

March 14, 1912.

The roads are graded from 22 ft. to 28 ft. wide and metalled from 8 feet to 15 feet wide. The depth of the metal consolidated is from 6 inches to 7 inches. The metal used was crushed stone, crushed and screened gravel and natural pit gravel. The most of the crushed stone used was brought in by rail, as local material was not available, and in such cases the freight rates increased the cost very materially. In some cases the freight on stone which cost 50 cents per ton f.o.b. at the quarries was \$1.00 per ton. If this association would take this matter up and could succeed in having the freight rates on stone reduced, it would certainly help along the good work of road improvement in sections where local material cannot be procured.

The total cost per mile for the different classes of roads was as follows:—

Roads metalled with crushed stone, shipped in, from	\$2,500 to \$4,000
Roads metalled with crushed stone, local, from	2,000 to 2,500
Roads metalled with gravel crushed and screened from	1,800 to 2,300
Roads metalled with screened gravel.....	1,500 to 1,700
Roads metalled with pit gravel, from.....	900 to 1,300

The road machinery owned by the county is as follows: 3 ten-ton steam rollers which cost \$8,300; 3 road sprinklers, cost \$734; 2 rock-crushing plants, consisting of a crusher, elevator, rotary screen and 20-ton mounted bins, cost \$1,400 for each plant; 1 gravel-screening plant, consisting of a 4-horse-power gasoline engine, elevator, rotary screen and 12-ton mounted bins, cost \$1,125; together with graders, wheel scrapers, drag scrapers, plows and tools; amounting in all for the entire plant to about \$14,500.

The cost of operating a plant crushing stone amounted to \$15 per day, including the amount paid per day for a 14 horse-power traction engine which supplied the power. The amount of stone crushed averaged about 40 cubic yards per day, making the cost of crushing about 37½ cents per cubic yard.

The crushing plants were also used in gravel pits where there was an excess of coarse gravel and stone. The material was run through the crusher, screened and separated in the bins. The cost of operating, including the cost of handling stone and gravel in the pit, was about \$25 per day. An average of about 60 cubic yards of metal per day was turned out, making the cost about 42 cents per cubic yard.

The gravel-screening plant was used in a pit where there was an excessive amount of sand intermixed with the gravel. This was screened out and the fine and coarse gravel which was left was separated in the bins ready for the roads. The cost of operating was about \$10 per day, and the amount of screened gravel obtained about 28 cubic yards per day, making the cost of screening about 36 cents per cubic yard.

The Highway Improvement Act has done much to demonstrate to the people of Ontario the advantage of good roads, and has given an impetus to road building on scientific principles in many parts of the province. It has, however, been generally admitted that for obvious reasons the aid given to counties under the Act is not sufficient for main roads which have to be kept up for through traffic. And it now seems that in the orderly course of progression the time is ripe for a further step in the shape of a provincial system of highways, to be built and maintained by the province, with the aid of the subsidy to be given by the Federal Government for the improvement of highways. These roads would be object lessons in the scientific construction and maintenance of highways, and would do much for the cause of good roads in an educational way. Besides, the best re-

sults should be achieved at a minimum cost, as the roads could be constructed and maintained on the most approved principles under experienced supervision.

In selecting the roads for a provincial system of highways the object in view should be the greatest benefit to the greatest number, and in carrying out this very wise maxim the farmers, who are the backbone of this agricultural province of ours, should get the first consideration. In fact, it seems to me that if we do what is in the best interests of the farmer in this matter, we will not require to go much further, as the interests of the farmer are so interwoven with the interests of the business man and the prosperity of the urban municipality depends so much on the prosperity of the rural municipality, that their interests cannot be separated.

Now, I do not think any general scheme can be laid down for this system of roads in old Ontario that is more practicable and will answer all purposes better than a connected interurban system having at least one main road through each county. This would provide a system of trunk roads for tourist traffic, as well as the roads for interurban traffic. This system of roads built and maintained by the province, with well constructed lateral roads or feeders built by the counties, would give us a system second to none on the continent. It would require, say 2,200 miles of road, to cover this system and would cost, say \$15,000,000. This amount would necessarily be spread over a number of years, as it would be required only as the roads were built, and would be a small amount compared with the enormous sums expended on roads by our progressive counties.

BUILDING STONE FROM BLAST FURNACE SLAG.

The manufacture of building stone from smelter and blast furnace slag is an industry of considerable importance in Germany, and is carried on to a greater or lesser extent at nearly all these furnaces. The process is not patented and is very simple in details. Practically all blast-furnace and smelter slag is suitable for stone-making. Slag for this purpose must, however, be in a granulated state. After it has been allowed to harden it is unsuitable. All attempts to utilize slag that has been crushed or ground, after having once hardened, have failed to produce solid stone.

The slag is granulated by the addition of water as it flows hot from oven or furnace. The granulated slag after being thoroughly mixed with the required proportion of lime is allowed to stand one hour before being put through the press. After being pressed, the stones are stacked in the open air, where, after three or four weeks, according to the weather, they are ready for use. Under low temperature they harden slowly. If subjected to frost before thoroughly hardened, they are crumbled and destroyed. Operations may, however, be continued in the winter, the stones being hardened in steam-heated drying rooms. These stones grow constantly harder with time and after several years show a resistance of 100 kilos. per square centimetre.

THE BRITISH COLUMBIA ELECTRIC RAILWAY.

The report of this company up to the 30th of June, 1911, has been published in London, England. The net profits for the year are shown by this statement to be \$1,363,461.00; this is an increase of 17% over the net earnings of the preceding year. The company now have 233.65 miles of track and 647 cars in operation. The number of passengers carried during the year was 46,541,448. The report shows that the company are planning for considerable development work in the near future.