

financial failure of the Prince Edward Island Railway, the only remaining government railroad enterprise, has been perhaps even more disastrous, this road having been operated at a deficit from the beginning. These results, however, may not be used as arguments either for or against governmental management of railroads. Though financially a failure, the state railways of Canada have been in many ways a success. They have helped to join the eastern provinces in a strong political union, to create a traffic with Quebec & Ontario, to foster a feeling of solidarity, & to be serviceable to the country in the deplorable event of an American or Oriental war. The nation stepped into the breach where private capital hesitated, & the millions that have been spent have not necessarily been wasted.

The financial success of a railway, or of a system of railways, depends upon the relation that the excess of revenue over operating expenses bears to the total cost of the line. A railway may be successful because its gross receipts are large, or because its working expenses are small, or because its capitalization is low, or through a combination of some or all of these circumstances. The net income of a railway may be large, but where, as in the United Kingdom, the capitalization is very heavy, the net revenue per dollar of invested wealth is small.

In new & sparsely-settled countries, the railways are usually capitalized at a low figure. In the U.S. the capitalization is considerably heavier in the east than in the less populous west, & the same relation obtains between Western Europe & the more sparsely-settled countries of the east. The capitalization of Canadian railways is \$52,000 a mile, which is less than that of U.S. roads (\$9,610) & considerably less than that of roads in many European States. The capital account per mile of railway in England is about 5 times, in Scotland more than 3 times, in France & Belgium more than twice, & in Germany, Switzerland, Holland & Italy from once & a half to twice as great as in Canada. This low capitalization is due not only to the sparseness of the population, but to the comparative youth of the Canadian railways. The capital account of British railways increased from £24,630 in 1838 to more than £47,200 (\$235,000) in 1895, but this has been largely due, as in other countries, to the tendency of the railways to branch out into industries other than that of transportation.

The chief cause of the low capitalization of Canadian railways is the obvious one of low cost of construction, but cost & capitalization are not quite identical. In Canada, as elsewhere, the capital account has been swelled to larger proportions by the facile expedient of stock-working. When the Manitoba & North-Western went into receivership, it was bonded to from 50 to 100% above its cost of construction. The second issue of Canadian Pacific bonds was made at 25%, & a subsequent & still larger block was sold at 52. There is a natural tendency for the capital account of all corporations to approach, not the actual investment of capital, but the real value of franchise & other property; thus the inflation of railway property for the purpose of concealing profits, or from less laudable motives, has obscured the actual cost of constructing the railroads. In the absence of trustworthy statistics, however, we may still infer that the cost was not excessive. The right of way, which in thickly-settled districts is costly, & on which the English railways, according to a moderate estimate (that of Jean's), expended fully one-tenth of their total capital, was obtained in Canada cheaply, if not gratis. The vast sums often expended on palatial stations, on terminal facilities in great cities, in avoiding grade-crossings, etc., were not demanded by Canadian conditions. In the United Kingdom immense sums have been spent in promoting & combating parliamen-

tary legislation, & drains have been made upon the resources of the railways by all forms of legal & extra-legal extortion. On the other hand, many of the raw materials of construction have been dearer than in Europe, & the Canadians have only partially pursued the policy of substituting cheap alien for the dearer native labor.

A final cause of the low construction cost of Canadian railways is found in the character of the lines. In Canada, as in the U.S., there has been in the character of construction a wise adaption of means to ends, & cheap, light, single-track lines have been built, instead of the heavier & more durable track, in more populous districts. As traffic increased, the light structures have been perfected & supplemented; steel has taken the place of iron & even of wooden rails, & the permanent way & rolling stock have been generally improved. But the railways of Canada are still far more lightly constructed than those of the United Kingdom, or France or Belgium, owing to the smaller amount of traffic.

