

demand by the modern road-vehicle, should be regarded as a public investment to be safeguarded. If this investment is to appeal to the public, there must be a reasonable assurance that the contemplated expenditures will be made prudently. The people want to know that their money will not be scattered around on job and patch work, but that proper care will be taken to secure the best location, firm foundations, thoroughly drained and consolidated, and with surface coverings economically justifiable. In this connection, I am pleased to be able to state that all the provinces of Canada have already established highway departments or branches which are under the direction of experienced, competent engineers acquainted with modern methods of road construction and at the same time fully alive to the limitations of local conditions. The ground, to use a figurative expression, is in this respect already paved and prepared for a superstructure of solid achievement in highway work.

Provincial Highway Organizations

In passing, perhaps, you will allow me to state that possibly the best evidence, that the provinces now have capable highway organizations, which have been applying themselves to the task of classifying their roads, may be found in the fact that eight out of the nine provinces have, to date, submitted to the federal government, for approval, a programme map of a selected system of highways in these provinces for construction or improvement under the Canada Highways Act. This means that these provinces have chosen the roads of the most general and local importance, in each, for improvement with federal co-operation and assistance. The total mileage of the roads that have been so far designated as Federal Aid Roads is about 18,000 miles; and the total amount that is being raised by these provinces and which will be applied during the next five years on this system aggregates about \$73,000,000. Consequently, it would appear that the manner in which this vast sum of money is to be obtained for highway purposes is a very pertinent question at the present time.

Now experienced highway engineers fully realize that any highway improvements undertaken from special expenditures in grading or preliminary work should be done only with the view to the laying of foundations that will meet all reasonable requirements of future traffic; and that any gravel or stone should be applied with the view to making a suitable surface to accommodate the present requirements of traffic and to fit into a finished work later on, even if that work should be of the most expensive class of pavement. Public confidence in special highway debentures would be more secure if the people were taken into the confidence of highway engineers as to the manner in which the work is to be carried on to a greater extent than has been done in the past. However, it is a well-known fact that engineers are not good advertisers. Still, there is a public which looks for immediate results, forgetting that only the cheap and most impermanent structures are built in a day, and which should be informed as to what is intended.

Methods of Financing Large Expenditures

Now let us briefly consider what is the general trend of methods of financing large special expenditures on highways. In the past road work was but one of several so-called public works receiving the attention of a provincial department of public works. All expenditures made by such departments were usually met out of the general funds of the province. Of late, however, there have developed in practically all of our provinces special departments to deal with road matters which in order to satisfy the public demands for improved roads require extraordinarily large expenditures. Since these expenditures are made largely in response to the demands of a limited portion of the public—namely, those using the roads or living adjacent thereto, a tendency towards financing the necessary expenditures from direct taxes on real property, motors or gasoline, or from capitalizations of prospective revenues from these sources in the shape of debenture issues is very strong. This method of finance has its merits. While not forgetting that there is

a very great general public interest in improved conditions owing to the decreased cost of hauling and hence a reduction in the cost of farm products, etc., to the consumer, yet it is undoubtedly a very equitable arrangement by which those benefitting directly from improved road conditions, are called upon to pay the bulk of expenditures on the selected system of trunk highways placed under provincial control. It permits of the ordinary sources of revenue being applied to the lesser important roads while a definite program of permanent construction is being carried out. Because debentures have in the past been issued for highways and other public works and have failed because the proceeds have been spent in constructing hard surfaces on unimproved grades without proper foundation and drainage, is no reason for condemning the principle of capitalizing a given source of revenue for highway purposes.

Moreover, it is a mistake to secure a large highway bond issue on the pledge of the entire revenue from motor license fees for the construction of extensive mileage of expensive highways, unless there is or will be an assured adequate fund from other sources for maintenance purposes. Good business methods demand that provision be made for protecting the investment by proper methods of maintenance.

Basis of Fees From Motor Owners

While many states and several of the provinces of Canada are devoting their revenue from motor licenses towards the financing of special expenditures on their roads, it would appear to be timely to consider briefly the basis on which the fees are collected from motor owners. At present there is little uniformity in this regard. One province may levy a flat rate upon all vehicles whether used for touring or commercial purposes having no regard to weight or horse-power. Another province may distinguish between commercial and pleasure vehicles on a flat basis, while its neighbor may base the fee upon both weight and horse-power. Possibly a more equitable plan would be to have regard to each of these factors. In this case the fee would be based somewhat as follows: $\frac{1}{3}$ on power, $\frac{1}{3}$ on weight and $\frac{1}{3}$ on valuation or as a flat tax. There is no doubt that the tonnage and speed of any motor vehicle have a direct bearing on the amount of damage done by the vehicle to highway improvements, and should be taxed accordingly. A proportion of the fee based upon the assessed valuation of the motor vehicle would appear to be a fair means of taxing personal property that is not productive. However, it is doubtful that this method of levying the fee would be generally acceptable, especially in the central provinces.

The Babcock Plan

In the neighboring state of Minnesota what is known as the "Babcock Plan" of financing a trunk road system contemplates raising the motor fee to \$18, which is now about one-half that amount, and pledging the extra amount so raised for the creation of a special bond issue, limited in any calendar year to \$10,000,000, with never more than \$75,000,000 outstanding. The greater part of the revenue derived from motorists now consists of a personal property tax on each payable to the state. The average assessed value of all cars listed on May 1st, 1918, was \$140 per car and the average tax on this assessment was \$5.60, amounting together with a license fee of \$1.66 to \$7.26 only. The "Babcock Plan" will, it is claimed, not add a single dollar of taxation to the current expenditure on highways in the state. It would appear that this method of financing highway expenditures is satisfactory all around, providing the motor owners do not kick. Further, that the motorists of the state will have nothing to lose by this increased tax, is sustained by the argument that the improvements will occasion them 20% less expenditure to operate their cars than at present.

It has been estimated by an eminent French highway engineer that there is a reduction of one-third of the amount of gasoline required in driving over improved roads. This fact that the amount of gasoline used in a car is fairly proportionate to the excellence of the roads covered has been