

52-D-51

C. 3

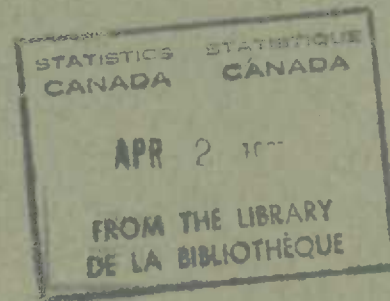
Published by Authority of the Hon. James A. MacKINNON, M.P.,  
Minister of Trade and Commerce

**CANADA**

**DEPARTMENT OF TRADE AND COMMERCE**

**DOMINION BUREAU OF STATISTICS**

**TRANSPORTATION & PUBLIC UTILITIES BRANCH**



**INDEX NUMBERS**

**OF**

**RAILWAY FREIGHT RATES**

**1913 -1938**



**OTTAWA**  
1938

Price 25 cents



**DOMINION BUREAU OF STATISTICS**  
**TRANSPORTATION AND PUBLIC UTILITIES BRANCH**  
**OTTAWA**

---

Dominion Statistician, R.H. COATS, LL. D., F.R.S.C., F.S.S. (Hon.)

Chief, Transportation and Public Utilities Branch, G.S. Wrong, B.Sc.

---

INDEX NUMBERS OF RAILWAY FREIGHT RATES

In 1936 the Dominion Bureau of Statistics issued its first report on index numbers of freight rates, covering rates from 1913 to 1933. A second report was issued early in 1938 revising the data and bringing them up to 1936, and this third report brings them up to August, 1938.

The earlier reports contained brief summaries of the principal general changes in rates and an explanation of the method of computing the index numbers. The rates and index numbers of the second report have been checked and revised and the revisions in this report are due to corrections and not to any change in routes selected or in method.

The revenue per ton mile, computed by dividing the total freight revenue of all railways by the total ton miles of all freight carried, is sometimes used as an index of freight rates but when the relative tonnages of high and low class freight fluctuate widely from year to year it is not a reliable index of freight rates.

Grain and grain products are carried in Canada at relatively low rates. In 1929 the tonnage of grain and grain products carried amounted to 16 per cent of the total revenue freight carried by all railways. In 1932 the percentage increased to 27 per cent of the total. Because of the long haul of grain the ratios of the ton miles would show an even greater spread. For these two years the average revenue per ton mile for all freight dropped from 1.099 cents in 1929 to 0.937 cent, or by 16 per cent. The change in rates had only a minor effect on this average, the change in the consist of the traffic being the main factor.

The method adopted by the Bureau in computing these freight rate index numbers was as follows: first, a list of commodities was selected representative of the seventy-six commodity classes for which the railways report tonnage carried each year; second, a selection was made of hauls for each of these commodities; and third, a compilation was made of the freight rates for each of the selected hauls for the years 1913 to date from the tariffs filed with the Board of Transport. On the assumption that the list of commodities was a fair sample of all freight carried by the railways, that the selected hauls were representative of the actual movement of these commodities, and that the changes in rates on these would be fairly representative of the changes in rates of all freight, weights were given each series and index numbers computed. The selections of commodities and hauls were made with the aid of various returns collected by the

Bureau, railway officials having first hand knowledge of freight movements, and other sources available. Carload commodity rates were used wherever such were in effect. In a number of cases, as a result of commodity rates not being in effect in the earlier years, it was necessary to use the class rates until such time as the lower commodity rate was established. Where commodity rates had not been established in the earlier years and it was considered class rates would have produced distorted trends interpolations of the commodity rates were used.

The rates for the various selected hauls for each commodity were combined by taking the geometric mean of these rates. The geometric mean is the "nth" root of the product of "n" factors and is less than the arithmetic mean of the same factors. The next step was to combine these geometric means representing the freight rates for each commodity. This was done by taking the weighted arithmetic mean. The weights used were the tonnages reported by the railways for 1926 and index numbers for the five commodity groups, "Agricultural Products", "Animal Products", "Mine Products", "Forest Products", and "Manufactures and Miscellaneous" and for the total of all freight were computed using the 1926 data as equal to 100 as a base.

Unquestionably all hauls should be weighted so that changes in rates for hauls with heavy traffic would have a greater influence on the group index than changes in rates for hauls with light traffic. The difficulty has been to secure data on the volume of traffic moving over the various routes. From the Bureau's reports of production and distribution of grain and coal, however, sufficient data were available to compute fairly satisfactory weights for the principal movements of these commodities, which, in tonnages are by far the most important commodities carried by the railways.

Rates on grain in certain sections of the country are not under the jurisdiction of the Board of Transport and such rates have trends that differ somewhat from rates under the jurisdiction of the Board. Consequently a proper weighting or selection of routes for grain was more important than for other commodities. These exceptions are the rates on grain in the west controlled by the Crow's Nest Pass Agreement.

Coal constitutes between a fifth and a quarter of the total revenue tonnage carried by the railways and consequently the freight rates for the individual hauls of coal also should be weighted as carefully as feasible.