The bulk of this traffic is freight, the receipts from this source, amounting to 64 % of the total income in 1897, while only 9.4 % were derived from mail, express & miscellaneous sources, & but 26.6 % from the passenger business. The preponderance of the freight traffic, achieved in spite of water competition, is due to the sparse population & the large area, distance acting considerably less as a deterrent to freight transmission than to travel. The passenger traffic of Canada has grown very slowly. While the tonnage moved, per head of population, increased 194 % (from 1.60 to 4.73 tons) from 1876 to 1896, the number of travellers increased only 106 % (1.40 to 2.88) during the same period. While the Canadian thus averages only 2.9 trips a year, the average in the United States is 8.2, in France 9.1, in Germany 10.4, in Belgium 14.7, in the United Kingdom 21.4 (excluding season tickets), & an almost equal number in the New England States. If the length of the trip is taken into account, the statistics of travel are not so unfavorable to Canada, since in all rural, & particularly in thinly-settled, districts (Russia, Norway, Hungary, Roumania & the Western States) the average distance covered by a traveller is generally great. Like the English railways, those of Canada do not, as a rule, give statistics of passenger-mileage, but a rough calculation gives the average trip as about 40 miles. On the Canadian Pacific each traveller is carried 46.5 miles, & the rate per mile is 2.74c. If this fare obtained throughout the whole of Canada, the average distance travelled would not be far from 33 miles, but, despite the high fares in Manitoba & the Northwest, where 4c. & 5c. a mile are not unusual, the average receipts per passenger mile are probably less. On the assumption of forty miles per passenger, the average yearly travel per capita equals only 116 miles in Canada, as compared with 153 in Germany, 170 in France, 208 in the United States, & about 250 miles (est.) in the British Isles. With three-fourths of Belgium's population, 300 times its area, and 6 times its railway mileage, Canada carries but fifteen million (14,810,407) passengers compared to little Belgium's hundred million—a difference only partially compensated for by the smaller parcours (about 13 miles) on the Belgian railroads.

Since 1885 the passenger traffic has increased more slowly than the railway mileage, & from 1890 to 1895 it has remained almost at a standstill, but an increase of 15.6 % in the traffic from 1895 to 1897 indicates a coming revival in the passenger business. The freight traffic has also recovered from the ill-effects of the business depression of recent years; but, despite the recent increase in traffic, the total earnings per mile of road have steadily declined. In 1875 the receipts per mile of road were \$4,033; in 1880 they had sunk to

\$3,418; in 1885, to \$3,175; in 1895, to less than \$3,000. This decline, which may be paralleled elsewhere, is due partly to the construction of new & temporarily unremunerative railways, & partly to the great decline in freight charges, which has been so striking a feature of American railway history. The receipts per ton-mile on the Canadian Pacific declined from 1.50 to 1.17c. from 1889 to 1896, & numerous other instances of cheapened transportation might be cited.

The result of comparatively low rates & sparse population has been diminished receipts per mile, the statistics for Canadian railways showing but \$3,107 in 1896, compared to about \$7,000 in the United States, \$11,000 in France & Germany, \$12,000 in Belgium, & almost \$24,000 in England & Wales.

Fortunately the operating expenses have declined still more rapidly. During the 20 years ending with 1895, the operating expenses declined from \$3,268 to \$2,049, & while the working expenses formed 82% of the total revenue in 1876, the proportion had sunk to 69 % in 1896. Despite this decline in the coefficient of exploitation, however, the net earnings \$15,500,000, furnish but a very moderate return, 1.72 % upon the total paid-up capital, including the government subsidies.

The Canadian railways have passed through a storm-&-stress period that has been accentuated & aggravated during the last few years. The slowly returning prosperity of both Canada & the U. S. promises to aid the railroads of Canada, & railway securities have risen, with increase in railroad profits. The suspicious decline in operating expenses within the last few years has occasioned a slight scepticism as to the actual extent of the increasing prosperity of the railways, & pessimistic views are held in London & elsewhere concerning the ability of such roads as the Grand Trunk to weather future storms. It seems probable, however, that the future progress of the Canadian railways will be continuous, if not rapid. The bright promises of 20 years ago have not been realized; population has increased slowly, & the great country to the south has robbed Canada of its immigrants. But the Canadians have built for the future, & the development of Manitoba & the west, & the increase of manufacturing in Quebec & Ontario, coupled with a conservative railway policy, doubtless will improve the railway conditions in Canada.—*Engineering Magazine.*

[In stating that the U.S. has robbed Canada of its immigrants, Mr. Weyl has, probably, spoken on hearsay. Of immigrants who came across the Atlantic, intending to settle in Canada, & then changed their minds & went to the U. S., the total number is very small. At one time there was a considerable movement from Quebec to the factory towns of the New England States, but the tide is now running the other way, & repatriation is the order of the day. From Ontario considerable numbers, principally farmers' sons, went to Minnesota, Dakota & other Northwestern States while those districts were being opened up by railways & before there was through all-rail communication with Manitoba & the Northwest Territories by the north shore of Lake Superior. But that also is a matter of ancient history, & to-day there is a considerable movement of settlers from nearly every Western State into the Canadian Northwest.—*EDITOR RAILWAY & SHIPPING WORLD.*]

At a meeting of the Ontario Lumbermen's Association in Toronto Aug. 2, it was agreed that the Board of the Association should see the G.T.R. & C.P.R. officials & endeavor to induce them to equalize the freight rates on soft & hard wood. To Toronto the rates now are 6½c. for soft wood & 7½ for hardwood; to Montreal 12½c. for soft wood & 15 for hard wood.