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INDEX NUMBERS
OF
RAILWAY FREIGHT RATES

1912-1933

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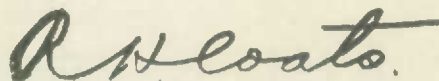
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P R E F A C E

Index numbers measuring changes in wholesale and retail prices of commodities, prices of services, rates of wages, etc. are compiled in all the principal countries, but index numbers of railway freight rates have been practically non-existent. Consequently information as to the general level of freight rates in any country, compared with rates at some previous period, is almost impossible to secure. To fill this gap in Canadian statistics the Dominion Bureau of Statistics began some time ago the computation of an index of railway freight rates by compiling for a series of years the rates charged for a representative list of commodities and for selected hauls and using these rates as a basis. A considerable amount of work was entailed, and owing to staff limitations, the task is only now completed.

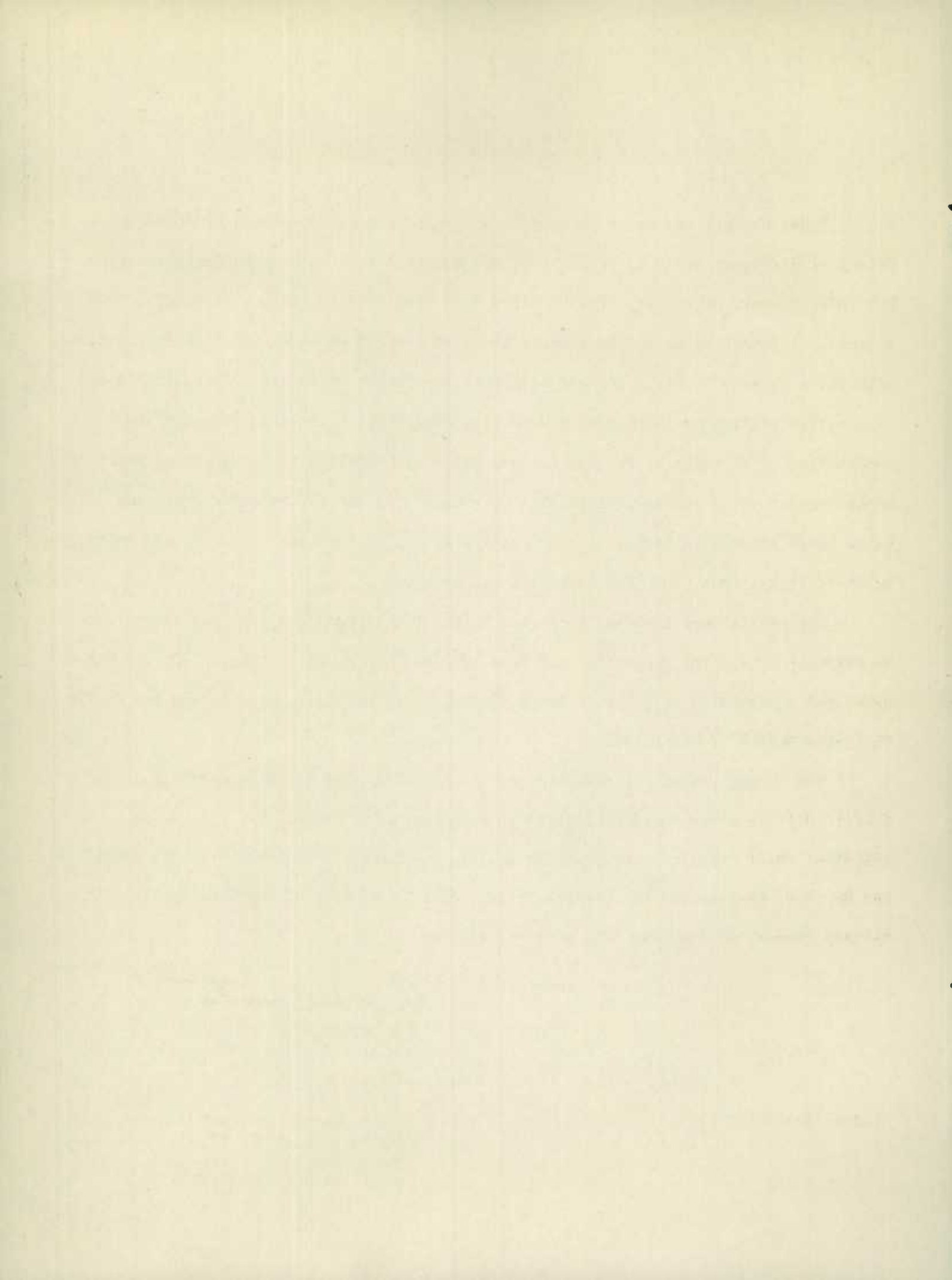
The preliminary work was performed by Mr. S.L.T. McKnight, who has since been superannuated, and the report has now been completed by Mr. R.G. Bangs, B.Sc., A.M.E.I.C., under the supervision of Mr. G.S. Wrong, B.Sc., Chief of the Transportation and Public Utilities Branch of the Bureau.

The Bureau gratefully acknowledges the assistance of Mr. W.E. Campbell, Chief Traffic Officer of the Board of Railway Commissioners for Canada, Mr. G.A. Brown, Assistant Chief Traffic Officer of the Railway Commission, and members of his staff, and Mr. W.B. Lanigan who was General Freight Traffic Manager of the Canadian Pacific Railway Company at the time this work was started.



