with the Canadian Government Rys. at Villeroy, and with the Quebec, Montreal and Southern Ry. at Fortierville.

"The committee concur in the foregoing recommendation and submit the same for approval."

The Quebec Railway, Light, Heat & Power Co.'s directors ratified the sale at a meeting in Montreal, Dec. 10, 1919.

The Lotbiniere & Megantic Ry., which was built under a Quebec charter, extends from Lyster on the G.T.R. to St. Jean des Chaillons, 30 miles. The results of its operations for the year ended June 30, 1918, were as follows:

Earnings—		
Passenger earnings	$ 6,167.78	
Freight and switching	35,324.22	
Other earnings	15.00	$41,507.00
Expenses—		
Maintenance of Ways and Structures	$11,824.11	
Maintenance of equipment	4,279.26	
Traffic expenses	411.00	
Transportation	13,817.79	
General expenses	5,575.40	$35,907.56
Net operating earnings		$ 5,599.44
Deductions—		
Taxes		$ 900.00
		$ 4,699.44
Corporate Income—		
Rentals		$ 2,106.96
Net income		$ 2,592.48

The railway carried during the year under June 30, 1918, 11,370 passengers, and 62,867 tons of freight. The company was reported to own 4 freight locomotives, 2 first and 2 second class passenger cars, 1 box, 24 flat and 1 other car in freight service, and one caboose. The company received subsidies from the Dominion amounting to $96,000; and from Quebec, $126,994. In 1907, the Quebec Legislature incorporated the Quebec Eastern Ry. to build a railway from Sherbrooke to the site of the Quebec Bridge, with power to arrange for the operation of the line into Quebec; a branch line to Lyster, with power to acquire the Lotbiniere & Megantic Ry.; a branch to Lime Ridge, and unnamed branch lines. Extensions of time for the building of the lines were granted from time to time, but nothing was ever done. Several years ago the L. & M.R. was acquired by the Quebec Railway, Light, Heat and Power Co.

The Exechequer Court held several sittings towards the end of 1916, at which evidence as to the cost of the railway and its property was given.

The L. & M.R. has been operated for several years under the Quebec Railway, Light, Heat and Power Co.'s officials, G. W. Robins being the Superintendent at Lyster, Que.

Conservation of Lumber in Farm, Street and Highway Crossings.

The following committee report was presented at the Roadmaster and Maintenance of Way Association's last annual meeting in Chicago:—

It rests with the maintenance of way department men to advocate substitutes for lumber to a larger extent than the managements have yet seen fit to do, or we ourselves have recommended. For instance, only a few roads have adopted such excellent substitutes as asphalt, road oil, macadam, etc., for farm, street and highway crossings, and while concrete is not a novelty on railways, as for years past its value and usefulness have been developing, this development has been much slower in the maintenance of way department than circumstances would appear to warrant, especially in the maintenance of way department than circumstances would appear to warrant, especially in the lighter forms of construction where timber has been and is now used, such as fence, mile and whistling posts, town and county markers, chaining stakes, gate posts, pipe line supports and signal and telegraph poles. However, it will be the purpose of this report to treat only of crossings.

It was, of course, following the lines of least resistance that plank or timber was laid between and outside the rails to permit a vehicle to be driven across a railway track, and, for a more highly finished job, planks of specified thickness, length and width were made standard supplies, and laid with care and precision, fastened with 6, 8 or 10 in. spikes and the ends leveled. Because of wear and tear, derailments, heaving in winter, etc., they had to be renewed frequently. Without going into details as to the maintenance expense of wooden crossings, a report from one supervisor's division shows that it required 53,678 ft. of lumber, 3,226 lb. of crossing spikes and a labor charge of $5,642.96 to maintain the public and private crossings on his territory for one year, the cost of the plank alone being $1,717.70. It is not the purpose of this report to go into the details of the unit cost of maintaining single crossings, but as the subject assigned to the committee implies, to advocate the conservation of lumber by using well recognized substitutes. If on one division 53,678 ft. of lumber can be conserved, assuming that it requires 512 ft. for one single track highway crossing or twice the amount for a double track crossing, and assuming that there are 50 or more highway crossings on each of 3,000 supervisors' divisions on the railways of the country, the use of some other material than lumber would mean the conservation of 76,800,000 f.b.m., amounting to $2,457,600. And this does not include farm crossings or streets sometimes planked solidly from one side to the other of six or more tracks.

