

REPAIR AND MAINTENANCE OF ROADS.*

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The primary defect in road repair and maintenance today is lack of business management. The management of road construction is slowly improving, but repair and maintenance continue neglected. There is a certain enthusiasm and interest about new work which is entirely lacking for repair and maintenance operations. It is now well recognized, however, that no system of roads will remain a good system unless continuously cared for.

It is necessary to distinguish between repair and maintenance. When a road is finished, traffic and the elements act continuously to deteriorate it, and will ultimately destroy it. To oppose such deterioration, maintenance equally continuous is required. If maintenance is neglected the best roads will very soon require repair and longer neglect will even require reconstruction. It has been customary for a long time to classify repair as maintenance. It is a natural mistake in view of the fact that, generally speaking, roads on this continent have not been continuously maintained and therefore if maintenance is referred to, it necessarily signifies repair.

Under the organization which prevails throughout Canada and the United States, town and county roads are largely in charge of local officials elected at short intervals. Road management constitutes, as a rule, only a part of a miscellaneous list of duties. Consequently local officials are not elected because of their skill in road making. The typical road official has abundant confidence in his ability and usually proceeds to try out his ideas at the expense of the community. He has his own definition of gravel, crown, grade, etc., and usually has spent considerable money before he is willing to seek advice; and then it is time for electing a new man. Now, any system in business where an executive officer was dismissed as fast as he learned his duties would be unhesitatingly condemned. Why do we continue to use such a system on our highways.

The difficulty is largely because the local civil unit for highway purposes is too small. Too small because the annual appropriations for highways do not warrant the employment of skilled supervision; too small because with the permanent practice of rotation in office the annual appropriation is handled by each official as *his* appropriation, without reference to what has preceded or what is to follow. Too small because the experience in road construction and maintenance does not cover a wide enough range to supply information which already exists beyond the borders of the local community. The remedy for this condition, which so universally prevails, is co-operation in some of its various forms. A possible form of co-operation is for townships to collectively organize road districts and hire a salaried road engineer. Another possible form is to delegate more authority over local roads to county officials and to require a high-class county engineer. A still more effective form is to invite co-operation from the state or province, even in the matters of township roads, as well as in county roads and inter-county roads. It has been done in the State of New York.

You will observe that all of these methods suggested involve more centralization in the matter of roads. If there is objection to such centralization, the answer must be that there must then continue a "road problem," for an actual

study of the scant records that have been kept on the cost and method of earth road work always reveals the startling fact that enormous sums of money have already been spent under the old system without visible improvement in the roads. I do not hesitate to condemn the use of statute labor upon highways. It has never proved effective. There are several fundamental objections to its use. First, under the statute labor system, work upon the roads cannot be, in any sense, continuous. Neither can it be applied "in point of time." Second, the attitude of freemen toward such work is careless and indifferent, and the days of working out the taxes are too often regarded as more or less of a jollification period. Statute labor is not economy even for those who advocate it strongly. For those who advocate it strongly are the residents who see in the custom an opportunity to avoid cash payments and to discharge a duty to the community with a minimum of effort. Now, the dwellers along the road are the ones to use the roads, and in proportion as the repair and maintenance of their roads is poor, so is the transportation burden per ton mile of useful produce increased. Those who advocate statute labor in preference to cash taxes simply shift the payment of a road tax to the payment of a mud tax. The road tax is a definite sum of cash, the mud tax has the never-ending invisible burden on the cost of hauling.

Let us consider, then, the repair and maintenance of a typical well organized county road system. In the first place, there should be a map of the county showing plainly all the roads within its borders. These roads should be classified. A possible classification is market roads, through roads and neighborhood roads. Necessarily many market roads will also be through roads and usually every through road is in part a market road. When the roads have been classified according to their service, there should be indicated the nature of construction on the already improved portions in each class. By consulting records, the average annual appropriations for all road and bridge purposes for a series of years may be determined. It will usually be found that some of this money has been spent for the new work, but that a large percentage of it must go for annual repairs. The county highway engineer or other highway engineer in charge of the road system must then adopt a financial plan, not for one or two years, but such a plan as will, within a series of years, result in a general betterment of the highways under his jurisdiction. A certain large percentage of the roads will receive a minimum of expenditure proportioned according to their importance. These roads will, many of them, be neighborhood roads which serve, in many instances, but one or two families. A plan of improvement system established for all improved roads and especially for the important roads which must wait for improvement.

The order of improvement to the relatively small percentage of most used roads should be definitely determined, and the type of improvement should be carefully planned. In making such plans, it must be understood that the first mile of any highway radiating from a market centre receives an annual traffic many times greater than a mile of the same road which is six or seven miles away from the market. Therefore, the type of improved surface adopted near the town must necessarily be more expensive than that adopted on the outlying mileage. A great deal of permanent improvement may be brought about on earth roads by the expenditure of the money which is usually classified under annual repairs. The engineer should first determine the existing profile of such roads and establish a grade line toward which some work may be done each season. The necessary improvement of the culverts, such as replacing wooden and other cheap construction by more durable construction such as concrete, should be planned so that some permanent

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