R.H. COATS,
DOMINION STATISTICIAN.

Ottawa, March 18, 1936.



DEPARTMENT OF TRADE AND COMMERCE
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

Railway freight rates are the prices which railways charge for the service performed in transporting freight from place to place. The prices are different for different classes of freight, for different distances, and in different parts of the country; consequently the total number of individual prices or rates is enormous.

There are continuous changes in individual rates and also broad movements up and down, similar to changes in wholesale and retail prices of commodities, but, because of the complexity of railway freight rates, satisfactory measures of these changes are difficult to compute. Because of the difficulties in computing an index with a fixed base and fixed weighting over a number of years, the average revenue per ton mile has been quite generally used to measure the fluctuations in freight rates. The chief weakness in this average as an index number is the influence of large changes in the nature of the freight carried irrespective of changes in the freight rates. This is particularly noticeable in Canada where a large grain harvest tends to lower the average revenue per ton mile because of the relatively low rate charged for grain, the long haul and the large percentage grain is of the total freight carried.

It is necessary to use some index of freight rates when making comparisons of freight rates with prices of commodities or of other services, and in this report the Bureau has attempted to compute an index which will not have the inherent weakness of the average revenue per ton mile and which will indicate the relative level of freight rates for various classes of freight and for all rates considered as a whole for a series of years.

The schedules of freight rates, including mileage, class rate scales, general and special commodity rates, are worked out by the railways and filed with the Board of Railway Commissioners which has very broad powers of rate regulation. The Railway Board modifies, adjusts and corrects rates, it protects the public against discriminatory and unreasonable charges and practices and endeavours to keep the rates in the several sections of the country so related to each other as to enable all sections of the country, regardless of geographical location, to enjoy as fully as may be their special economic advantages.

Classification is the initial step in rate construction. The Canadian Freight Classification No. 18, issued July 17, 1929, is the official publication of the several carriers containing the class ratings of all articles and the special rules, governing billing of freight, packing, payment of charges, minimum weights for carload shipments, loading and unloading regulations, mixed carload shipments and other rights and duties of the shipper, consignees and carriers. There are approximately 15,000 articles

listed in the Canadian Freight Classification and in order to reduce the number of rates which must be made the different articles are grouped into ten classes of freight. The Railway Board must approve the classification for it is on the basis of this classification the freight tariffs are issued. The Board may direct the carriers to change the classification of any article or articles and remove them to a lower or higher classification according to its decision providing that goods shall not be taken from a lower to a higher classification without sufficient notice having been given in the Canada Gazette. The carriers are required to give thirty days' notice of any advance in rates and three days' notice of a reduction in rates except in the case of competitive rates which, owing to the exigencies of competition, are urgently required to be brought into immediate effect without previous notice to the Railway Board, and which may be acted upon before filing with the Board. The railway company must forthwith file a tariff containing such rates together with a clear statement of reasons for so acting.

First Class includes commodities and manufactured products of a bulky nature and of high value, such as passenger automobiles set up, loose or in packages, carload minimum weight 10,000 lbs. Second Class comprises those commodities which are slightly less bulky or valuable but moving in relatively greater tonnage, such as certain kinds of musical instruments, including pianos and radio receiving sets. Third Class comprises the ordinary merchandise commodities in compact packages of comparatively great weight and cubical measurement moving in less-than-carloads. Fourth Class covers articles of light weight and bulky dimension, fragile in character, of comparatively high value and moving in low minimum carloads. Fifth Class includes general merchandise moving in carload, generally speaking, of the same character that would take third class rate in less-than-carloads. This class covers a substantial tonnage and is the basis upon which the classification is constructed. Sixth Class, as a rule, covers flat car merchandise. Seventh Class includes railway equipment and supplies, Eighth Class includes cereals and cereal products, potatoes and vegetables, Ninth Class is livestock, and Tenth Class covers such products as timber, lumber, coal, stone in the rough, brick, etc. The first six classes may be termed as merchandise while the last four as commodity classes. This classification is the basis for the standard freight class tariffs which specify the maximum mileage rates which may be charged for each class of freight contained in the official Classification. Provision is also made in the classification for two different ratings of many commodities, one on the basis of less-than-carload (L.C.L.) quantities and the other upon carload (C.L.) quantity. When a commodity is shipped on the L.C.L. basis it is given a higher rating and, of course, is charged a higher rate than when it is shipped C.L.

For freight rate purposes Canada is divided into two main divisions, east and west, the line of demarcation being through the head of the Great Lakes. The rates in the eastern division are, on the whole, lower than in the western division, the principal governing factors accounting for the differences being:- water competition, greater density of traffic, and better balanced traffic in the eastern division; the last two factors affect the operating costs.

Standard freight class tariffs specify the maximum mileage rates which may be charged for any one of the ten classes of freight in the Canadian Freight Classification and are the charges used in the absence of special tariffs quoting lower rates. Since most of the traffic moves on lower rates, the standard mileage class rates are not very important in relation to the total volume of traffic handled.

In the freight structure of Canada each railroad has its standard mileage class freight tariffs and, as the geographical limits of the territories are very similar, the

Canadian Pacific Railway tariffs are used as an illustration.

(1) Eastern Standard Mileage Freight Tariffs.

(a) C.P.R. No. E-1, local mileage freight table No. 1 which applies between stations Sault Ste. Marie, Windsor, Ontario, and east thereof, 2,100 miles.

