DOMINION OF CANADA

ANNUAL REPORT

OF THE

DEPARTMENT OF RAILWAYS AND CANALS

For the Fiscal Year from April 1, 1921,
to March 31, 1922

Submitted in accordance with the provisions of the Revised Statutes of Canada, Chapter 35, Section 33

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1922

To General His Excellency the Right Honourable Lord Byng of Vimy, G.C.B., G.C.M.G., M.V.O., Governor General and Commander in Chief of the Dominion of Canada.

May it Please Your Excellency:

The undersigned has the honour to present to Your Excellency the Annual Report of the Department of Railways and Canals, of the Dominion of Canada, for the fiscal year ending March 31, 1922.

W. C. KENNEDY,
Minister of Railways and Canals.

TABLE OF CONTENTS

REPORT

OF THE

DEPUTY MINISTER OF RAILWAYS AND CANALS

FOR THE YEAR ENDING MARCH 31, 1922

To the Hon. W. C. KENNEDY,
Minister of Railways and Canals.

SIR,—I have the honour to submit herewith the annual report of the Department of Railways and Canals. The several railway reports cover the calendar year ended December 31, 1921, while the report as to canals, the report of the Departmental Accountant, and the report of the Chief Commissioner of Highways are for the federal fiscal year which ended March 31, 1922.

The operated mileage of the Canadian National System, and the Grand Trunk Railway System (including the Central Vermont) at December 31, 1921, was as follows:—

CANADIAN NORTHERN SYSTEM—			
Steam lines	9,773·70		
Electric lines	126·20	9,899·90	
CANADIAN GOVERNMENT RAILWAYS—			
Intercolonial Railway (Includes Vale Railway, 5·95 miles; New Brunswick and Prince Edward Island Railway, 36·05 miles; International Railway, 105·74 miles.)	1,670.38		
Prince Edward Island Railway	275·99		
National Transcontinental Railway (Including Lake Superior Branch, Grand Trunk Pacific, 191·84 miles)	2,006·73		
Hudson Bay Railway (Constructed mileage, 238·17)	214.00		
Eastern Branch Lines—			
Moncton and Buctouche Railway	29·93		
Salisbury and Albert Railway	44·77		
Elgin and Havelock Railway	26·11		
St. Martins Railway	28·73		
York and Carleton Railway	5·46		
Quebec and Saguenay Railway	67·61		
Caraquet and Gulf Shore Railway	80·01		
Lotbinière and Megantic Railway	29·59		
Cape Breton Railway	30·64		
St. John and Quebec Ry. (leased)	172·07	4,682.02	
GRAND TRUNK PACIFIC RAILWAY		2,756.38	
CANADIAN NATIONAL LINES			17,338·30
GRAND TRUNK RAILWAY SYSTEM—			
Canadian lines	3,611·91		
Western lines	991·68		
New England lines	172·21	4,775.80	
Central Vermont Railway (Operated by Grand Trunk under separate management)		531·95	
Total Grand Trunk operation			5,307·75
Total operated mileage			22,646·05

The report of the Canadian National System includes the figures relating to the Canadian Northern and the former Government lines (the Intercolonial and the Transcontinental) which were combined for co-ordinated operation in the closing months of 1918, and the Grand Trunk Pacific, which has been operated as an integral part of the National System since October, 1920. For the first time, it is possible to present, in comparable detail, the result of the operation of the Grand Trunk and the Central Vermont, in which the Grand Trunk has a controlling interest. For purpose of reference, the combined result of the operation of these various railways has been set out in the following statements:—

OPERATING REVENUES

	1921	1920
Canadian Northern Railways	$69,088,474 16	$66,695,398 80
Canadian Government Railways	40,964,303 92	44,537,803 85
Grand Trunk Pacific Railway	16,638,677 64	14,408,549 66
Total Canadian National Railways	$126,691,455 72	$125,641,752 31
Grand Trunk System—		
Canadian lines	76,858,032 27	81,442,647 32
Western lines	22,193,256 82	22,106,707 15
New England lines	2,910,515 43	2,936,869 55
Central Vermont	7,135,753 06	6,737,710 50
Total Grand Trunk	109,097,557 58	113,223,934 52
Total Canadian National	126,691,455 72	125,641,752 31
Grand total operating revenues	235,789,013 30	238,865,686 83

OPERATING EXPENSES

	1921	1920
Canadian Northern Railway	$75,564,385 30	$82,953,978 60
Canadian Government Railways	46,551,602 67	54,987,680 28
Grand Trunk Pacific Railway	20,668,369 51	24,543,063 60
Total Canadian National Railways	$142,784,357 48	$162,484,722 48
Grand Trunk System—		
Canadian lines	71,179,292 80	76,213,815 16
Western lines	22,641,181 93	21,389,912 07
New England lines	3,592,005 72	3,712,544 75
Central Vermont	7,312,559 48	7,568,556 60
Total Grand Trunk	104,725,039 93	108,884,828 58
Total Canadian National	142,784,357 48	162,484,722 48
Grand total operating expenses	247,509,397 31	271,369,551 06

OPERATING NET OR DEFICIT

Canadian Northern Railway	$ 6,475,911 14	$16,258,579 80
Canadian Government Railways	5,587,298 75	10,449,876 43
Grand Trunk Pacific	4,029,691 87	10,134,513 94
Total operating deficits, Canadian National Railways	16,092,901 76	36,842,970 17
Grand Trunk System—		
Canadian lines (net rev.)	5,678,739 47	5,228,832 16 (net rev.)
Western lines (deficit)	447,925 11	716,795 08 "
New England lines "	681,490 29	775,675 20 (deficit)
Central Vermont "	176,806 42	830,846 10 "
Total net revenue, Grand Trunk (including C.V.)	4,372,517 65	4,339,105 94
Canadian National deficit	16,092,901 76	36,842,970 17
Grand Trunk net revenue	4,372,517 65	4,339,105 94
Total operating deficit	$11,720,384 11	$32,503,864 23

Income and expenditure other than operation added $602,350.17 to the operating deficit of 1921, making the total deficit before fixed charges $12,322,734.28, as compared with $26,812,422.28 for 1920.

Fixed Charges and Total Deficit

To this must be added the fixed charges, as follows:—

	1921	1920
Canadian Northern Railway—		
Interest due public	$17,595,707 51	$13,993,695 36
" " Government	13,224,208 27	10,326,260 69
	30,819,915 78	24,319,956 05
Grand Trunk Pacific—	1921	1920
Interest due public	3,977,447 36	4,270,244 38
" " Government	1,535,474 22	1,539,224 00
" on receiver's certificates	1,702,886 64	808,351 63
" due Grand Trunk Railway	2,742,191 60	2,256,467 90
	9,957,999 82	8,874,287 91
Total fixed charges, Canadian National lines	40,777,915 60	33,194,243 96
Grand Trunk Railway System—		
Interest payable to Dominion Government	2,107,420 66	771,450 67
Interest payable to others—		
Canadian lines	13,385,194 04	10,765,944 62
Western lines	2,077,098 70	1,935,583 49
Central Vermont	675,870 28	552,658 29
Total Grand Trunk fixed charges	19,245,583 68	14,025,637 07
Total Canadian National fixed charges	40,777,915 60	33,194,243 96
Grand total fixed charges	60,023,499 28	47,219,881 03
Add net deficit	12,322,734 28	26,812,422 28
	$72,346,233 56	$74,032,303 31
Add loss on St. John and Quebec Railway (leased)	316,044 60	346,015 49
Total deficit	$72,662,278 16	$74,378,318 80

The operating results of the Grand Trunk Western lines, New England lines, and the Central Vermont during 1920 are for ten months only from March 1, when the American roads were turned over to their owners for operation after the war-time period of Government control with standard return.

