

Road Construction.

A standard thickness of the broken stone covering used in constructing a macadam road may be placed at six inches, provided the sub-soil is sand or gravel, and the drainage is good. If the drainage is poor, this thickness of material must be increased, or what is preferable, under-drains may be laid at the side of the road. The common practice is to deepen the open drains, but municipal officers are finding that under-drainage is as useful on the roads as on the farms.

On clay soils, the best practice demands deep drainage for the roads. Unlike sand and gravel, clay retains an excess of moisture, and moisture is the bane of good roads. If good drainage cannot be had in this way, a Telford fountain should be used. This consists of large angular stones placed on edge, in the bottom of the road, by hand, the projecting points being chipped off and wedged into the interstices. Upon this foundation the broken stone or gravel is then spread. A good substitute for Telford has been found in a layer of gravel or coarse sand. This is porous and prevents the road metal from coming in contact with the wet clay beneath. The little moisture that is absorbed from the clay by the foundation of sand or gravel is beneficial rather than otherwise, as it helps to keep the layer of sand or gravel firm and compact.

Too much water is the one thing to be avoided in securing a good road. The fundamental object in building a Canadian road is the disposal of the excess water. In very hot climates, where dust and drouth are the chief difficulties, or even in this country, where sand is the prevailing soil, some consideration must be had to retaining a certain amount of moisture; but for the average road too much emphasis cannot be laid on the great essential factor—good drainage.

If it were not for the water in the road, the road would not freeze; if the road would not freeze it would not be cut up, rutted and destroyed in the spring. If water were removed quickly in the fall of the year, the farmers would not only have good roads, but would be saved the expense of repairing bad roads. The economy is two-fold.

Crown the roads so as to shed water to the open ditches, give the ditches a good fall, and free outlet. Use clean gravel or broken stone for surfacing the road, not a mixture of clay, sand, turf, and a few boulders. In renewing old gravel roads which have become too flat, cut off the square shoulders with a grading machine, throwing the material of which they are composed outward, across the ditch if necessary. These shoulders consist of earth, sand and sod, with a little stone, and should never be brought to the centre of an old gravel, or stone roadbed to give it a crown. Many a township on purchasing a grading machine and operating it for the first season has ruined miles of their gravel roads by making this mistake.

This soft spongy material should have no place on the roadway, but having been disposed of by turning it to the inner edge of the open ditch, if there is room, or across the ditch if there is not room, the road should then be crowned by building up the centre with a coating of clean, new gravel or broken stone.

Police Villages.

The steady advance of municipal reform throughout the province is making itself felt in many particulars. The position in which many stirring, but small villages find themselves, as a part of a township municipality, is one of these details which is in many cases seeking re-adjustment. The abolition or commutation of statute labor in the township is apt to render the change more necessary. Unless the village is sufficiently large to justify its being formed into a separate corporation, with the added expense entailed for municipal administration, there is need for some means of undertaking certain local improvements to roads and sidewalks, and of applying certain sanitary and other regulations which cannot be extended over the entire township.

The unincorporated village or "hamlet," is the first step in the scale; but this offers but a means of commuting statute labor without such a change being made over the township of which it is a part, the money thus raised being expended by the township council.

A better and more advanced step is the "police village" provided for in sections 713 and 750 of the Municipal Act. These sections provide for the election of three police trustees with power to let contracts, employ labor and purchase material for building sidewalks, culverts, drains, for repairing and improving streets. They may provide fire protection, establish public parks and enforce certain regulations respecting nuisances. The township council continues to collect the annual taxes; the village rate being struck, however, in accordance with the money required by the police trustees. The township treasurer and clerk also continue to act for the village, so that the expenses of incorporation are not undertaken.

The plan is one with many advantages. Without taking such a step, however, improvements can be undertaken in villages through the local improvement provisions of the Municipal Act, in much the same manner as drainage works are entered upon, the method, however, being rather more cumbersome than that which may be applied to police villages.

The number of police villages in the Province as yet reaches only a total of twenty-seven, the list being:

Stoney Point, Comber, Highgate, Morpeth, Selkirk, Manchester, Zurich, Gorrie, Chatsworth, Flesherton, Otterville, Tavistock, Thamesford, Burford, Moorefield, Smithville, Orono, Delta, Elgin, Lyndhurst, Maitland, North Augusta, Frankford, Metcalfe, Crediton, Elmvale, Dublin.

Bicycle Paths.

Bicycling can no longer be regarded in the same category with baseball, cricket and football, as a summer sport alone. It is certainly used for pleasure, but so is the family horse and carriage. In city, town and township, it has become a thing of genuine usefulness to such an extent that its popularity as a sport is waning, and it has become the rule, in cities at least, that the bicycle is employed for strictly business purposes by the majority of those who possess them.

Having reached this plane, the construction of bicycle paths has entered into the domain of municipal works. In cities and towns these have been undertaken by the municipal councils, but rarely have more rural municipalities had occasion to do so.

The simplest form of these paths, as built through country districts, is usually placed on the grass space between the fence and the ditch, in about the place a sidewalk occupies. The width ranges from eighteen to forty-eight inches. For a country path, eighteen inches, which generally spreads out to about two feet, is found to give good service. If the width is made greater than this, it is generally with the object of allowing two to ride abreast, and should for this purpose be about forty-eight inches.

They are made by first levelling a strip the required width, putting in culverts wherever needed to allow water to cross the path. To avoid expense the path may, of course, be allowed to turn out on the wagon road to cross a large culvert or bridge. On this levelled strip, a layer of cinders, one or two inches in thickness, is spread. Over this is sprinkled a thin layer of sand or sandy loam, and the whole is then rolled down smooth and hard.

The cost of these paths has been found to range from \$100 to \$200 per mile, but the labor is the chief item of expense. In the case of one bicycle path in Ontario, leading from Port Credit easterly towards Toronto, the cinders are being supplied by a local factory without charge, users of bicycles are themselves performing the work of grading, so that the path is demanding practically no financial outlay.

These paths, where they traverse country districts, as a rule, indicate that the residents have been unable to improve the roadway for all classes of travel, and in such cases, and indeed, in the majority of cases, the cost, where they are built, must certainly be borne by the wheelmen themselves. Occasionally, however, we find a municipality, within which is a summer resort, or other objective point, becoming interested in the matter. Bicycle paths, however, are but a protest against bad roads, an argument for good roads, which all citizens can use, and which are built by the united effort of all, without dividing it into one part for roads and another for paths.