(b) C.P.R. No. E-1, local mileage freight table No. 2 applies between stations Sudbury, Ontario, and west to Fort William, Ontario (inclusive); also between stations west of Sudbury, Ontario, to and including Fort William, Ontario, and stations Sault Ste. Marie, Windsor, Ontario, and east, 3,000 miles.

(c) C.P.R. No. 34, special mileage freight tariff which applies between C.P.R. stations in the Province of New Brunswick, 300 miles, (The C.N.R. tariffs corresponding to this tariff apply to that section of the country east of Levis and Diamond Junction, Quebec, to the Maritime Provinces, comprising what is designated as the "preferred territory" under the Maritime Freight Rates Act (17-18 Geo. V, C.44).)

(2) Western Standard Mileage Freight Tariffs.

(a) C.P.R. No. W-1, Section No. 1, "Prairie" Standard applies (local and interchange) between stations in the provinces of Ontario (Port Arthur, Ontario, and west thereof), Manitoba, Saskatchewan, Alberta (Canmore, Alta. and east thereof), and British Columbia (Crow's Nest, B.C. and east thereof); also on interchange traffic between stations defined above and stations east of Port Arthur, Ontario, to Sudbury, Ontario, 2,100 miles.

(b) C.P.R. No. W-1, Section No. 2, "B.C. Lakes" Standard applies locally between ports of call on the Arrow, Slocan, Kootenay and Okanagan Lakes and the Columbia River. These rates do not apply where a rail haul intervenes and the maximum mileage expressed in the tariff is 150 miles. It may be mentioned here that there is no "B.C. Lakes" Standard for the C.N.R. which has only the "Prairie" and "Pacific" Standards in the western division.

(c) C.P.R. No. W-1, Section No. 3, "Pacific" Standard applies (local and interchange) between stations in the provinces of British Columbia and Alberta (Canmore, Alta. and west thereof); also applies on interchange traffic between rail stations and ports of call in British Columbia defined in Section No. 2 and also on interchange traffic between rail stations and ports of call in British Columbia and stations as defined in Section No. 1. The maximum of the mileage scale is 2,200 miles.

The following table shows the rates for a distance of 100 miles throughout the standard mileage territories of the Canadian Pacific Railway.

Classes as per Canadian Freight Classification
(Rates in cents per Hundred Pounds)

Territory	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
"Preferred"	52	46	39	33	26	24	20	22	20	17
Sault Ste. Marie, Windsor and East thereof	65	58	49	41½	32	29	24	25	24	19½
Sudbury and West to Fort Wm.	86½	72	58	43	34½	30½	24	22	24	19½
"Prairie"	69	57	47	35	32	27	21	23	26	18
"B.C. Lakes"	69	57	47	35	32	27	21	23	26	18
"Pacific"	81	68	54	39	36	30	23	26	30	20

In the division between Sudbury and Fort William the rates are the highest of all eastern rates; the "Prairie" Standard is higher than those of the two most easterly divisions, but lower than the Sudbury and Fort William division. The "B.C. Lakes" Standard mileage rates are the same as the "Prairie" Standard and the "Pacific" Standard mileage rates are the highest of all western rates. The Sudbury and Fort William Standard mileages are higher than the "Pacific" Standard mileage rates for the first four classes and the sixth and seventh classes.

It is worthy to note at this particular point the relation of classes in eastern and western Canada. The fourth class rate of the Sudbury and Fort William, the "Prairie," "B.C. Lakes" and "Pacific" standard mileages is approximately 50 per cent of the first class rate, while second and third classes are approximately $83 \frac{1}{3}$ and $66 \frac{2}{3}$ per cent respectively of the first class rate. In standard mileage tariffs for stations Sault Ste. Marie, Windsor and east thereof and the "Preferred" territory the fifth class is 50 per cent of the first class with second, third and fourth classes approximately $87 \frac{1}{2}$, 75, and $62 \frac{1}{2}$ per cent of the first class. Below the fifth class in eastern Canada and the fourth class in western Canada the rates are scaled down without regularity until the tenth class is reached. This same relativity exists in the "class," "town" and "distributing class" rates which are explained later in this report.

Mileage rates, other than standard mileage rates, are applicable to many commodities. For example, in the case of building materials, like stone, brick, lime, sewer pipe and drain tile, the tariffs in eastern Canada provide for specific mileage rates which are lower than standard mileage or regular class rates.

Class rates are lower than standard mileage class rates and are in force in a great number of class rate territories throughout Canada. Class rates for the most part apply to L.C.L. traffic and some C.L. traffic of the higher grades. It is the most expensive traffic to handle; however, only a relatively small portion of the total tonnage moves upon class rates.

Of the special class tariffs in the east which are lower than the standard mileage maximum, the "town" tariffs are perhaps the most important because of the greater bulk of higher classes of freight moving within the thickly populated centres of Ontario and Quebec. These "town" tariffs have increased until now there are approximately 150 cities and towns in Ontario and Quebec on the Canadian National Railway lines which have "town" tariffs. These "town" tariffs apply in both directions, and as a consequence they help to maintain the whole class rate structure considerably lower than the standard mileage basis.