Freight and Passenger Traffic

FREIGHT TRAFFIC, REVENUE TONS

	1921	1920
Canadian National	21,182,466	25,089,376
Grand Trunk (all lines)	27,254,786	33,026,658
Central Vermont	3,428,344	4,870,160
Total	51,865,596	62,986,194

PASSENGERS CARRIED

Canadian National	11,856,620	13,572,245
Grand Trunk (all lines	13,526,108	14,378,416
Central Vermont	1,235,122	1,470,347
Total	26,617,850	29,421,008

FREIGHT EARNINGS

Canadian National	$93,785,017 60	$90,951,115 73
Grand Trunk, Canadian lines	54,510,164 08	58,102,053 78
" Western lines	17,731,671 85	17,008,463 74
" New England lines	2,031,605 21	2,118,673 83
Central Vermont	5,143,566 53	5,480,246 60
Total	172,202,025 27	173,660,553 68

PASSENGER EARNINGS

Canadian National	21,110,052 83	23,583,571 58
Grand Trunk, Canadian lines	15,510,164 08	16,948,180 21
" Western lines	3,207,277 53	3,345,957 00
" New England lines	517,710 49	487,144 57
Central Vermont	1,708,027 40	2,012,095 39
Total	$42,053,232 33	$46,376,948 75

Employees and Compensation

The total pay-roll of the Canadian National Railways, including betterments, was $88,755,060.20 in 1921. The operating pay-roll was $82,381,597.87. The total compensation paid on the Grand Trunk System was $62,598,783.75, of which $45,865,171.10 was paid in Canada, $14,643,684.22 on United States Western lines, and $2,089,748.43 on New England lines. In addition, $4,446,477.97 was paid in compensation to the employees of the Central Vermont.

The grand total operating pay-roll of the Canadian National lines, Grand Trunk and Central Vermont was $149,426,859.59; the grand total gross revenue, $235,789,013.30, and working expenses, $247,509,397.31. The relation of operating labour costs to gross revenue was 63·37 per cent and to working expenses 60·37 per cent.

Canadian Government Railways

AVERAGE NUMBER OF EMPLOYEES

	1921	1920
Canadian National—		
Canadian Government Railways	20,658	23,849
Canadian Northern Railway	32,384	33,654
Grand Trunk Pacific	7,281	7,821
Total, Canadian National	60,323	65,324
Grand Trunk System—		
Canadian lines	29,127	32,260
Western lines	8,987	10,791
New England lines	1,445	1,562
Central Vermont	2,572	3,053
Total, Grand Trunk lines	42,131	47,666
Total, Canadian National	60,323	65,324
Grand total	102,454	112,990

OPERATING RATIOS

Canadian Northern Railway	109·37	124·38
Canadian Government Railways	113·64	123·46
Grand Trunk Pacific Railway	124·21	170·34
Canadian National	112·70	129·32
Grand Trunk—		
Canadian lines	92·61	93·58
Western lines	102·02	97·17
New England lines	123·41	126·41
Central Vermont	102·48	112·33
Grand Trunk, all lines	95·99	*96·17

* American lines, ten months only, following relinquishment of United States Federal control, February 29, 1920.

CANADIAN GOVERNMENT RAILWAYS

Summary of Revenue and Expenses and Operating Ratios year ended December 31, 1921.

—	Revenue	Expenses	Deficit	Operating Ratio
	$ cts.	$ cts.	$ cts.	
Intercolonial Railway	24,605,887 19	28,353,435 33	3,747,548 14	115·20
Prince Edward Island Railway	888,394 77	1,514,808 99	626,414 22	170·51
Transcontinental Railway	14,585,286 04	15,697,234 75	1,111,948 71	107·62
Moncton and Buctouche Railway	53,165 91	98,043 60	44,877 69	184·41
Elgin and Havelock Railway	20,729 52	60,900 19	40,170 67	293·78
St. Martins Railway	23,288 76	66,677 23	43,388 47	286 31
York and Carleton Railway	7,957 07	24,429 02	16,471 95	307·01
Salisbury and Albert Railway	58,488 97	117,870 87	59,381 90	201·55
Lotbiniere and Megantic Railway	14,591 41	41,240 69	26,649 28	282·64
Caraquet and Gulf Shore Railway	99,170 02	262,111 41	162,941 39	264·30
Cape Breton Railway	24,853 93	50,092 07	25,238 14	201·55
Quebec and Saguenay Railway	129,557 95	163,362 18	33,804 23	126·28
Hudson Bay Railway	29,475 26	101,396 34	71,921 08	344·00

MOTIVE POWER AND ROLLING STOCK

LOCOMOTIVES

	December 31, 1921
Canadian National	1,973
Grand Trunk, all lises	1,404
Central Vermont	99
Total	3,476

PASSENGER SERVICE CARS

Canadian National	2,375
Grand Trunk, all lines	1,106
Central Vermont	104
Total	3,585

FREIGHT SERVICE CARS

Canadian National	80,969
Grand Trunk, all lines	38,875
Central Vermont	2,518
Total	122,362

WORK AND COMPANY SERVICE CARS

Canadian National	5,134
Grand Trunk, all lines	2,399
Central Vermont	7,719

INVESTMENTS

From the consolidated balance sheets of the Canadian Northern, Grand Trunk Pacific, Grand Trunk and Central Vermont, and from the statement of the accountant of the Department of Railways and Canals, which form part of the accompanying reports, the following statement of the aggregate investment in railways now under

government operation and control is compiled. It includes capital investment in road and equipment, acquired securities, sinking funds, improvements on leased properties, investments in affiliated and subsidiary companies, lands unsold, etc.

