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PLACING GRAVEL ON THE ROAD.

A road should be smooth and level. Nothing is more common than to find the surface of a road, otherwise good, a succession of knolls and hollows, a wavy, undulating line. This is more especially the case with gravel roads. This condition is usually found almost immediately after the gravel has been placed on the road, and has become consolidated. The wheel tracks are smooth, the road fairly well crowned, but the wavy, undulating condition exists.

Such a road will not last at all so long as one that is level. The hollows or depressions hold water, become soft, and rapidly wear deeper. In the spring, when the ground is soft, these depressions are broken through, and the road becomes a series of pitch-holes.

It is not the smooth, even roll of a wheel over a level road that does serious damage. It is the irregular, jolting, jarring movement of wheels dropping into depressions. A wagon is commonly loaded with a couple of tons, and the effect of a narrow tire, supporting 1,000 pounds, and dropping into a depression on the road is nearly as destructive as a pick operated by a pile-driver. The same action is seen where a large stone projects above the surface of the road, wheels constantly dropping from it, cutting a hole on each side. A culvert or bridge is very apt to show, at each end, similar holes dug down by wheels as they drop from the higher and stronger floor.

These undulating roads may result from several causes. Gravel may be carelessly dropped in heaps on the road, without being spread. This was the old-time method, and there are still those who would argue that gravel should not be spread, but should be left for traffic and vehicles to work into place. Such an idea is no better than superstition. Roads should be made for traffic, not by it. Gravel should be properly spread if a good road is to be had.

Even when spread, these undulations are apt to appear. This may result from the fact that, in spreading the gravel, consideration is not given to the manner in which gravel falls from the wagon in heaps, and is more or less compact in these spots, while it is shovelled loosely into the intervening spaces. When it becomes consolidated, the effect is, naturally, a wavy surface.

The wavy surface may be caused by a difference in the quality of the gravel. If one load dropped on the road is of a firm, strong nature, and the next is principally sand, there can be but one result—the road will soon wear to a wavy, undulating surface.

To prevent the surface of a road becoming uneven and irregular, various precautions may be taken. The gravel used should be of a uniform quality. The teamsters should be watched to see that none of them make a habit of filling their wagons with the sandy or earthy material easily loaded. Loads should be of a uniform size. A load should be dropped and spread, and the next placed, in part, on top of the spread material, to be in turn shovelled forward into place. The men spreading the gravel should watch closely the way in which the gravel falls, and should spread it accordingly, with a view to equal consolidation.

Special wagons for gravel or broken stone are excellent for this work. They have a hopper-like opening in the centre, which may be opened to any width, and the material spread uniformly as the horses walk along the road. Wherever roadmaking is being carried on in an extended way, it will pay municipalities to provide teamsters with these wagons. Larger loads will be hauled, and the metal will be spread more uniformly.

It goes without saying that, before a coating of metal is applied to the road, the surface should be properly prepared. If the road has an old gravel or stone bed, and this is uneven, it should be picked up and levelled. This is not expensive. One or two men with picks can readily keep ahead of the teams, cutting off the tops of the knolls and spreading the material as they loosen it. The new gravel or stone can then be spread to a uniform depth, and will consolidate to a level surface.

New material placed on a road should be rolled. If this cannot be done, a man should be sent over the road with a rake, from time to time to rake material into the wheel tracks and level the road wherever it is not settling uniformly. Due care to see that the material is properly put and kept in place will greatly increase the life and usefulness of a road.

THE ROAD PROBLEM.

The total length of roads in Ontario amounts to 60,000 miles. This does not include streets of towns and cities, but the country roads only, maintained by township and county councils. This suggests a public work, the extent, the immensity of which few realize. The improvement of these roads is a work which has required, and still requires an enormous expenditure of money and labor. Distributed as this work is, in a uniform manner, throughout the Province, each municipality and community attending to its own small portion, the larger character of the work as a whole is too apt to be overlooked. A realization of the true extent of this work brings before us the great drain which this work has involved in the past and the still greater expenditure which future requirements demand. It has already cost the people of the Province millions, and will still cost millions. No possible measure can undo past expenditure ; no possible means can avoid future expenditure ; roads are an absolute necessity ; the country cannot exist without them ; that is the situation and it must be faced.

All are at one in the belief that the roads of the Province should be improved. From every township and county comes the demand for better roads. The reasons for this are many, and if followed to their logical conclusion, point to the one result—that the opportunities of farm life are definitely restricted by the condition of the common country roads.

Distributed as this work is, and carried on continuously year after year, a bird's eye view presents a very complex organization. Upon the perfection of this organization the progress of the work depends. Money and labor, without perfect organization, will be wasted. With perfect organization every dollar expended will be of benefit, and a profitable investment.

Road construction in Ontario is, with minor exceptions, under either county or township councils. Township control is universal ; while in certain cases, county