Another important class rate structure in the east is the system of rates between points west of Montreal and points east of Montreal in the provinces of Quebec, New Brunswick, Nova Scotia and Prince Edward Island. In the matter of rates between Ontario and the Maritime Provinces the St. John rate acts as a blanket for every other place in the province of New Brunswick. Also there is the class rate structure between the territory west of Montreal and that east of Quebec City and Levis, particularly the Maritime Provinces. The basis of the class rate structure between Ontario and the Maritime Provinces is the Toronto to St. John rate. Points west of Toronto take rates which are fixed amounts above the Toronto rates and at the Maritime end St. John is the pivotal point and other groups in the Maritime Provinces bear a fixed relation to the St. John rates. As stated in the foregoing there are three standard mileage tariffs in the territory west of Lake Superior, the two most important being the Prairie Standard between the Head of the Lakes and Canmore and the Crow's Nest on the C.P.R. and Edson, Alberta, on the C.N.R. and the Pacific Standard in effect from the western boundary of

the Prairie standard to the Pacific coast. These standard mileages constitute the basis of the western "town" tariffs or what is more commonly known as "distributing class" rates. In the east the rates as quoted in the tariffs apply in both directions between the distributing centre and the point of destination and the origin of the shipment, while in the west they apply only one way or from the distributing centre to the destination of the shipment. Also these "distributing class" rates differ from the "town" tariffs of the east in that the rates are not joint rates and apply only to points on the same railway. The most important centres in the west which enjoy these "distributing" rates are: in Manitoba Winnipeg, Portage la Prairie and Brandon; in Saskatchewan Regina, Moose Jaw and Saskatoon; in Alberta Calgary, Edmonton, Lethbridge and Medicine Hat; and in British Columbia Nelson, Kamloops and Fernie. Coast points like Vancouver, New Westminster and Victoria are somewhat different from interior points in that they possess the advantages of ocean connections and low rates to other countries of the world with the result that the carriers issue special and competitive tariffs, naming class and commodity rates between these points and other stations in Canada.

(Port Arthur and west thereof). With regard to the class rate structure between Ontario and western Canada, the whole of the territory between and including Montreal on the east and Windsor, Sarnia and Sault Ste. Marie on the west and between and including Niagara Falls on the south and Sudbury on the north, is blanketed; consequently the rate between any point in this territory and Fort William or west thereof is the same. The blanketing of this great expanse of territory is a result of the effects of water competition on the Great Lakes. Class rates between Montreal and Western Canada are based on a Montreal Fort William arbitrary plus the local rate between Fort William and the point of destination. Similarly from and to points east of Montreal the rate is obtained by adding an arbitrary to the Montreal rate. It is by this procedure that class rates between the east and west are built up. In addition there are class tariffs between Fort William and Port Arthur and west thereof; also from Vancouver and other British Columbia coast points to points east thereof which are based on constructive mileage, 130 miles less than the actual mileage. While the class rate structure is very complex only a relatively small tonnage moves on the class rates.

By far the greatest tonnage of traffic moves on commodity rates. These rates may be mileage, general, special or competitive. It is quite probable that approximately 75 per cent of the total traffic moves on commodity rates and in British Columbia the percentage may be as high as 90. Most of this commodity rate traffic is C.L.; the amount of L.C.L. which moves on commodity rates is very small. In common with class rates, commodity rates may be local, joint or export. Commodity rates are generally put into effect to secure a lower rate for those commodities which move in very large volume and on account of geographical location have to meet the exigencies of competition. The Canadian carriers are forced to meet the competition of the United States carriers on commodities for export via Atlantic Sea board points, with the result that Montreal, St. John and Halifax are made competitive with the eastern sea board points of the United States. Commodity rates, as a whole, have no definite relation to class rates, also the distance hauled is not an important factor. The entire commodity rate structure seems to be built on the theory of allowing the producing areas of basic commodities to reach their markets upon some equality of terms. Economic demands and competition seem to be the controlling feature of the rates charged. The lumbering, mining, fishing and fruit industries of British Columbia, the grain, livestock, coal and flour milling of the central Prairie Provinces, the highly developed manufacturing provinces of Ontario and Quebec and the coal, fishing, lumbering, sugar, fruit and vegetable industries of the Maritime Provinces are moved largely on commodity rates.

In recent years, as a result of the high and efficient development of the motor transport aided by a system of surfaced highways, the movement of freight by trucks has increased very rapidly. As class rates are generally based upon distance and they apply more generally on L.C.L. traffic, which is the most expensive traffic to handle, the motor transport has captured a considerable percentage of this traffic. To meet the effect of this motor truck competition the Canadian carriers introduced in May, 1931, special rates. Further on May 1, 1935, the carriers introduced a pick-up and delivery service with no cartage charges in parts of Ontario and Quebec to meet the motor truck competition on L.C.L.

One of the important factors in western rates is the Crow's Nest Pass Agreement of 1897. Under an act to authorise a subsidy for a railway through the Crow's Nest Pass (60-61 Vic. C.5), the Canadian Pacific Railway received a subsidy and in return the company made a reduction in the general rates of certain classes of merchandise westbound from and including Fort William and on all points east of Fort William on the company's railway to all points west of Fort William on the company's main line; also a reduction in the company's rates on grain and flour from all points on its main line, branches and connections west of Fort William to Fort William, Port Arthur and all points east, of three cents per hundred pounds, to take effect one and one-half cents per hundred pounds on or before the first day of September, 1898, and an additional one and one-half cents per hundred pounds on or before the first day of September, 1899.