Canadian Northern System		$681,822,115 00
Canadian Government Railways—		
Intercolonial	$135,508,770 66	
Prince Edward Island Railway	12,836,775 49	
Transcontinental Railway	168,487,927 03	
Hudson Bay Railway	20,536,106 28	
Quebec bridge	14,831,742 99	
Branch lines	23,372,683 43	
Rolling stock	39,864,147 80	415,438,153 68
Grand Trunk Pacific		256,768,407 18
Grand Trunk Railway Company of Canada		512,687,282 20
Central Vermont		25,861,823 76
Total book value of investments		$1,892,577,781 82

Funded Debt and Interest Obligations

As against this, are the following liabilities carrying fixed charges:—

Canadian Northern—		
Long-term funded debt	$302,339,007 36	
Debenture stock	24,999,388 00	
Equipment trust obligations	36,656,000 00	
Dominion of Canada	286,279,459 69	$650,273,855 05
Grand Trunk Pacific—		
Receiver's certificates	34,400,305 12	
Long-term funded debt	157,699,714 86	
Dominion of Canada	62,809,237 34	
Grand Trunk Railway System (loans)	36,872,142 07	291,781,399 30
Grand Trunk Railway Company of Canada—		
Debenture stocks	155,373,808 34	
Guaranteed stock	60,833,333 33	
Funded debt unmatured	81,132,898 66	
Dominion Government loans and interest	76,965,322 10	
Non-negotiable debt to affiliated companies	1,780,682 58	
Debt to public	14,794,376 00	390,880,421 01
Central Vermont—		
Long-term debt to public		9,647,065 00
Total long-term or funded debt		$1,342,582,740 45

The debenture stock of the Canadian Northern included above does not call for interest until there is a net surplus available for dividends. The loans and advances by the Dominion Government are shown with accrued interest, as that is the way they appear in the respective balance sheets. Stripped of accrued interest, the Canadian Northern advances are $251,088,248.88, Grand Trunk Pacific, $50,591,237.10, plus $31,889,066.56 by Receiver's certificates. The Grand Trunk holds $12,664,205.52 of Central Vermont securities, not including capital stock to be referred to. The public holds the amount shown above.

It has not been customary to reckon interest charges on capital or other expenditure on the Intercolonial, Transcontinental or other lines comprising the original Government Railway group. On this account there has been a capital expenditure to December 31, 1921, of $415,438,153.

Capital Stock

The balance sheets of the acquired railways show, as liabilities, in addition to the funded debt, certain capital stock. These include:—

Canadian Northern—		
Common	$100,000,600 00	
Affiliated companies	2,897,200 00	$102,897,800 00
Grand Trunk Pacific—		
Capital stock issued		24,905,400 00
Grand Trunk Railway Company—		
Preference and common stocks		180,404,255 50
Central Vermont—		
Capital stock		3,000,000 00
Total		$311,207,455 50

The position of these stocks is as follows:—

The common stock of the Canadian Northern Railway, with the exception of a few shares outstanding, is in the hands of the Government. Seventy thousand shares were turned over in 1913 in consideration of a subsidy to Ontario lines; 330,000 shares in 1914 in consideration of a guarantee of interest on certain securities; and authority was granted under chapter 24, of 1917, for the acquisition by the Government, at a price to be fixed by arbitration, of the remaining 600,000 shares of the authorized capital stock. The par value of these was $60,000,000 and the value fixed by the award was $10,800,000. The share capital of the Grand Trunk Pacific is entirely held by the Grand Trunk. The Grand Trunk has been acquired by the Government, part consideration being a guarantee of interest on the debenture and guaranteed stocks, which are, therefore, included in the funded debt. The value, if any, of the preference and common stocks was referred to arbitration, and the majority award of the arbitrators declared these stocks to have had no value at the date of taking over.

The Grand Trunk also owns $2,191,100 of the three million dollars of capital stock authorized by the Central Vermont Railway.

Guarantees

Much of the long-term funded debt of the Canadian Northern and Grand Trunk Pacific is guaranteed by either the Federal or certain of the Provincial Governments. These securities appear in detail in the several reports appended, but for convenient reference are thus summarized:—

CANADIAN NORTHERN AND AFFILIATED COMPANIES

By the Dominion of Canada	$121,489,913 84
" Province of Ontario	7,859,997 59
" " Manitoba	24,041,865 51
" " Saskatchewan	8,029,999 99
" " Alberta	14,810,663 37
" " British Columbia	25,026,001 13
Total guarantees	$201,258,441 43
Unguaranteed securities	101,080,565 93
Long-term funded debt	$302,339,007 36

GRAND TRUNK PACIFIC AND SUBSIDIARIES

By the Dominion of Canada		76,480,848 00
By Grand Trunk Railway Company of Canada		
Absolutely	$27,702,000 00	
Conditionally	34,879,252 86*	62,581,252 86
By the Province of Saskatchewan		13,191,498 00
" " Alberta		3,583,764 00
Total guarantees		155,837,362 86
Unguaranteed securities		1,862,352 00
Long-term funded debt		157,699,714 86

* The guarantee by the Grand Trunk of $34,879,252.86 of Grand Trunk Pacific 4 per cent perpetual debenture stock is conditional on there being Grand Trunk net surplus earnings wherewith to pay the interest.

Grand Trunk Railway

Under the Grand Trunk acquisition agreement, the Dominion guarantees the the interest on the following Grand Trunk securities:—

Debenture stocks	$155,373,808 42
Guaranteed stock	60,833,333 37

Annual interest charges on the guaranteed stocks above referred to amount to $8,988,633.77.

Since the Government became responsible for the financing of the Company the following additional guarantees have been given:

1920 7 per cent gold debenture bonds	$24,743,000 00
1921 6 " "	25,000,000 00
Total guaranteed securities	$266,050,141 79
Total funded debt	371,042,194 75

Profit and Loss Account

The profit and loss accounts of the several railways indicate the accumulated deficits to date. As these deficits occur, it has been the practice to meet them out of moneys voted by Parliament for that and other railway purposes, taking, in the case of acquired roads, demand notes against the railways. Deficits as of December 31, 1921, carried to profit and loss account of the several railways were:—

Canadian Northern System	$85,167,760 29
Grand Trunk Pacific Railway	66,096,606 46
Grand Trunk Railway Company	17,475,495 98
Central Vermont	2,036,904 95
	$170,776,767 68

Deficits occurring on Canadian Government lines—Intercolonial, Transcontinental, etc.—have not been carried to a profit and loss account. However, the statement of the departmental accountant shows the total revenue of these roads, to December 31, 1921, to have been $432,257,863.70, and total working expenses, $479,551,975.64; so that the deficit from operation to December 31, 1921, was $47,434,571.75. The total accumulated deficit to date is therefore:—

Former privately-owned roads as shown above	$170,776,767 68
Canadian Government Railways	47,434,571 75
Total deficit	$218,211,339 43

President Hanna's Suggestions

The report of President Hanna, of the National Lines, takes the form of a three-year review of the operation of the system, and contains a great deal of instructive information, particularly with reference to the Canadian Northern. He points out that the total net advances to that railway have been distributed as follows:—

Refunding of loans, including principal of equipment securities	$32,306,952 49
New construction	29,804,673 62
Betterments	21,962,955 31
Railway equipment	42,339,483 81
Rails, accessories and other material	19,212,656 94
Capital contracts payable	1,973,820 00
Fixed charges and operating deficits	103,487,706 71
	$251,,088,248 88

President Hanna calls attention to the great handicap entailed on the National System in having to maintain and operate duplicate main lines designed originally as competing routes. This has made it a matter of great concern to the directors and management as to how far they can go to meet the general demand for train service. The problem, he points out, is not confined to main lines, but is common to all localities in every province. Under the circumstances, the management has endeavoured to provide satisfactory services and, in view of the operating results of the latter months of 1921, feel that the relationship between service and expenditure was fairly satisfactory. Although freight and passenger rates have since been reduced, it is considered that better price conditions now prevailing, and wage adjustments which reasonably may be expected, should, under normal traffic conditions, enable an even better showing to be made.

