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Editor

Canadian Railways and Railway Statistics

Analysis of Physical and Financial Condition of Roads as a Whole — Traffic has Increased in Density as Well as in Volume—Large Additions to Gross Revenue Eaten up by Expenses—Capital Liabilities Indicate Railway Expansion since 1900

By W. T. JACKMAN, M.A.

THE recent publication of the *Railway Statistics* of the Dominion of Canada for the year ended June 30, 1918, gives a favorable opportunity for a review of the condition and operations of our railways during the last two decades, and especially during the past ten or twelve years; and I trust that I may be pardoned if I use the comparative method in analysis, since it is only in this way that the tendencies may be fully exemplified. It must be borne in mind that we are not now speaking of the conditions appertaining to a single railway system, but that we are endeavoring to get a view of the railways as a whole, so that we may see the most important elements in the entire mechanism of rail transportation and may thus be enabled to understand the directions in which the present forces are tending. In some respects the statistics of a particular railway system show the lines of development better than do the statistics of the *tout ensemble*; but, on the other hand, the conditions upon any one system may be open to the objection that as a subject of study they are not typical of all lines and that, therefore, we cannot generalize from one special case and form conclusions which are applicable to all. It will be desirable, then, to consider the picture as a whole, with all special particulars eliminated, in order to be able to gauge the trend of the chief factors in railway operation and finance.

The physical factors, while deemed by many as subordinate, are nevertheless very important in the consideration of the economies of operation. As it is of moment to know the details about the country through which railways run and the nature of the traffic, so it is important to know the full facts regarding the rolling stock with which this business is carried on. This equipment is constantly wearing out and being replaced; old cars and engines are being removed from the field and new ones are substituted. How much is spent in the repairing of cars and locomotives; how many of these are discarded year by year and replaced by others—these and many other details concerning the equipment of the railways are not included in the government statistics; and when the latter are revised in the course of another year, it is to be hoped that such facts will be given to the public.

Freight Car Equipment

The capacity and the numbers of freight cars are worthy of consideration and for the purpose of comparison we give the following table of freight cars in service:—

	1907.	1909.	1911.	1913.	1915.	1917.	1918.
Box	68,149	74,477	79,412	128,511	145,307	145,290	150,156
Flat	20,477	21,188	21,069	25,177	25,290	25,322	23,540
Stock	4,817	5,518	5,809	6,745	7,553	7,883	8,556
Coal	10,358	11,721	13,768	14,746	15,703	15,649	16,949
Tank	132	197	277	479	560	731	485
Refrigerator	1,917	2,466	2,807	3,911	4,713	5,234	5,893
Other	1,557	2,212	4,016	2,712	2,556	3,390	3,664
Totals	107,407	117,179	127,158	182,221	201,690	203,499	209,243

It will be noted that in each case there has been a constant increase in the numbers of cars employed. This is what

we should naturally expect in the case of a developing country which is showing a healthy growth. It will be of interest to note also in this connection the proportionate increase of each kind of car in service; and when we compute the percentage increase of each variety during this twelve-year period, we find that the number of box cars increased by 120 per cent., flat cars 15 per cent., stock cars 78 per cent., coal cars 64 per cent., tank cars 267 per cent., refrigerator cars 207 per cent., and other cars 135 per cent. The relative rates of increase will indicate the relative demands for equipment; and from these we see that the greatest demand is for specialized equipment, like tank and refrigerator cars, and then for box cars for the movement of the crops. The importance of oil, gasoline, etc., for the rapidly increasing numbers of engines, motor trucks, automobiles, tractors, etc., as well as of the perishable foodstuffs in the national economy comes out with clear emphasis from these figures. Moreover, the fact that this specialized equipment is much more costly than the other kinds of rolling stock shows the increasing burdens which the railways have had to bear in furnishing the facilities required for these rapidly expanding kinds of traffic.

Average Capacity Has Increased

But it is not alone the increase in the number of cars which must be taken into consideration; the progressive advance in the capacity of the cars must also enter into our calculation. The following table will be found instructive:—

Capacity (lbs.)	1908.	1910.	1912.	1914.	1915.
10,000	771	393	77	.....	1
20,000	1,995	1,245	742	457	445
30,000	3,227	2,412	3,277	3,118	2,916
40,000	25,855	20,858	14,695	9,781	8,036
50,000	1,135	1,029	3,237	827	600
60,000	69,416	76,610	89,512	117,984	116,541
70,000	230	217	292	281	328
80,000	9,790	11,927	21,951	63,133	64,191
90,000	.....	.....	.....	.....	.....
100,000	3,448	4,992	7,135	8,603	8,622
110,000	.....	.....	.....	.....	.....
120,000	.....	.....	.....	.....	.....
over 120,000	.....	.....	.....	.....	10

It is evident that there has been a steady progress in the use of larger and larger units; smaller cars are becoming fewer and larger cars becoming greater in number. Those which have a carrying capacity of 30,000 pounds or less are disappearing very rapidly from the field of active employment. They are too small to be economical; the tare is too great in proportion to the paying load which they can carry; and, moreover, the cost of construction of a 40,000-pound car is but little more than that of a 30,000-pound car, while the revenue from the car when fully loaded is much greater than that from the smaller car loaded with the same kind of freight. From every standpoint, therefore, there is economy in displacing the smaller by the larger cars. From the table it is clear that the standard car, of which