The foregoing rates were the maximum rates which could be charged under this agreement. However, an agreement executed in 1901 (See Manitoba Statutes 1901, C.39.) between the Manitoba Government and the Canadian Northern Railway Company, known as the "Canadian Northern Railways Agreement" or in short title, the "Manitoba Agreement," had a very definite effect on the Crow's Nest Pass Agreement on grain and flour rates eastbound to Fort William. Under the "Manitoba Agreement" the railway company in consideration of the provincial government's guaranteeing its bonds and giving it a lease of the Northern Pacific and Manitoba Railway, including several lines of railways owned and operated by it, agreed to:-

- (a) reductions amounting together to more than four cents per hundred pounds on the tariff rates in force on the date of the said indenture for the carriage of grain from Manitoba to a Lake Superior port, and
- (b) reductions amounting together to more than fifteen per cent of the tariff rates in force on the date of the said indenture for the carriage of all other freight from and to points in Manitoba and from and to points in Manitoba to and from Fort William or Port Arthur.

At the time of this agreement the rate on wheat from Winnipeg to Fort William was 14 cents per hundred pounds and by virtue of this "Manitoba Agreement" the rate was reduced by two cents per hundred pounds and a little later a further two cents per hundred pounds, or the total reduction of four cents per hundred pounds. When the Canadian Pacific Railway as a competitor agreed to be bound by this Manitoba scale of rates the Canadian Northern was allowed one cent more so that the grain rate from Winnipeg to Fort William became eleven cents per hundred pounds, or three cents below the maximum rates of the Crow's Nest Pass Agreement. The Canadian Pacific Railway also voluntarily reduced its rates on grain from Alberta and Saskatchewan points to Fort William.

In June, 1916, by its decision in the "Eastern Rates Case" (B.R.C. G.O. 133), the Railway Board ordered that east of, but including, Port Arthur there should be an increase of 2 cents per hundred pounds on first class freight and 1 cent per hundred pounds on fifth class, the rates on the other classes being scaled proportionately as shown in the standard tariffs for mileages covered by any particular movement excepting

the through rates to and from the Maritime Provinces and also for the Quebec stations of the Canadian National east of Levis. These increases amounted to approximately 5 per cent of the rates which had been in effect. The commodity rates were considered separately, but no general changes were introduced as was the case with class rates.

On March 15, 1918, on account of the financial exigencies of the railways, the Railway Board considered that a 15 per cent increase requested by the railways should be allowed. However, there was difficulty in applying this increase in western Canada for the carriers, through the Western Rates Case in 1914, had already obtained a substantial increase of a little less than $6\frac{1}{2}$ per cent in the five classes of general merchandise and to increase these rates by a full 15 per cent would make the total average approximately $21\frac{1}{2}$ per cent. The Board, therefore, allowed 15 per cent on the through rate so far as the territory west of Port Arthur was concerned, but on the eastern balance of the through rate the increase was limited to 10 per cent. Conditions in British Columbia and adjacent territory in Alberta, comprising the Pacific District, were different; generally speaking the rail rates were on a higher basis than the Prairie territory. Consequently, to avoid increasing materially the spread between Pacific and Prairie tariffs, the rates in the Pacific territory were increased, with few exceptions, only 10 per cent. Special commodity rates were provided for particular commodities such as coal, sand, crushed stone and gravel. Further in the west grain was the chief traffic and the Crow's Nest Pass Agreement of 1897 would not permit a general increase of 15 per cent to the Head of the Lakes. However, a flat increase of 2 cents per hundred pounds with a maximum of the Crow's Nest Pass rate was allowed on grain and grain products, which was close to 10 per cent of the average western rate. Rates on carload grain and grain products in the west, other than to the Head of the Lakes and intermediate points, which were held down by the terminal rates and also on the same commodities from Port Arthur and Fort William eastward, as well as on carload grain and grain products in eastern Canada, were advanced a flat 15 per cent, subject to a maximum increase of 2 cents per hundred pounds over existing rates. Transcontinental class rates were increased 10 per cent, but no increases were allowed in transcontinental commodity rates because they were directly competitive with United States rates. By the increases granted (B.R.C., G.O. No. 213) December 26, 1917, on the great bulk of the traffic in the west, the rates were increased approximately 10 per cent on the average, while the eastern rates in general were increased 15 per cent and became effective March 15, 1918, with the exception of the increased rates on grain and grain products which were made effective June 1, 1918.

The next change in the rate level came later in the same year as a result of the "McAdoo Award" which increased the wages of railway employees by substantial amounts. The rates worked out by the Railway Board and put into effect August 12, 1918, by O.C. No. P.C. 1863, were as follows:

- (a) Territory east of Fort William all class rates were increased 25 per cent and commodity rates according to a definite schedule while the rates on commodities not enumerated were increased 25 per cent.
- (b) In the territory west of Fort William all class rates were increased 25 per cent calculated on the tariffs in force before March 15, 1918, when the 15 per cent increase was put into effect but the increases by the Railway Board since that date were to be cancelled. In other words, in respect of Western Canada, the 15 per cent increase of March 15, 1918, was to be included in the 25 per cent increase of August 12, 1918. Commodity rates were also increased the full 25 per cent calculated on the tariffs in force prior to March 15, 1918.

By virtue of this order rates were established for the first time on a higher scale than the Crow's Nest scale of 1897.

The next change in the rate level occurred on September 13, 1920 (B.R.C., G.O. No. 308), as a result of the "Chicago Award" which was made to offset the increase in the wages of various classes of railway workers in the United States. The changes in the rate level at this time were:

- (a) Until December 31, 1920, there should be a general increase of 40 per cent in eastern freight rates and 35 per cent in western freight rates.
- (b) Beginning January 1, 1921, these freight rates (a) were reduced to 35 per cent in the east and 30 per cent in the west.

