

ments. All this was done at a cost less than previously, even though the various councils had decided to do the work regardless of the poor state of financial affairs. This shows the friendly attitude of the public toward the good roads movement in the province of Quebec.

Gravelling.—Without overlooking the remarks just made respecting the gradual substitution of hard surfaces for earth, it may be said that the gravel road is destined to render great services. When well made, its surface is as suitable for automobiles as for vehicles with metal tires and there is no reason why it should not be used instead of macadam, especially on account of its comparatively small cost. Gravel costs about one-third and sometimes one-fourth the price of macadam. In connection with gravelling, there are some principal points to be considered: the distance over which it must be carted and the quality of the gravel. For a distance of one or even two miles—if it cannot be done otherwise—carting gravel is inexpensive, especially when the gravel is of superior quality. Some gravels possess cohesiveness, require no rolling nor sprinkling, are compressed by the sole weight of the traffic (provided it be always followed by running the double drag over the road), and their use does away at once with a rather considerable expenditure. On the



Fig. 2.—Edward VII. Road, Parish of Napierville.
(Upper) Laying Gravel on Fluxphalte.
(Lower) Finished Road.

other hand, the same gravels have in most instances, a co-efficient of hardness lower than that of less earthy gravels. The latter are harder, but have less cohesiveness and this defect must be overcome by rolling and sprinkling, although, properly speaking, the most economical method and that generally followed calls for neither rolling nor sprinkling. Good gravel which binds well and which lies at a normal distance should evidently be used in preference to a harder gravel lying too far from the spot where it is to be used. Only in the case of bitumen gravelling is it advisable to use gravel not sufficiently hard, even if found close by. The principle on which this theory is based is that it would be unwise to use capital for an improvement most of which would not be permanent. Although the gravel surface wears out as the earth one does, and as also does a stone surface, if the road, when gravelled, is properly kept, a very considerable portion of the gravel remains and serves as a foundation, as it were, for fresh layers of gravel.

Gravel which does not contain more than 20% of earthy substances cannot be accepted for normal gravelling. In such cases, the use of stone covered with such

gravel is recommended. Specifications are never drawn up before the gravel is examined in the laboratory. The engineers also make a study of haulage distances and organization of labor for the benefit of the municipalities.



Fig. 3.—Montreal-Quebec Road—St. Paul-l'Ermitte (L'Assomption). Macadam Done in 1915.

In the course of his report, the Hon. M. Tessier says: "Another thing to be considered in studying the the most economical methods of construction, is the extraordinary development of our road policy. At an interview which I recently had with the members of a very important delegation, it was observed to me that the carrying out of that policy had upset everything, had completely changed the ideas of the rural population, had done away with all opposition to the new state of things we had created; that we no longer needed to have lectures given, to carry on a campaign; that the province now came to us, begged us to not stop, even asked us to set aside the precautions which the present financial situation imposes on us. Such dispositions on the ratepayers' part should not displease us, for we really have wished for such mentality, have brought it about and we wish to maintain and even develop it if necessary. But, as we said at the beginning of last season, we must continue on a reasonable upward path that is in proportion to the resources of the province, in accordance with the march of events. At this moment, our political life, or at least our financial life, is bound up with the financial life of the whole world. That means the obligation under which we are placed to not arrest the impetus that has been given to seek the more easily accessible means to meet first needs for a certain

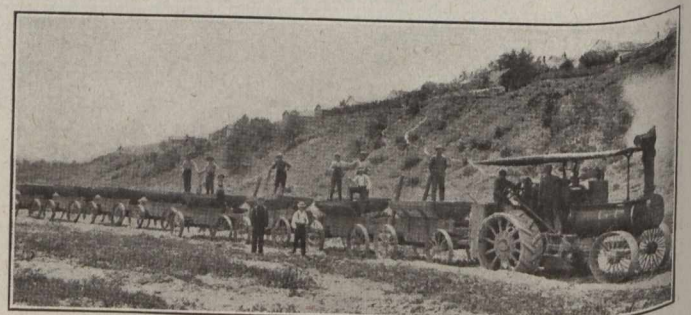


Fig. 4.—Levis-Jackman Road—St. Georges (Beauce).
Conveying Gravel with a Traction
Engine and Trucks.

time. We have not failed in it; after deciding, last spring to spend a certain amount, we set to work and divided up that amount in the most rational and equitable manner possible. After several weeks of arduous labor, we succeeded in starting work again throughout the province