Mr. Hanna calls attention to the importance of a resumption of immigration, of which there has practically been none since the completion of the main line of the Canadian Northern, National Transcontinental and Grand Trunk Pacific—railways designed to take care of the inflow of settlement which ceased with the outbreak of war. There remain unsold 719,496 acres of company's lands. Mr. Hanna holds it important, from a traffic standpoint, that such lands tributary to the railway should be occupied, and it is suggested that the terms and conditions of sale should be modified and special inducements offered to *bona fide* settlers. The National Railways are ready and anxious to co-operate with the Government in any plan which may be formulated for the encouragement of proper immigration.

Statement of Departmental Accountant

The report of the departmental accountant is a cumulative statement of past and present departmental expenditure and revenues in connection with Government railways and canals. It is for the fiscal year ending March 31, and for that reason does not agree with the Canadian Government Railways report, which is for the calendar year. The disparity, however, is unimportant.

The grand total expenditure of the department to March 31, 1922, was $1,276,157,749.95, divided as follows:—

Railways (including Quebec bridge)	$1,051,887,556 36
Canals	194,617,719 61
General (i.e. common to both)	29,652,473 98

The expenditures on railways falls into the following divisions:—

Capital	$473,703,507 28	
Income	6,494,642 45	
Revenue	480,006,981 91	$960,205,131 54
Quebec bridge		15,290,953 63
Railway subsidies		76,391,471 09
Total expenditure on railways		$1,051,887,556 36

The expenditure to date on canals is classified as follows:—

Capital	$141,425,372 94	
Income (improvements and heavy repairs)	12,512,654 17	
Revenue, staff	22,751,779 70	
Revenue, ordinary repairs	17,926,912 80	$194,617,719 61

During the same period, the revenues of the department have been $451,734,854.18, derived as follows:—

Railways	$432,654,337 45
Canals	19,080,516 45

Of the railway revenue, $349,749,560.64 was from the Intercolonial railway, $65,991,894.96 from the Transcontinental and $13,137,028.01 from the Prince Edward Island Railway.

Capital expenditure on railways includes $62,789,776.09 paid out on account of Canadian Pacific Railway construction when that road was undertaken as a public work shortly after Confederation. It also includes $9,999,999.90 paid for capital stock of the Canadian Northern Railway.

Revenue received from the railways has been $432,654,337.45, and working expenses $480,006,981.91, so that the accumulated operating deficit has been $47,352,644.46. Of this amount, the Intercolonial accounts for $19,071,207.45, the Prince Edward Island Railway $6,960,186.17, and the Transcontinental Railway $15,156,770.94.

The expenditure on Hudson Bay Railway and Port Nelson terminals amounts to $20,536,106.28, of which $14,346,116.32 is chargeable to the railway and $6,189,989.96 to the terminals.

The acquisition of the Grand Trunk and associated railway systems has cost $1,268,718.38, mainly charges connected with the arbitration.

The lifting of rails for shipment overseas involved an expenditure of $5,435,611.60, less payment by the Imperial Munitions Board of $1,356,615.62 on rail account. The balance of this account is under audit at the present time, after which settlement by the Imperial Government will be in order.

To March 31, 1922, $3,934,009.17 had been paid under the Canada Highways Act to the various provinces toward the improvement of highways. The Act contemplates a total expenditure of $20,000,000 within five years from the first day of April, 1919.

The Canals

Canal expenditure on capital account during the year amounted to $4,482,638.65, of which $4,279,815.61 was connected with the Welland Ship canal, and $195,823.04 on the Trent. Total expenditure to date on the Welland Ship canal has been $29,620,549.43, and on the Trent $18,850,018.78. During the year, $836,810.46 was spent on income account, of which $478,126.50 was on the Trent and $151,412.55 on the present Welland. Staff expenditure, all canals, was $1,131,178.40 and repairs $1,166,118.50.

Revenue from the canals for the year was $804,518.58, compared with $366,010.69 the previous year. No tolls have been charged on the canals since 1903, and the revenue referred to is from hydraulic and other rents, wharfage and elevator charges. Total revenue to date from all canals aggregates $19,080,516.73.

The 1921 season of navigation on the through water route of 1,229 miles between Montreal and Port Arthur and Fort William covered eight months from April 18 to the middle of December. There were few interruptions to traffic, one only on the St. Lawrence canals, when a coal steamer carried away the upper gates of lock 15. Navigation was resumed in thirteen hours. The volume of traffic was heavier on the Welland canal than during any of the preceding seven years. The total freight tonnage carried was 3,076,966, an increase of about 35 per cent over the previous season. Unfortunately, the increased traffic was accompanied by several accidents which resulted in considerable damage and delay to navigation, though the canal staff maintained its excellent reputation for prompt repairs. The Government elevator at Port Colborne in 1921 received 48,368,303 bushels of grain, an increase of more than 25 per cent over the record established in 1914. The net earnings for the year were $106,072.41.

WELLAND SHIP CANAL

Strikes and other labour troubles have very considerably retarded construction work on the Welland Ship canal ever since work was resumed after the war period. Conditions, however, have materially improved since the cessation of the work on the Niagara power development late in 1921, and the consequent increase in the supply of labour. The following summary of the progress on the sections under contract is of interest:—

Section 1 (three miles):—Rock excavation, 88 per cent completed; earth excavation, 77 per cent; watertight embankments, 35½ per cent, and concrete work, 68 per cent.

Section 2 (four and a half miles):—Rock excavation, 54 per cent; earth excavation, 71 per cent; watertight embankment, 72 per cent; concrete work, 38 per cent.

Section 3 (two miles):—Rock excavation, 68 per cent; earth excavation, 60 per cent; concrete work 12½ per cent.

Section 4 (two miles):—Work on Section 4 is well advanced. It comprises excavation of canal prism, the construction of a new waterworks reservoir for the town of Thorold, and rebuilding a section of the Grand Trunk railway.

Section 5 (3½ miles):—The work involves rock and earth excavation, and considerable dredging and bridge substructures. Rock excavation is over 50 per cent completed and earth excavation about 90 per cent.

Traffic over the construction railway was heavier than in the previous year, the average number of trains per day being 129, while the total number of cars handled was 38,282.

TRENT CANAL

That portion of the Trent canal which lies between Trenton and Rice Lake was formally opened for traffic on June 3, 1918. The extent of the canal now in operation is 203·6 miles, or between Trenton and Washago at the head of lake Couchiching. In addition to this is maintained the Lindsay branch, 30 miles in length, and various other channels aggregating in all about 60 miles. The total extent of canal and canalized waterways maintained in operation is therefore slightly over 300 miles.

Considerable repair work and improvements were effected during the year, but very little new construction was undertaken. Storage and water flow conditions were at all times adequate. Freshet levels of the recent spring were unusually high, though the record levels of 1913 were not attained.

ENLARGEMENT OF ST. LAWRENCE CANALS

The question of the ultimate enlargement of the St. Lawrence Canal System has been before the department for some years, and our engineering staff has secured much data in relation to the proposal. During recent years, the work of completing tentative plans for such an enterprise became necessary in order to enable the department to deal intelligently with proposals, by private corporations, for the development of isolated water-powers which might seriously conflict with any reasonable development of the navigation and power potentialities of the river as a whole. Under this impetus, plans were evolved for a comprehensive development of the upper section of the river. A large part of these plans and estimates has been incorporated in the joint report of Colonel W. P. Wooten, of the United States Corps of Engineers, representing the United States Government, and W. A. Bowden, Chief

Engineer of this department, representing Canada, which was filed with the International Joint Commission on June 24, 1921, and is now before the respective Governments. Since the joint report was filed further data on the hydraulics and ice action of the river have been obtained and an economic analysis of the whole project is now being prepared.

