April 22, 1910.

Batteries, rent 38.00 60% dynamite, at \$10 per box..... 1,020.00

Or 0.636 per cubic yard. \$1,117.15

Making a total of \$4.97 per cubic yard.

To this must be added an amount for the depreciation of plant, in this case \$930. This included broken and wasted material and drill steel sharpened away.

This was equivalent to 50 cents per cubic yard and made a grand total of \$5.47 per cubic yard. When it is remembered that it was rock work where the wear and tear upon plant was great this amount is not unreasonable.

This price, i.e., \$5.47 per cubic yard for solid rock, is high, but the trench was for 18-inch pipe; it was not wise to use large shots and the amount of drilling, i.e., one foot for 41/2 cubic yards, was excessive. The price is not high for trench work in rock.

COST OF HICHWAY WORK IN MAINE

The following figures are given by the state highway commissioner of Maine in his last annual report as a summary of work for the year:

No. Nature of

0	f Improvement.	Square	Length	
Tow	vns.	yards.	in feet.	Cost.
I	Block paving	1,356	714	\$ 2,107.00
34	Macadam	107,480	41,411	62,515.28
5	Bituminous macadam	20,110	+5,065	\$23,044.70
335	Gravel		290,385	150,070.82
84	Earth and drainage		71,220	34,223.07
4	Earth and gravel		4,907	1,685.53
8	Abutments and culverts	5		1,510.44
6	Bridges			2,344.41
		The second of	A Carlot and a start of the	

477 Total 413,702 \$278,501.15 +Including 224 lineal feet of granite block on Hassam base.

Reports show 10,671 feet additional not classified as to surfacing material, making a total length of state road of all classes of 424,373 feet or 80.37 miles.

From above table we learn that the average cost per mile (including the cost of the bridge and culvert jobs) is \$3,-465.24.

Average cost, block paving, per square yard	\$1.62
Average cost, macadam, per square yard	0.5818
Average cost, bituminous macadam, per square yard	1.145
Average cost, gravel road, per mile	2,744.90
(55 miles of gravel road built; surface from 12	in in
to 21 feet in width)	

Average cost, earth and drainage, per mile..... 2,536.00 (13.49 miles.)

COST OF LABOR ON RAILROADS

From the railroads of the United States have been gathered figures showing the total amount paid to their employees in the year ended June 30th, 1908.

The figures now gathered show the increase in the proportion of labor cost to gross operating revenue and to operating expenses, as follows:

The second se	1902	1907	1908
Percentage of labor cost to operating			N.F.S.
revenue	38.2	40.4	42.1
Percentage of labor cost to operating			and the second
expenses	60.5	61.3	62

that the aggregate amount of wages paid to enginemen exceeds by \$29,000,000, the total paid to conductors, and that firemen received within \$5,000,000 of as much as the total paid to the conductors.

COST OF HICHWAY BRIDCES.

During 1909 the Nova Scotia erected a number of steel highway bridges. Erected under the specifications of the Department of Public Works, Nova Scotia, the cost per foot was as follows :---

	Spa	an Width	Total	Cost	
Mater	ial. in f	ft. in ft.	cost.	. per foot.	Remarks.
Steel	25	14	\$ 875.00	\$35.00	Swing.
Steel	87	12	2,240.00	25.74	Swing.
Steel	45	15	489.00	10.86	Does not include
-					flooring or
					stringers.
Steel,	deck 50	14	698.00	13.96	
Steel	50	15	533.00	10.66	
Steel	50	15	538.00	10.76	
Steel	50	16	548.00	10.96	
Steel	60	15	648.00	10.80	
Steel	65	15	749.00	11.52	
Steel	70	15	829.00	11.84	
Steel	75	15	1,050.00	14.00	
Steel	80	15	975.00	12.18	
Steel	80	15	1,186.00	14.82	
Steel	100	14	1,550.00	15.50	Does not include
					flooring or
					stringers
Steel	125	15	2,015.00	16.12	Does not include
					flooring or
					stringers.

COST PUMPING WATER. OF

The Water Commissioners of London, Ont., found that they could pump 274 gallons per lb. of coal. The average static and dynamic was 240 ft., and cost \$8.35 per million gallons pumped, or 31/2 cents per million gallons raised one foot.

HYDROCRAPHIC SERVICE STEAMER FOR THE CANADIAN COVERNMENT

Messrs. Swan, Hunter & Wigham Richardson, Limited, the builders of the Mauretania, have quite recently constructed at their Neptune yard, Walker-on-Tyne, (England) the twin-screw steamship Cartier, which was designed by Mr. R. L. Newman, of Victoria, B.C., for the hydrographic service of the Canadian Government. Fig. 1 gives an elevation and deck plan of this steamship, and, as supplementing the details given in the drawings, it may be recited that the Cartier has the following overall dimensions :- Length, 173 ft. 6 in., and breadth, 29 ft. 11/2 in.; while the depth, moulded, to upper deck, is 15 ft. The gross tonnage is 555.7 tons, and the net tonnage 234 tons. The d.w. capacity of the vessel is 230 tons on lift, and the displacement is 1035 tons on Lloyds draft of 12 ft. 8 in. The service speed is 111/2 knots, The Cartier is fitted with twin screw triple expansion engines, with cylinders 111/2 in., 18 in., and 31 in. x 24 in. stroke, supplied with steam by two cylindrical multitubular boilers, 10 ft. 6 in. diameter x 11 ft. 6 in. long, having a pressure of 185 lbs., and working under Howden's system of forced draft. A most interesting feature of the statistics is the fact As will be seen from the drawing, there are a large number