A variation was made in the case of such commodities as coal, which was increased 10 cents per ton on all rates up to 80 cents per ton, 15 cents on all rates 80 cents to \$1.50 per ton, and 20 cents on all rates over \$1.50 per ton. Cordwood and fuel wood were increased 10 per cent and no increase was allowed on milk.

During the year 1921 the carriers made voluntary reductions on grain rates from Fort William and other Lake Ports to Montreal and the Atlantic Seaboard for export and also for domestic consumption in eastern Canada. On livestock a reduction of approximately 25 per cent of the existing rates was made. Reductions were also made on hay in eastern Canada, on lumber from British Columbia to eastern points, and on a number of other commodities.

In July, 1921, a reduction was made in the wages of railway workers approximately 10 per cent and as a result of an investigation by the Board of Railway Commissioners the following changes were made effective December 1, 1921:

- (a) In the territory east of and including Port Arthur, Fort William and Westfort freight rates were based upon 25 per cent over rates in effect prior to September 13, 1920.
- (b) In the territory west of and including Port Arthur, Fort William and Westfort freight rates were based upon 20 per cent over rates in effect prior to September 13, 1920.
- (c) On through rates between eastern and western Canada the above named percentages were to apply to eastern and western factors respectively.
- (d) Transcontinental commodity rates were established on a basis of approximately 23 per cent over the rates in effect prior to September 13, 1920.

On July 5, 1922, (B.R.C., G.O. 366) the Crow's Nest Agreement was restored. It had previously been suspended by Parliament in 1919 for a period of three years. By the restoration of this agreement the eastbound rates on grain and flour were restored to the level of 1897. The Board also ordered a reduction of approximately $7\frac{1}{2}$ per cent on basic commodities which still remained $12\frac{1}{2}$ per cent above the basis of September 13, 1920, in western Canada and $17\frac{1}{2}$ per cent in eastern Canada. Rates on coal, other than anthracite and westbound coal from the Head of the Lakes, which had been increased by flat amounts, were restored to the September 12, 1920, level.

The effect on grain rates of the various orders since the Crow's Nest Pass Agreement in 1897 is illustrated below by the rates on three hauls, viz., from Winnipeg, Regina and Calgary to Fort William.

GRAIN RATES IN CENTS PER 100 POUNDS TO FORT WILLIAM

From	1897	1901	June 1918	August 1918	September 1920	January 1921	December 1921	July 1922-35
Winnipeg	14	10	12	14	19	18	17	14
Regina	20	18	20	24	32.5	31	29	20
Calgary	26	24	26	30	40.5	39	36	26

In 1922 a reduction was made in the Pacific standard mileage tariff. Previous to 1914 for 220 miles in the mountains each mile was counted as the equivalent of two prairie miles and beyond that up to the limit of 750 miles (the longest local east and west movement in British Columbia) the mileage was weighted on a somewhat lower but irregular basis. Under the Railway Board's judgment in the Western Rates Case of 1914 a basis of one mile Pacific standard equivalent to one and one-half miles Prairie standard was adopted and in 1922 this was further reduced to one mile Pacific standard equivalent to one and one-quarter miles Prairie standard.

A very important reduction was made on grain and flour from the Prairie Provinces to Vancouver for export the latter part of 1923. The rates originally established by the Canadian Pacific Railway on grain and grain products to Vancouver for export were based on the grain rates to Fort William, the basis, roughly (and with some exceptions) being that from its main line and southern branches rates to Fort William were applied to points of corresponding mileage to Vancouver, but with the addition of a constructive mileage for mountain haul. From north main line stations and northern branches of the Canadian Pacific Railway there were established approximately the same rates as the Canadian National Railways apply from their main line stations of equal distance to Port Arthur, which were on a somewhat higher basis than the Canadian Pacific Company's main line scale. These rates were subsequently increased along with the general increases in rates which resulted from the change in conditions brought about by the war and in 1922 reduced by the restoration of the Crow's Nest Pass Agreement. Effective not later than October 22, 1923, the Board (B.R.C., G.O. 384) ordered that the current rates on grain and grain products to Pacific coast ports for export be reduced uniformly 10 per cent. Effective September 15, 1925 (B.R.C. Order No. 36769), the rates on grain and flour from Prairie points to Pacific coast points for export were reduced approximately 5 per cent, or to the same level, mile for mile, as those applying from the Prairies to Fort William and Port Arthur. A further revision was made by the Board (B.R.C., G.O. 448) effective September 12, 1927, whereby:

- (1) The rates on grain and flour from all points on the Canadian Pacific branch lines west of Fort William to Fort William, Port Arthur and Westfort were equalized to the existing Canadian Pacific main line basis of rates of equivalent mileage groupings (the rates governed by the Crow's Nest Pass Agreement not to be exceeded). All other railway companies were required to adjust their rates on grain and flour to conform with the Canadian Pacific Railway rates.
- (2) The rates on grain and flour from Prairie points to Vancouver and Prince Rupert for export were placed on the same basis as the rates to Fort William, but in computing such rates the distance from Calgary to Vancouver, via the Canadian Pacific Railway, was assumed

to be the same as Edmonton to Vancouver via Canadian National Railway, namely 766 miles.