Report of the Commissioner of Highways

In his report, Mr. Campbell points out that the year 1921 was more favourable for the placing of road construction contracts than either of the preceding two years, owing to the greater availability and higher efficiency of labour offering. It was the first year when all the provinces, with the exception of Alberta, were fully operating with Federal assistance. With the falling off of railway construction, a number of ex-railway contractors of experience have turned to highway work, all expenditure for which, under the Act must be by contract, unless for good reasons and by the consent of both the province and the Dominion authorities.

It is estimated that the density and speed of highway travel in Canada have increased in recent years by approximately 400 per cent. This has necessitated improved main roads of sufficient width to permit of two processions of vehicles travelling in one direction, at varying rates of speed, and also room for at least one procession of traffic in the opposite direction.

Longer seasons of highway construction operations have been necessitated by the fact that the development of road traffic has so greatly exceeded the normal rates and degrees of construction and improvement. At present, frost and financial limitations preclude all-the-year-round work, but where provincial finances will permit, the work of grading, collection and preparation of materials and surfacing with metal is being carried on from seven to ten months of the year.

On a number of the main trunk highways recently improved, there have been established public carrier motor bus lines, particularly between urban centres, summer resorts and other places not being served by steam or electric railways, though the motor vehicle has not hesitated to compete, during good weather, with both electric and steam railways.

As highway traffic and rate of travel increase, the question of accident prevention assumes increased importance, and road surveys now include proper provision for the public safety, such as the widening of travelled surfaces, the enlargement of curves at turns, the improvement of lines of sight by straightening locations, cutting down brush and shrubbery at crossings, etc., the elimination of dangerous level highway-railway crossings, and the placing of standard signs of direction and danger on all improved roads.

Since operations under the Canada Highways Act commenced in 1919, to the close of the fiscal year ending March 31, 1922, 147 projects have been submitted by eight of the nine provinces. In connection with these projects, 178 agreements have been entered into covering 4,820 miles of highway. Of this mileage, 1,260 had been completed at the end of the fiscal year. The subsidizable cost of the agreed projects is placed at $27,542,455; the estimated Dominion aid of 40 per cent, $11,016,982; the total Federal payments to the close of the fiscal year, $3,934,009.

Progress has been made by the Highways Branch in the collection of full information as to provincial highways and vehicular legislation, regulations, organization, machinery and methods in relation to highway transport. Particular attention is being given to provincial and municipal systems of maintenance of public highways, and a bulletin on "Highway Maintenance Methods and Costs," is in course of preparation. The field for standardization, experimentation and research in subjects connected with highway transport within the Dominion is so wide that co-ordination

alone involves considerable study. Steps are being taken to insure that such information collected by the Highways Branch shall be brought to the direct attention of provincial departments, district engineers, provincial road superintendents, supervisors and men in charge of maintenance work throughout the different provinces, numbering approximately 3,000.

Reorganization

During the year under review, the Grand Trunk arbitration, which had lapsed on April 9, 1921, was revived on June 1, as a result of an agreement reached with the Grand Trunk shareholders on May 13. The agreement provided for the resignation of the English Board, the establishment of the head office of the company in Canada, and the appointment of a Canadian Board of Directors. It provided also for the appointment of a shareholders' committee to act for the shareholders in connection with the arbitration.

The Grand Trunk English directors resigned on May 26, and the following Canadian board was thereupon established:—

Sir Joseph Flavelle, Bart., Toronto.
Howard G. Kelley, Montreal.
A. J. Mitchell, Toronto.
E. L. Newcombe, K.C., Ottawa, and
J. N. Dupuis, Montreal.

The presentation of the case for the Government commenced on June 7, and the hearings were finally concluded on July 8. The arbitrators made their award at Ottawa on September 7, and notice of appeal by the Grand Trunk to the Privy Council on a point of law was served on the Government on October 1. The case was heard on July 10, 11 and 13 of the present year, and decision pronounced on July 28, dismissing the appeal.

Pending the unification and reorganization of the National Railways, the operation of the Grand Trunk was continued under its own management, but with such co-ordination of traffic and properties as had been effected by the Committee of Management representative of both railways.

On August 14, 1922, the resignation of Howard G. Kelley, Director and President of the Grand Trunk Railway Company of Canada, was accepted by Order in Council, P.C. 1701. The same Order in Council appointed Major Graham A. Bell, C.M.G., Deputy Minister of Railways and Canals, to succeed Mr. Kelley on the directorate, and on August 17, W. B. Robb was, by the Board of Directors, appointed ranking Vice-President and General Manager of Grand Trunk lines, taking over the duties vacated by Mr. Kelley.

On October 4, Orders in Council, P.C. 2094 and 2095 were approved accepting the resignations of the Grand Trunk Board and appointing the following to succeed them, and also to act as directors of the Canadian National Railway Company:—

Major General Sir Henry Worth Thornton, K.B.E., London, England,
John H. Sinclair, K.C., New Glasgow, N.S.
Richard P. Gough, Toronto,
James Stewart, Winnipeg,
Ernest R. Decary, Montreal,
Frederick G. Dawson, Prince Rupert, B.C.
Tom Moore, Ottawa,
Graham A. Bell, C.M.G., Ottawa,
Gerard G. Ruel, Toronto.

On October 10, the new board met in Toronto where the resignations of the directors of the Canadian Northern Railway Company, who had been acting as directors of the Canadian National Railways, were severally accepted and the above-mentioned elected to replace them, Sir Henry Thornton succeeding Mr. D. B. Hanna as president. The other retiring members of the Canadian Northern Board were: A. J. Mitchell, Toronto; Major Graham A. Bell, C.M.G., Ottawa; Robert Hobson, Hamilton; E. R. Wood, Toronto; R. T. Riley, Winnipeg; Sir Hormidas Laporte, Montreal, and A. P. Barnhill, St. John.

S. J. Hungerford was appointed Vice-president and General Manager of Canadian Northern lines.

The new board will also be entrusted with the direction and control of the Canadian Government Merchant Marine.

Your obedient servant,

G. A. BELL,
Deputy Minister of Railways and Canals.

October 11, 1922.

CANADIAN NATIONAL RAILWAYS

ANNUAL REPORT FOR YEAR ENDED DECEMBER 31, 1921

This report of the operations of the Canadian National Railways for the calendar year 1921 has been prepared by order of the Board of Directors with the object of presenting in convenient form the combined operating results of the three groups of lines which have been placed by the Dominion Government in the hands of the board for administration.

