone would result in the saving of thousands of dollars. It is now common knowledge that a country road properly located and drained, will save hundreds of dollars in its upkeep.

## DOMINION PUBLIC WORKS PROGRAMME TO BE CARRIED OUT.

During the recent convention in Ottawa of the mayors of Canadian cities the Federal Government was approached in the matter of unemployment. By way of reply, the delegation representing the convention was assured that the Government would continue the construction of all its public works under contract. This means a good deal to engineers. Estimated outlays for the current year includes expenditures upon public works of over \$25,000,000 on railways and canals, of \$27,000,000 on capital account alone, and on works of harbor commissioners of over \$3,500,000. The total expenditure of the Dominion for the year, apart from the war, will reach \$200,000,000, while the war expenditure will add another \$100,000,000. The Federal Government is therefore raising about \$1,000,000 per day, exclusive of Sundays, to maintain its existing programme and carry on the war. To do this, the Government has its revenues under the recent taxation measures and such funds as it can borrow in London, the latter being strictly limited by the British treasury to expenditures upon works under contract, the Imperial Government desiring to conserve the money market for its own issues for war purposes.

The works toward the continuance of which particular effort is being put forth include the Intercolonial Railway terminals at Halifax, Welland Ship Canal, Quebec bridge, N.T.R. and Hudson Bay Railways, terminal elevators and harbors at Halifax, St. John, Quebec, Montreal, Toronto, Hamilton, Port Arthur and Fort William, Vancouver and Victoria.

### BOUNDARY WORK BETWEEN CANADA AND UNITED STATES.

Since 1908 surveyors have been at work marking the boundaries between the United States and Canada. These land surveys are now nearing completion. The water line has also been run.

Charts of the international boundary as the surveyors of the two countries have laid it down on maps of the water frontier were presented to Premier Borden by Mr. J. W. Stewart, head of the Canadian Hydrographic Survey, last week. The Prime Minister, in receiving the charts of the boundary line from St. Regis Island in the St. Lawrence, through Lakes Ontario, Erie and Huron and Superior, to the head of the Lake of the Woods, referred

683