The Maritime Freight Rates Act came into force on July 1, 1927. It reduced:-

- (a) local traffic (all rail) between points on the Eastern lines by 20 per cent;
- (b) all-rail westbound traffic from points on the Eastern lines westbound to Canadian points beyond the limits of the Eastern lines at Diamond Junction or Levis. For example, Fredericton to Montreal, the 20 per cent is based upon the Eastern lines' proportion of the through rate.
- (c) Export traffic from points in the preferred territory via ports within that territory were also reduced by 20 per cent.

For greater clearness, it may be said that the following are not preferred movements:- (1) traffic inward or outward to or from the United States and all-rail from or to points in the United States to or from points on the Eastern lines; (2) traffic moving inward, eastbound from Canada, all-rail, such as Toronto to St. John; (3) import traffic to Canada originating overseas, such as Liverpool to Moncton or to Toronto.

The Maritime Freight Rates Act provided that the difference between these reduced rates and the normal rates should be paid by the Dominion Government to the railways; for the period July 1, 1927, to March 31, 1935, the Dominion Government has paid \$19,815,522 to the railways, or an average yearly subsidy of approximately \$2,556,800.

Since the Maritime Freight Rates Act of 1927 there have been very few changes widely affecting the general rate structure. The most general changes that have occurred are the rates issued to offset motor truck competition and the pick-up and delivery motor truck rates in parts of Ontario and Quebec, previously mentioned.

Changes of a widely scattered nature are constantly being made and supplemental tariffs affecting existing tariffs are continually being filed with the Board of Railway Commissioners. To measure the effect of these changes the Bureau has compiled index numbers.

The method adopted in computing these index numbers for the mass of freight rates was, first, to select a list of commodities representative of the seventy-six commodity classes for which the railways report tonnages carried each year, second, to select hauls for each of these commodities and, third, to compile the freight rates for the selected hauls for these commodities for a series of years from the tariffs filed with the Board of Railway Commissioners. 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 any other source 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. Further quite frequently typical commodity routes and rates have been cancelled and class rates restored as a result of insufficient volume moving to command the lower rate. The raising of a rate as a result of the change from a commodity to a class rate does not, broadly speaking, indicate that the rate level has

been generally increased on that particular commodity. It usually indicates that economic conditions have changed and that new routes which are not at all comparable with the former routes have been established; it has been quite difficult over a twenty-year period to establish a continuity of class or commodity routes and rates.

The geometric means of the rates were next compiled for each commodity by years. The geometric mean is the n th root of the product of several factors where " n " is the number of factors and is a value equal to or less than the arithmetical mean.

Consideration of the weighting of the geometric means for each commodity was next considered. All commodities are not of equal importance in the total traffic of the carriers. The Summary of the Monthly Railway Traffic Reports for the Railways of Canada shows the percentage volume of the various commodities carried by the railroads. These percentages reflect the relative importance of one commodity to another and when used as weights are rational in that they represent actual percentages of specific commodities carried by all the railroads of Canada.

Composite indices using the percentage tonnage of each commodity to the total traffic were compiled, using the year 1926 equal to 100 as a base, and a composite index showing the variations in railway freight rates for the period 1913 to 1933 inclusive was computed. The differences when using 1925, 1926 and 1927 data as bases were very slight.

In conclusion it is recognized that in many instances the data upon which to base the selection of commodities and rates were rather meagre and also that the weighting should be adjusted every few years for important changes in freight movements. The selections, however, cover a fairly wide range and the rise and fall of the geometric means weighted as they were by the 1926 percentages of tonnage will probably follow very closely the general trend of all Canadian freight rates when considered as a whole. The chart on page 13 indicates the sharp rise caused by the general increases during and after the Great War, reaching a peak on September 13, 1920, the general reductions of 1921 and 1922 and the very gradual decline from that date to the end of the year 1933. The table on page 12 shows for each year, 1913-1933, the index numbers of freight rates for each of the five commodity groups and the total.

CANADA
RAILWAY FREIGHT RATE INDEX NUMBERS

Base, 1926 = 100

	Agricultural Products	Animal Products	Mine Products	Forest Products	Manufactures and Miscellaneous	Total
Commodities	10	10	9	1	14	44
Rates	116	128	122	70	180	616
<u>Year</u>						
1913	69.15	63.61	70.19	63.78	56.85	63.80
1914	66.58	63.42	67.81	63.78	56.22	62.57
1915	66.58	63.53	68.78	63.78	55.86	62.61
1916	66.81	64.17	71.63	63.78	56.52	63.41
1917	69.56	66.20	71.67	63.78	58.47	64.99
1918	91.70	85.43	98.48	84.82	81.48	87.63
1919	91.17	85.43	97.64	87.23	81.46	87.73
1920	132.74	116.35	112.04	120.07	116.71	120.34
1921	123.29	107.92	111.45	114.93	111.48	114.47
1922	103.31	101.31	101.72	103.67	102.25	102.54
1923	101.14	100.02	100.70	100.76	102.16	101.22
1924	101.10	100.00	100.55	100.61	99.80	100.38
1925	100.00	100.00	100.28	100.79	99.79	100.10
1926	100.00	100.00	100.00	100.00	100.00	100.00
1927	98.86	98.16	93.92	100.29	99.38	98.39
1928	98.86	98.16	93.85	100.29	99.54	98.43
1929	98.86	98.16	93.75	100.22	99.54	98.40
1930	98.86	98.16	93.24	100.22	99.54	98.32
1931	95.74	98.15	93.11	100.22	99.16	97.42
1932	96.39	98.15	93.01	99.93	97.49	96.97
1933	92.91	98.15	93.01	99.68	96.87	95.87