While this is the first report of the system as a whole, it covers what may be regarded as the third year in the life of the National System. Reports have been submitted on behalf of this board covering the operations of the Canadian Northern Railway System since its acquisition by the Dominion Government, and the usual reports have been compiled under the board's direction for the Canadian Government Railways since the operation of these lines was placed in the hands of this board. These reports together with the returns of the Grand Trunk Pacific Railway since the date that the latter railway was placed in the hands of the Minister of Railways and Canals as receiver have formed part of the minister's annual statement as to the operation of Government railways, and have been included in the Dominion Government's annual blue book of railway statistics. In view of the unified operation of the three groups of railways it is considered proper that the results of the system as a whole should be reviewed. In order that the record for the first two years may be available in this form the statistical comparison covers the three-year period 1919-21 and the conditions affecting the first two years' operations are also referred to briefly.

The Canadian Northern Railway purchase was as from September 30, 1917, and although the Government had representatives on the Board of Directors through the previous acquisition of a certain amount of capital stock, actual control of the company was not taken by the Government until the completion of the arbitration proceedings in September, 1918, when the new Board of Directors was appointed.

On November 20, 1918, the jurisdiction of the board was extended over the Canadian Government Railways.

From September 1, 1920, the management of the Grand Trunk Pacific Railway, of which company the Minister of Railways had in March, 1919, been appointed receiver, was placed in the hands of the board, under Order in Council of July 12, 1920. Under this arrangement the board acts as manager for the receiver.

MILEAGE

The operated mileage as at December 31, 1921, was made up as follows:—

Canadian Northern Railway System		9,773.70	miles
Canadian Government Railways—			
Intercolonial Railway and Branch Lines	4,509.95		
National Transcontinental Railway			
St. John and Quebec Railway	172.07		
		4,682.02	"
Grand Trunk Pacific Railway		2,756.38	"
Total Railway—Steam operated		17,212.10	"
Canadian Northern Railway System electric lines		126.20	"
Total mileage operated		17,338.30	"

OPERATING RESULTS

The results of operation for the year were as follows:—

	1921
Gross earnings	$126,691,455.72
Operating expenses	142,784,357.48
Loss in operation	$ 16,092,901.76

The figures for the previous year were:

	1920
Gross earnings	$125,614,752.31
Operating expenses	162,484,722.48
Loss in operation	$ 36,842,970.17

It will be seen from the above that the loss in operation in 1921 compared with 1920 was cut down by $20,750.068.41.

GROSS EARNINGS

The increase in gross earnings in 1921 over 1920 of $1,049,703.41 is remarkable for the reason that in reporting an increase in gross the National Railway System stands alone as the only railway on the continent of anything like transcontinental character that had greater revenue in 1921 than in the preceding year. While all lines had the benefit of increases in freight and passenger rates, yet in nearly every instance additional earnings from this source were more than offset by the drop in the volume of traffic handled.

The directors consider that the improvement in the relative position of the National Railway System as a carrier of Canadian business, which the above and other figures indicate, is largely due to the improved condition of the railway's property as a whole, and to the better services which this condition has permitted, as well as better acceptance by the public generally of the definite place which the National System has secured in the economic life of the country.

Passenger traffic receipts decreased by 10½ per cent, and freight revenue increased by 3·12 per cent.

REDUCED EXPENSES AND IMPROVED NET SITUATION

With the decline in car loadings which occurred after the middle of April, 1921, and as the business depression showed signs of continuing for some time, the management took action to reduce operating expenses as far as this could be done without impairing the physical condition of the railways' lines, structures and equipment. A policy of rigid economy was continued throughout the year with the result that operating expenses were reduced as compared with 1920 by $19,700,365, being a reduction of 12·1 per cent. This reduction in expenses together with the increase in gross earnings already referred to of $1,049,703.41 makes up the improvement in the net situation of $20,750,068.41 as compared with the previous year.

A wage adjustment became effective from July 16, 1921, and was therefore in effect for five and a half months of the year; it was spoken of as a 12½ per cent reduction but has worked out at about 10½ per cent.

EARNINGS AND EXPENSES

A distribution of the earnings and expenses for the three years is as follows:—

Gross Earnings—	1921	1920	1919
Canadian Northern Railway	$ 69,088,474.16	$66,695,398.80	$53,562,177.57
Canadian Government Railways	40,964,303.92	44,537,803.85	40,179,380.93
Grand Trunk Pacific Railway	16,638,677.64	14,408,549.66	11,294,617.87
Total	126,691,455.72	125,641,752 31	105,036,176.37

Operating Expenses—	1921	1920	1919
Canadian Northern Railway.. .. ..$	75,564,385.30	$82,953,978.60	$60,034,023.92
Canadian Government Railway	46,551,602.67	54,987,680.28	47,728,205.73
Grand Trunk Pacific Railway..	20,668,369.51	24,543,063.60	17,587,567.37
Total	142,784,357.48	162,484,722.48	125,349,797.02
Operating Deficit—			
Canadian Northern Railway	$6,475,911.14	$16,258,579.80	$6,471,846.35
Canadian Government Railways	5,587,298.75	10,449,876.43	7,548,824.80
Grand Trunk Pacific Railway..	4,029,691.87	10,134,513.94	6,292,949.50
Total..	16,092,901.76	36,842,970.17	20,313,620.65

GENERAL CONDITIONS SINCE THE BOARD'S APPOINTMENT

In order that the variation in the above figures may be understood it is necessary to give a brief outline of the conditions affecting railway operation in each of these years. It may first be stated that when the board was appointed in September, 1918, the resources of the country were being severely taxed to maintain the nation's participation in the great war. A survey of the wartime requirements of the railway system was not completed before the armistice brought on all the problems of reconstruction. The McAdoo award, which Canadian railways under arrangement with Dominion Government had adopted generally from August 1, 1918 (although earlier in the case of some branches of the service) was just beginning to show a serious effect on operating results. It was known before the close of that year that the freight rate increases that were granted with the object of offsetting these McAdoo wage increases and other rises in operating expenses were absolutely inadequate for the purpose. When the United States Government decided to treat the railways' losses under Federal control as war expenditure it was official recognition in that country of the disproportion between expenses and earnings. As freight rate adjustments had generally, at least in recent years, been made in the two countries practically simultaneously, many through and international rates being interlocked and dependent on joint action, and as there had existed for years a general level between freight rates and passenger fares on both sides of the international boundary, to have attempted to disturb all this by raising rates and fares in Canada without an adjustment in United States would have been a step which might have had very serious consequences. At all events no further increase was granted to offset the exceptional increases in operating expenses until the United States railways were handed back to their owners. In the meantime, Canadian railways had to operate under conditions which it was beyond the power of the managements to control, revenue and expenses both being fixed, and the two factors bearing an admittedly improper relationship. In United States the railways as corporations were not affected by the losses which necessarily resulted from the disproportion between expenditures and receipts because the Government guaranteed to them a return based on their pre-war performance. The operating losses of the United States railways assumed by the United States Government for the period of Federal control amounted to $1,443,810,000, and in addition to this sum the United States Government advanced for betterments the sum of $1,144,000,000 to roads they do not own.

1919

This was a year of transition, the first after war year, during which it was necessary to spend a larger sum than usual on maintenance. The expenses were naturally higher due to the McAdoo award and many of its supplements being effective throughout the year. Material and supply costs were also high.