Government subsidies on both eastern and western coal affect the volume of the shipments but not the rates because the subsidies are based on the published railway rates. The reduction of twenty per cent in railway rates under the Maritime Freight Rates Act, 1927, was also a subsidy to shippers, but the reduction applied to all commodities and its effect is reflected in the index numbers.

The revisions mentioned above had very little effect on the index numbers for all freight, especially since 1918. The trend since 1922 has been fairly steadily downward with a very slight upturn in 1938.

The chart on page 4 indicates the sharp rise caused by the general increases after the World War, reaching a peak on September 13, 1920, and the almost equally sharp decline in 1921 and 1922 due to general rate reductions. The table following shows the index numbers of freight rates for each of the five groups and the total, and the table on page 5 shows the commodities for which hauls and rates were compiled and the weights used.

-3-

**FREIGHT RATE INDEX NUMBERS**  
(Revised)

1926 = 100

	Agricultural Products	Animal Products	Mine Products	Forest Products	Manufactures and Miscellaneous	Total
Commodities	10	9	9	4	16	48
Rates	112	92	88	49	159	500
<u>Date</u>						
1/ Jan. 1, 1913	84.8	65.7	71.9	65.9	60.4	68.9
Sept. 1, 1914	83.4	65.9	72.7	63.5	60.0	68.4
Dec. 31, 1915	83.4	66.0	69.3	63.5	59.9	67.7
2/ Dec. 1, 1916	84.2	67.6	70.8	64.0	60.8	68.7
Dec. 31, 1917	85.5	68.6	71.4	65.4	61.5	69.6
3/ Mar. 15, 1918	94.3	78.1	81.0	75.3	69.8	78.5
4/ Aug. 12, 1918	110.4	90.3	97.4	86.4	85.9	93.9
Dec. 31, 1919	110.4	90.3	97.4	89.4	85.6	94.0
5/ Sept. 13, 1920	145.3	123.8	114.7	124.5	116.8	124.1
6/ Jan. 1, 1921	143.4	116.8	112.5	117.5	113.1	120.4
7/ Dec. 1, 1921	130.1	106.4	110.4	110.4	104.5	112.1
8/ Aug. 1, 1922	103.0	102.7	103.3	104.2	102.5	103.0
Dec. 31, 1923	101.2	100.3	100.6	101.0	102.6	101.6
Dec. 31, 1924	101.2	100.2	100.6	101.3	100.2	100.6
Dec. 31, 1925	100.1	100.2	100.5	101.3	100.0	100.3
9/ Dec. 31, 1926	100.0	100.0	100.0	100.0	100.0	100.0
July 1, 1927	99.1	100.0	98.7	96.9	99.6	99.1
Dec. 31, 1928	99.1	99.2	98.0	96.9	99.6	98.9
Dec. 31, 1929	98.6	99.2	97.1	96.9	99.0	98.4
Dec. 31, 1930	98.6	99.0	96.0	96.9	99.0	98.1
Dec. 31, 1931	97.3	98.7	96.0	96.9	98.7	97.7
Dec. 31, 1932	97.8	99.6	95.6	96.9	97.3	97.2
Dec. 31, 1933	97.0	99.2	94.9	95.3	96.8	96.5
Dec. 31, 1934	96.2	99.2	93.7	95.3	93.9	94.9
Dec. 31, 1935	95.7	98.2	95.3	94.5	93.8	94.9
Dec. 31, 1936	94.5	98.2	95.5	94.5	93.5	94.6
Dec. 31, 1937	94.9	98.5	95.6	94.9	92.4	94.3
Aug. 1, 1938	96.1	100.0	97.2	94.9	93.2	95.3

- 1/ Western Rates Case.
- 2/ Eastern Rates Case.
- 3/ Fifteen per cent Case.
- 4/ Twenty-five per cent Case.
- 5/ Forty per cent Case.

- 6/ Five per cent Reduction.
- 7/ Ten per cent Reduction.
- 8/ General Freight Rate Investigation.
- 9/ Maritime Freight Rates Act.