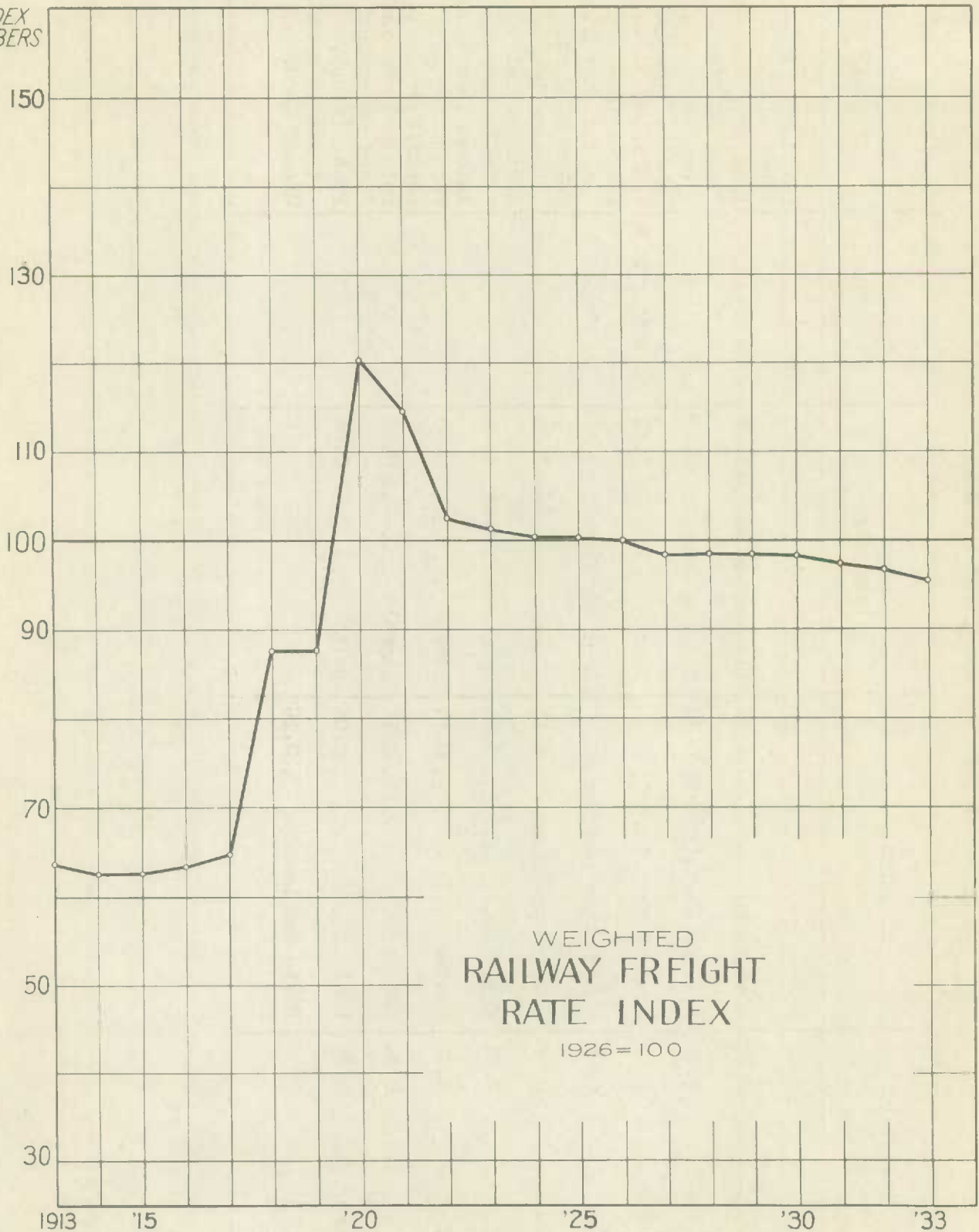
INDEX
NUMBERS

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	Lumber, etc.,	Petroleum Products... 2.40
Corn 0.68	Livestock 1.15	Bituminous Coal 13.64	10th class	Sugar 0.60
Oats 1.62	Dressed Meats(fresh) 0.46	Lignite Coal ... 2.50	and	Iron, pig 0.37
Barley 1.17	Dressed Meats(cured)	Coke 1.32	commodity 9.78	Iron and Steel Products 1.47
Rye 0.26	and other packing	Ores and Con-		Cement, Lime and Plaster..... 1.46
Flax 0.16	house products.... 0.53	centrates 3.69		Bricks and Artificial Stone .. 0.88
Flour 2.21	Eggs 0.15	Sand and Gravel. 4.70		Sewer Pipe and Drain Tile 0.10
Hay and Straw .. 0.88	Butter 0.17	Stone 1.50		Agricultural Implements 0.40
Apples 0.28	Cheese..... 0.11	Asphalt 0.23		Automobiles 1.68
Potatoes 0.63	Wool 0.05	Salt 0.34		Furniture 0.09
	Hides and Leather .. 0.16			Fertilizer 0.31
				Pulpwood, Woodpulp and Newsprint 7.30
				Fish, (fresh, frozen & cured) 0.11
				Canned Goods 0.36