The directors having definitely adopted the policy of building up of the various lines owned by the Government a National Railway System in all respects equal to the Canadian Pacific Railway in its ability to give good and adequate railway service, it followed, as the lines were brought up to proper standard and as suitable equipment

could be provided, that improved train services were established with a view to securing for the National System a greater participation in the movement of competitive traffic. During this year a number of wage increases were granted, and yet no relief was afforded the railways in the way of freight or passenger rate increases.

1920

In this year the operating difficulties of the railways became still more acute. The railways entered the year carrying the accumulated burden of the McAdoo award and all its oppressive supplements. The cost of materials continued to rise. In July the United States Railroad Labour Board announced a general wage increase which the Canadian railways were in September forced to adopt, and that involved the payment of five months' back time, which for the Canadian Northern and Canadian Government Railways amounted to approximately $6,000,000, making a yearly increase in the pay-roll of $12,773,200, and which increase of about 23½ per cent put the average wage of employees up to a point 135 per cent higher than the 1914 level.

When the after war boom was at its height the car shortage in United States resulted in a large number of Canadian railways' cars being held across the line, causing a loss of traffic to Canadian railways in which respect the Canadian National Railways were affected with other lines. The cost of living was high; the supply of labour was not equal to the demand, and labour was intractable and therefore inefficient. Material was difficult to obtain at any price. Such conditions naturally made very costly the work with which the management had to proceed in taking up deferred maintenance. The expenditures for improvements and betterments were also made higher. This year saw the peak costs for both labour and material.

The United States railways were turned back to their owners on March 1, 1920, but the Government continued their guarantee till September 1 of that year. Rate adjustments designed to give the railroads a return on their property investment of from 5½ to 6 per cent were made effective in United States from August 26, 1920. These freight rate and passenger fare adjustments were substantially followed in Canada from September 13, 1920. Shortly afterward the post-war boom burst, and in the face of falling traffic the rate adjustments proved entirely inadequate to meet the expenses they were designed to more than offset. The rate adjustments made no adequate provision for taking care of the large item of back time wages involved in the adoption of the so-called Chicago Award. Under all these circumstances it is not surprising that Canadian railways generally show a high operating ratio for the year. The railways in United States earned in 1920 but thirty-two one-hundredths of 1 per cent on their property investment. It is worthy of note that old established systems such as the Pennsylvania Railroad experienced enormous deficits.

1921

The business depression which began to make itself felt early in 1921 seriously affected the operations of the National System in common with all other railways until August. In that month an upward tendency commenced that continued through to the end of the year due to the usual seasonal crop movement which was substantially heavier than that of the previous year.

Labour forces, as already referred to, were reduced as traffic fell away and a reduction in wages was effected from July 16. Labour was also more efficient. There were reductions in costs of materials and supplies. The many improvements made to the railways' property commenced to be favourably reflected in the operating statement, particularly when the seasonal movement of grain was under way. While maintenance forces were reduced, this was possible without impairment to the property because most of the deferred maintenance had been taken up in 1919 and 1920. The maintenance forces employed in 1921 were able to fully maintain the physical condition of the property and in fact at the end of the three year period the system is in better condition than ever before.

FINANCE

During the year ending December 31, 1921, advances were made by the Dominion Government to the Railways in the National System, as follows:—

Canadian Government Railways		$ 5,792,896 48
Canadian Northern Railway	$64,649,245 24	
Less repaid from proceeds of securities	27,927,119 40	36,722,125 84
Grand Trunk Pacific Railway		9,270,500 33
Total		$51,785,522 65

The advances for the year were applied on construction and betterments, equipment, repayment of loans (including equipment trust obligations) operating deficit and fixed charges.

The total advances to Canadian Northern Railway Company and Grand Trunk Pacific Railway Company to December 31, 1921, are as follows:—

	Total Advances to Dec. 31, 1920	Total Advances During Year 1921	Total Advances Dec. 31, 1921
Canadian Northern Railway Company	$214,366,123 04	$36,722,125 84	$251,088,248 88
Grand Trunk Pacific Railway Company	73,209,803 33	9,270,500 33	82,480,303 66

Attention is directed to the fact that the advances made were largely for the purpose of capital betterments, improvements to property, new equipment and refunding of loans, as well as providing for deficits and fixed charges. The total net advances to Canadian Northern Railway have been distributed as follows:—

Refunding of loans, including principal of equipment securities	$ 32,306,952 49
New construction	29,804,673 62
Betterments	21,962,955 31
Railway Equipment	42,339,483 81
Rails, accessories and other material	19,212,656 94
Capital contracts payable	1,973,820 00
Fixed charges and operating deficits	103,487,706 71
	$251,088,248 88

The equipment included under advances to Canadian Northern Railway covered equipment for the National System.

The above figures represent cash advances only and do not include accrued interest. For accrued interest it would be necessary to add $35,191,210.81 on advances to Canadian Northern Railway and $14,729,238.80 on advances to Grand Trunk Pacific Railway.

It is submitted, inasmuch as large sections of the system's lines serve the newer parts of the country and thus assist in their development, and furthermore, as a considerable portion of the advances made by the Government have been for maintaining the property and carrying it over what might be called the pioneer stage, that it would be in order for the Government to refrain from charging the railways with interest on such advances for a certain definite period. It is further submitted that the fixed charges be limited to interest payable to the public.

During the year an issue of $25,000,000 Canadian Northern Railway 6½ per cent twenty-five year sinking fund bonds guaranteed by the Dominion of Canada was sold in New York, the proceeds being paid to the Receiver General in repayment of advances by the Dominion Government. There were also retired during the year $2,000,000 five per cent Duluth, Rainy Lake and Winnipeg Railway bonds guaranteed by the Canadian Northern Railway Company and £3,650,000 Canadian Northern Railway 5 per cent guaranteed notes. These were provided for out of an issue of Canadian Northern Railway 7 per cent twenty-year bonds, sold in the New York market in December, 1920. As advantage was taken of the low price of sterling a very large saving in exchange was made in connection with the refunding of these sterling loans.

BETTERMENTS

It is not possible in a report of this size to deal in detail with the improvements made to the physical properties of the National System in the last three years. The programme of improvements has included work of all kinds. Heavier rail has been provided for trunk lines; ballasting on an extensive scale has been undertaken on lines not previously up to standard; terminals have been enlarged; yards have been improved and extended, sidings have been lengthened; sections of double track have been provided. New buildings of all kinds have been erected to meet traffic requirements and to provide accommodation for employees. Extensive improvements have been undertaken to provide an adequate supply of water for locomotives. Shops have been equipped and much labour-saving machinery has been installed. Many temporary structures have been replaced with permanent work. Some line revisions have been undertaken to obtain better gradients and improved river crossings, etc. Telegraph communication has been improved and some additional telephone train dispatching circuits have been installed. It may be said in general that the work undertaken as the above will indicate has affected all branches of operation, and all parts of the system.

In carrying out the improvement programme, proposed expenditures are submitted to an investment examination to see whether the work under consideration will return not only interest on the money to be expended in the way of reduced operating or maintenance expenses, but that it will also show a sufficient return to be a source of profit. This policy with respect to improvements was faithfully followed for the three years, and in the autumn of 1921 the accumulative effect of the many improvements began to show quite favourably in the operating results. As traffic increases and reaches a volume more nearly equal to that which the main lines were designed to handle, greater benefit will come from the improvements made in carrying out the betterment programme.