INDEX  
NUMBERS

150

130

110

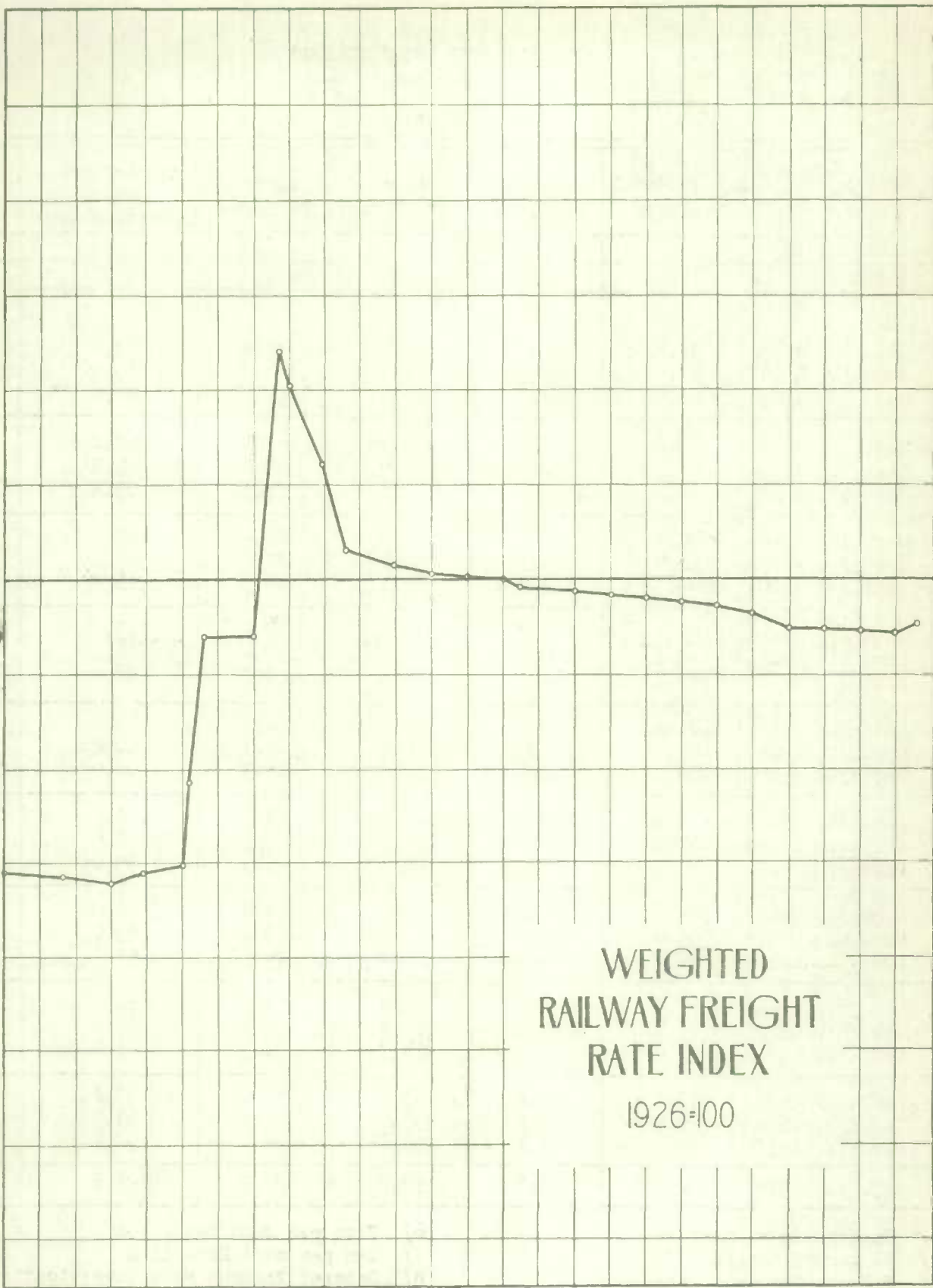
100

90

70

50

30



WEIGHTED  
RAILWAY FREIGHT  
RATE INDEX

1926=100

1913

1915

1920

1925

1930

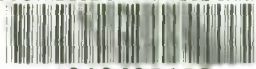
1935

1938

TABLE OF COMMODITIES AND WEIGHTS USED

AGRICULTURAL PRODUCTS		ANIMAL PRODUCTS		MINE PRODUCTS		FOREST PRODUCTS		MANUFACTURES AND MISCELLANEOUS	
Wheat .....	12.65	Horses .....	0.09	Anthracite Coal ...	5.26	Logs, Posts, Poles and Piling .....	1.40	Petroleum Products ...	2.40
Corn .....	0.68	Livestock .....	1.15	Bituminous Coal ...	13.64	Cordwood and Firewood .....	2.00	Sugar .....	0.60
Oats .....	1.62	Dressed Meats (fresh)	0.46	Lignite Coal .....	2.50	Pulpwood .....	3.80	Iron, pig .....	0.37
Barley .....	1.17	Dressed Meats, (cured) and other packing house pdts..	0.53	Coke .....	1.32	Lumber, Timber, Shingles, Box, Crate & Cooperage Material .....	6.40	Iron and Steel Products .....	1.47
Rye .....	0.26	Eggs .....	0.15	Ores & Concentrates	3.78			Cement .....	1.10
Flax .....	0.16	Butter .....	0.17	Sand and Gravel ...	4.70			Bricks and Artificial Stone .....	0.88
Flour .....	2.21	Cheese .....	0.11	Stone .....	1.50			Lime and Plaster .....	0.40
Hay and Straw ...	0.88	Wool .....	0.05	Asphalt .....	0.23			Sewer Pipe and Drain Tile .....	0.10
Apples .....	0.28	Hides and Leather ...	0.16	Salt .....	0.34			Agricultural Implements .....	0.40
Potatoes .....	0.63							Automobiles .....	1.68
								Furniture .....	0.09
								Fertilizers .....	0.31
								Wood Pulp .....	1.50
								Newsprint .....	2.50
								Fish (fresh, frozen and cured) .....	0.11
								Canned Goods .....	0.36

STATISTICS CANADA LIBRARY  
BIBLIOTHÈQUE STATISTIQUE CANADA



1010435192





