

I estimate that the unloaders can be taken down and re-erected for about \$200.

A bin of this capacity is not portable in the strict sense of the word, but the bins used in Brant county last year were made so that the whole structure could be readily taken apart. No nailed parts would have to be torn out except the lining boards of the end of the bin, each of which requires two 4-in. nails, so that no loss should occur in knocking down the bin.

In most counties, I believe, stone-unloading points on the railways can be located from which it would be possible to do several seasons' work.

I assume that the commonest method of unloading cars is to shovel out into wagons, which will cost in the neighborhood of 31c. per ton, or \$15.50 for a 50-ton car. Taking the cost of unloading by the slot, elevator and bin method at 3c. per ton, or \$1.50 for a 50-ton car, a saving can be effected of 28c. per ton, or \$14 per car. A season's work for one macadam outfit might, I think, be fairly placed at one car per day for 140 working days. This would represent a cost for unloading by the one method of \$2,170, and by the other of \$210, or a saving of \$1,960 for one season,—a little more than the cost of the outfit. I should consider the investment worth while if the outfit paid for itself in three years.

FEDERAL AID*

BY A. W. CAMPBELL
Dominion Highway Commissioner

BY an Act passed on the 7th of July last, the Dominion government appropriated \$20,000,000 to be divided among the provinces in proportion to their population, this sum to be used in paying 40% of the cost of improving roads designated by the provincial governments and approved by the federal department of highways. In making this appropriation, instead of voting a certain sum of money each year, the intention was to provide for a large outlay which would enable the different provinces to lay down or map out a scheme that would cover some four or five years. This \$20,000,000 is available to the provinces within a period of five years, and of that amount nearly \$6,000,000 is due to the province of Ontario.

In mapping this program, it was feared that the money would be scattered throughout the different provinces in small dribs of a few hundred dollars to this road and a few thousand to another, and that nothing of a substantial or finished character would be undertaken, that no connection would be made between the expenditures on the different roads, and that in order to secure this, some more comprehensive plan would have to be laid down. The provinces may plan for five years in advance, and the first regulation under the Act provides that each province shall, in the first place, submit a general program map. That program map should show the roads which it is the intention to build within the next five years. It was somewhat encouraging to find that you have gone so far in Ontario as to have completed your general program map involving some 1,800 miles of road. That is a pretty pretentious scheme; it is a pretty broad proposition, it is a very big undertaking, and to arrange for the forces to carry out that scheme within that time, means that there must be a great deal of activity on the part of your department as well as on the part of the various municipalities having charge.

As to the location of these roads, it seems to cover pretty generally the different parts of the province. There is no doubt, with the high cost of materials and labor, that this is going to involve a very large amount of money, but I believe the benefits to result from the general improvement of the roads of the country are such that even with the high price of labor and materials, you are unquestionably justified in making the outlay; and if you are justified in pro-

viding 60% of the cost of the work, we ought to be justified in providing 40% of the cost of the work.

As to what the character of that work shall be is a debatable question and one which will give you considerable worry and trouble in determining. In the first place, we consider that the improvement should be, as near as possible, in keeping with the requirements and demands of traffic, and that in measuring that, you should measure for a reasonable number of years in advance.

Immediate Maintenance Necessary

If we are going to undertake huge expenditures on roads in Ontario, a great deal of very careful, patient thought will have to be given to the question of the design of the road, to the material that is to be used, how that is to be applied, whether the work is to be done by day labor or contract, and all the other details which would naturally appear as we go along.

Much care and study will have to be given to the question of construction, and much careful thought must necessarily be given to the question of future maintenance in order that that will be put into operation immediately the road is improved and that it will be patiently and diligently carried on for the life of the pavement.

Maintenance, to my mind, is a question that we have not given the thought to, up to the present time, that it deserves, and construction without providing for suitable maintenance is a great mistake. Provide for the maintenance before you undertake the construction, and as soon as the construction has been carried out, pass that road over to your maintenance department to care for and look after.

It may be that 1,800 miles is a large scheme for one province but every province in Canada to-day is working out a scheme, a general plan, along the lines that you have been working. Three or four of the provinces have already submitted their plans for approval, and when you consider the question from coast to coast, it means a very, very large undertaking, and it means that in every province the same intelligent interest should be given to the question that you are giving to it here, and it should be made one of your chief municipal undertakings.

The employment of capable men for the direction of this work, and the employment of capable machinery of the most modern type, are absolutely necessary, and all of these questions provide suitable subjects for your consideration each year.

When we ask for the specifications which you will prepare in connection with these different works which you are going to undertake, we are not going to insist upon an extravagant outlay, nor an outlay that cannot be justified, but among the first things which we require when the project is submitted for approval, are: (1) That you should have made a careful count of the traffic on that road; and (2) that you should have made a careful reckoning of the amount of traffic which will be developed in consequence of the improvement of the road. This should be shown in order to justify the expenditure. Possibly these, more than anything else, are the questions which should be carefully thought out. It is impossible for us to raise sufficient money to go along recklessly establishing the most expensive and up-to-date roads if the traffic on those roads will not justify the outlay. These are questions that must be answered in order that we may be in a position to pass upon the improvement which you are to undertake.

Improvement of Township Roads

We believe that the roads generally should be improved; we believe that not only should the main roads be considered, but that every road in the township should be given some attention. It is just as necessary for you, in connection with the municipal roads which your councils are managing, that you should introduce the very latest practice with regard to their construction and maintenance, as it is that you should introduce this into what might be called the provincial or more important roads. The same principles should underlie the care and keeping up of municipal roads as underlie the question of provincial roads.

* Address at the 18th annual meeting of the Ontario Good Roads Association, March 4th, 1920.