

ENGINEERING DEPARTMENT.

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Quebec Follows.

The Commissioner of Agriculture for Quebec, Hon. L. Beaubien, in a speech at Nicolet on October 4th announced that a branch of roadmaking had been established in connection with the Department of Agriculture. In reference to this he said: "An inspector has been appointed whose duty will be to visit different localities and give lectures on road management, to decide on roads to be made or alterations to be carried out, and to explain the mode of using the various machines, of which the Department has several, and will get more if more are required. There is a stonebreaker, a roller, and machines to shape the roadbed, making the ditches at the same time as the rounding of the bed. Each of these machines is entrusted to a foreman who is under the direction of the Department. The management furnishes the machines as well as the foreman, the municipalities or individuals having to supply the horses and the laborers that may be required. This plan has been decided upon during the last month or so. The municipalities that derive the benefit from it having only to make an application and, in their turn, they can take advantage of what we offer to them. Since we inaugurated the system of coming to the assistance of the municipalities, I am happy to say that more than one of them has hastened to buy one of the machines, whose excellent work they are in a position to prove. In Denmark farmers have to furnish broken stone along that part of the road they have to keep up. During the long winter months they break the stones, and, in the summer, the municipalities, after having rounded up the roads with the machines, lay the stone on them. In this province the municipalities, after having prepared the roadbed, have a right to demand from the taxpayers that a certain quantity of them be placed alongside the road in proper place then the steam crusher and roller which we possess will come and break the stones, the only thing remaining to be done to them being spreading on the roadbed.

The township of Southwold, Elgin County, has to pay into court the sum of \$700 damages, in consequence of an accident caused by a dangerously graded roadway.

The city of St. Thomas, will next year repave its leading business thoroughfare, Talbot street, on which cedar block is now used. In anticipation of this, the council is experimenting with vitrified brick, crossings of this material being laid. The brick is obtained from Ohio at a cost of \$14.10 per thousand.

Electric Light for Villages.

A country village with a population of only 600, and with no more than the usual number of factories, churches, stores etc., and which has an electric plant owned by the municipality, furnishing light for street lamps and for private residence, is rather notable, and may be an incentive to some municipalities in Ontario. This is the village of Johnson, located in Vermont and only about thirty miles South of the Canadian border. Within the village there has been for several years an abandoned mill-dam which at one time furnished power to a saw-mill, but with the exhaustion of the timber, the saw-mill was dismantled and the water-power from the small mountain stream left unused.

The residents of Johnson are with a few exceptions, people of very modest incomes, who live simply and plainly. Up to the time when the electric light plant we are about to describe was installed, coal oil was the only illuminant. Dark streets and dimly lighted houses, while water power ran to waste close by, was an anomaly which at last attracted the attention of some of the more enterprising citizens and after a careful consideration of ways and means, a village corporation was organized and the work of installing an electric light plant was begun. The abandoned mill-dam and mill site was purchased for a small sum; the dam was substantially rebuilt, and a small wooden building was erected for a power house.

The power house machinery and electric apparatus is very simple. An old turbine which had formerly run the saw-mill was purchased with the mill-site. The total cost of water power, mill site, water wheel, power house, dynamo, switch board, wiring, poles, converters, etc., all ready for operation was in round numbers \$5,600. Of this the cost of the dynamo was \$1,175; other electrical apparatus \$1,850; water power privilege, dam and turbine, \$1,150.

The lighting of the street is extremely satisfactory and is obtained by incandescent lamps. Popular ideas regarding the use of arc and incandescent lamps are often at variance, but single arc lamps at street intersections, with long spaces of total darkness between, do no give so useful a light as twice the number of incandescent lamps equally distributed. The dynamo is started in the afternoon as soon as lights may be needed for private residences, sometimes before sundown if the day is cloudy, and runs until eleven p. m.; also during the winter from five a. m. until daylight. The street circuit is not turned on until the lights are actually needed and on very bright moonlight nights it is not operated.

The annual cost of operation is very small. Insurance, oil, waste, lamps for street lighting amounting in all to about \$100 are the chief items of expense, with the exception of the salary of one engineer, \$425 per year. Interest charges are

\$244. Depreciation on \$4000 or that portion of the plant subject to wear at a rate which would replace it in twenty years, amounts to \$133, so that the entire annual cost is \$902.

The schedule rates for lighting private residences is per year:

First light in each living-room or hall	...\$3 00
Each extra light in each living room or hall	1 50
Each light in cellar	1 00
First light in each sleeping room, bath room and pantry extra	1 50
Each extra light in sleeping room, bath room, and pantry	1 00
Each light in barn or shed	1 00

Stores, public halls, hotels etc., are charged at slightly different rates but the receipts from private lighting during the last financial year was in round numbers \$1,000.

This is supplemented by a grant of \$200 from the township, on the basis that the street lights are as much of a benefit to those living outside the village, who use its streets when they drive to town, as to dwellers of the village. Also because residents of the townships outside the village may use the lights at a very slightly increased rate. The revenue amounts in all to about \$1,200 from which if we subtract the cost of operation there is a yearly balance in favor of the village of almost exactly \$300.

There are some lessons in the experience with this Johnson plant which numerous communities in Ontario might be able to profit by. There are very many country villages which if they have not unused water-power at their doors, could develop it within a distance not so great as to be prohibitory, and could thus have well lit streets and houses in place of the present darkness and coal oil lamps, and, as in the village of Johnson, at rates which read like a romance.

Narrower Carriageways.

The report of the city engineer of Toronto, recently issued, is a very complete and interesting volume. Among other matters dealt with, the question of narrower roadways is nicely stated. The report says: The narrower the carriageway the better opportunity there is for wide boulevards and handsome shade trees, which always improve the appearance of a thoroughfare when properly cared for. When a larger portion of a street than is necessary is taken up by the pavement, it entails a continuous expense to keep the surface in proper order, to sweep and water it. The first cost of such a pavement is also greater, and when it becomes necessary to relay or repave is a heavy burden on the taxpayers, whilst with a narrower carriageway, if it is subsequently found that the amount of travel or business upon the street has so increased as to warrant widening it, this can be easily accomplished by moving the curbs back and adding such additional width as may be considered necessary.