Since maintenance is an operating expense, it has to be paid out of the income and as a crossing must be kept up continually, the method of maintaining it should be simple so as to be grasped readily by the average workman. To be practical the work should be performed with the least possible equipment and this should be of such character as will always be on hand. To be economical, the expense must be within reason and not exceed that of other methods and materials that are used for work of like nature, producing like results.

The committee recommends that, as far as possible, all rail joints be eliminated in road crossings; that good drainage be installed; that all road crossings in high speed tracks be made of crushed stone of standard size, mixed either with good road oil, bituminous, macadam, asphalt or other good substitute for lumber. In parts of the country where there is considerable frost, and where tracks heave, the sealing of the crossings with these substitutes will keep out the moisture and frost, and eliminate the heaving of tracks to a considerable extent; also, the heaving of crossing planks, which is a source of danger, will be eliminated. On slow speed tracks and where heavy trucking is done in yards, etc., track should be paved.

Excellent results have been obtained in eliminating signal failures and also from the standpoint of safety from crossings constructed according to the following specifications:

Formula 1—Clean out all dirt and ballast down to 2 in. below the bottom of the ties for the full width of the crossing and for a distance of 2 ft. outside of the outside rails.

Replace all damaged rails and ties in the crossing, bond all joints, that cannot be eliminated, with 3 copper bonds per joint, put all track through the crossing in first class line and surface, thoroughly tamp them up and install good drainage.

Paint rails with asphalt, applied hot with a brush or swab, covering thoroughly the entire surface of the rail below the under side of the head, including the under side of the base.

Pack around the rails for 8 in. on each side with a mixture of crushed stone up to ½ in. in size, and hot asphalt, tamping this mixture thoroughly to ensure a complete bond with the rail at all points.

Refill the crossing with good clean crushed stone (ballast size), up to the level of the under side of the head of the rail, rolling or tamping it thoroughly.

Cover the entire crossing with fine stone up to the level of the top of rails, sprinkling freely with a good quality of road oil while fine stone is scattered. Roll or tamp this covering thoroughly and sprinkle the entire surface with road oil.

Cost of formula 1, with road oil at 1918 prices:

Double track—	
Ballast size stone, 6.46 cu. yd. at 80c	$ 5.17
½ in. size stone, 3.26 cu. yd. at 70c	2.28
Oil to cover 352 sq. ft., 100 ga. at 18c a gal.	18.00
	$25.45

Planking for a similar crossing would cost $56.

Single track—	
Ballast size stone, 2.53 cu. yd. at 80c	$ 2.02
½ in. size stone, 1.33 cu. yd. at 70c	.93
Oil to cover 144 sq. ft., 50 gal. at 18c a gal.	9.00
	$11.95

Planking for a similar crossing would cost $28.

Formula 2—Clean out all dirt and ballast down to 2 in. below the bottom of the ties for the full width of the crossing and 2 ft. outside of the outside rails.

Replace all damaged rails and ties in the crossing, bond all joints that cannot be eliminated with 3 copper bonds per joint, put all tracks through the crossing in first class line and surface, thoroughly tamp them up and install good drainage.

Paint rails with asphalt, applied hot with a brush or swab, covering thoroughly the entire surface of the rail below the under side of the head, including the under side of base.

Pack around the rails for 4 in. with a mixture of crushed stone of ½ in. size and hot asphalt, tamping it thoroughly to ensure a complete bond with the rail at all points.

Refill the crossing with good clean crushed stone (ballast size) up to the level of the under side of the head of the rail, mixed with a good mixture of good bituminous macadam, rolling and tamping it thoroughly.

Cover the entire crossing with fine stone of ½ in. size, to the top of the