ROLLING STOCK AND MOTIVE POWER

During 1919 and 1920 extensive additions were made to the system's equipment. The board found on taking office that the rolling stock and motive power were insufficient to meet traffic requirements and that due to war conditions repairs to equipment were in arrears. The improved services which it was found proper to operate required new rolling stock. The new equipment purchased and received in the last three years and the total number of units of each class now available for service are shown in the following table:—

MOTIVE POWER AND ROLLING STOCK ADDITIONS AND INVENTORY

Class	New Equipment received 1919-21	In Service Dec. 31, 1921
Motive Power—		
Locomotives	163	1,973
Passenger Equipment—		
First-class cars	20	477
Second-class cars	—	230
Combination cars	—	195
Colonist cars	150	342
Dining cars	21	73
Parlour cars	—	67
Sleeping cars	50	222
Postal cars	20	55
Baggage and express cars	100	565
Business and pay cars	2	66
Other cars in passenger service	12	83
Total	375	2,375

Freight Equipment—

Class	New Equipment Received 1919-21	In Service Dec. 31, 1921
Box cars	3,750	55,833
Flat cars	500	9,586
Stock cars	1,150	3,825
Coal cars	2,300	8,259
Tank cars	—	71
Refrigerator cars	750	1,800
Other cars in freight service	—	1,595
Total	8,450	80,969
Work Equipment—		
Gravel cars	84	479
Derrick cars	—	187
Caboose cars	155	1,049
Other road cars	—	3,419
Total	239	5,134
TOTAL CARS	9,064	88,478

CONSTRUCTION

Prior to the war a number of branch lines were under construction in Western Canada. During the war work on these lines was discontinued due to the limitation on spending capital moneys, and on account of the scarcity of labour and material. After the armistice urgent requests for railway facilities were renewed by settlers along the uncompleted lines and it was considered that the situation warranted the adoption of a programme providing for the completion of certain partly constructed lines and for some extensions of branch lines which would serve new districts where settlement had preceded the railways and where the settlers were suffering most through lack of service.

The present position with reference to lines under construction is, that there still remain 584 miles of grade without track.

BRANCH LINES ACQUIRED

During the three-year period the management at the request of the Dominion Government has taken over as addition to the Government's Railway System a number of small lines, and of these the following particulars are given as a matter of record:—

Name of Railway	General Location	Mileage	Capital Expenditures to 31st March, 1921
Quebec and Saguenay Railway	Quebec	67.61	* $7,708,325 24
Lotbiniere and Megantic Railway	Quebec	29.59	346,715 00
Caraquet and Gulf Shore Railway	New Brunswick	80.01	229,600 00
Cape Breton Railway	Nova Scotia	30.64	103,753 42

*From Government Blue Book.

In addition to these lines the Hudson Bay Railway was by Order in Council turned over to the board for operation.

CO-ORDINATION

The first step that may be placed under this head was the reorganization, which took place as a result of the combination for operating purposes of the Canadian Government Railways and Canadian Northern Railway System in the closing months of 1918. These two groups were each constructed with an entirely different object in view, and in some particulars with the idea of competition rather than co-operation. The situation from an administrative point of view required a rearrangement of jurisidictional territories and a general reorganization of all departments with a view to providing a management adequate for the requirements of such a large system as was constituted by the combination of these two groups of railways.

Recognized principles of railway organization were followed and the consolidation of official personnel was satisfactorily arranged.

The second step came in September, 1920, when, following governmental authorization of July 12 of the same year which appointed the Board of Directors managers of the Grand Trunk Pacific Railway acting on behalf of the receiver, an amalgamation of staff took place and the various Grand Trunk Pacific lines were incorporated into territorial units of the Canadian National Railways.

This co-ordination affected only Western Lines, yet on account of the fact that the lines being amalgamated served much common territory the consolidation for operating purposes involved a general rearrangement of train service to secure the shortest and most suitable routes. Arrangements were also made for the joint use of terminals and other facilities. A number of duplicate offices were abolished, and certain stations, freight sheds and roundhouses have been closed. A number of rail connections were required and have been put in; others have yet to be constructed. The carrying out of this co-ordination programme has of course resulted in substantial savings in operating expenses. The changes made have also enabled passenger train services to be improved, permit of short routing of freight, and in general have resulted in giving the National System a greater capacity to handle business and give good service to the public. When the full programme is completed further advantages of this kind will be secured.

In the case of both the staff amalgamations special effort was made to give fair representation to the officers of the groups of lines being brought together, and the best proof that this object was attained is found in the general good feeling which prevails in all departments and the loyal co-operation which one department receives from another. Our vice-presidents are unanimous in reporting that a proper spirit of rivalry exists as to the competition with the large privately owned system, that as much enthusiasm exists among the officers and employees as on any privately owned railway, and that there is no evidence of slackness in the service rendered to the public, but on the other hand, a determination to secure results by close attention to the wants of patrons.

GRAND TRUNK RAILWAY CO-OPERATION

On March 8, 1920, an agreement was reached between the Dominion Government and the Grand Trunk Railway in respect to the acquisition of that company's lines, and subsequently through a joint committee a certain measure of co-ordination has been arranged between the Grand Trunk System and the Canadian National Railways with a view to securing improvement in service and reduction in cost of operation. Duplicate offices and services have to a large extent been eliminated. This has necessitated certain track connections and other facilities. The co-ordination has been generally helpful from both traffic and operating points of view and through it the position of the nationally owned lines including the Grand Trunk Railway, has been materially strengthened.

RATES AND FARES

Through a decision in the so-called Western Rates Case announced April 6, 1914, and effective September 1, 1914, Canadian railways may be said to have entered the war period with a reduced scale of freight rates. This cannot, however, be regarded as a war time adjustment, as it was an adjustment based on peace conditions. This adjustment established a rate structure which continued until 1917 and may be regarded as the pre-war level. Rating this level as 100 per cent the freight levels which have existed since may be compared with this base as follows:—

FREIGHT RATES APPLICABLE TO CANADIAN NATIONAL RAILWAYS

	Index	Decision, etc.
2. March 15, 1918	115.00	15% case.
3. August 12, 1918	129.96	25% case designed to offset McAdoo Award practically absorbing 15% increase.
4. September 13, 1920	174.01	Increase of 40% east and 35% west with exceptions.
5. January 1, 1921	168.28	Reducing increases in item 4 to 35% east and 30% west.
6. December 1, 1921,	156.08	Reducing increases in item 4 to 25% east and 20% west.

PASSENGER FARES APPLICABLE TO CANADIAN NATIONAL RAILWAYS

Passenger fares have been subject to certain adjustments as shown below. In this case the pre-war level is also shown as 100 per cent and the effect of the adjustments in percentages of the pre-war level is shown for information.

	Index	Decisions, etc.
Pre-war level 1914-17	100%	
Mar. 15, 1918	115	Increase 15%.
Sept. 13, 1920	133.4	Increase 20% with 4c. maximum.
Jan. 1, 1921	126.5	One-half of 20% increase of 13th September, 1920, removed.
July 1, 1921	115.0	Balance of increase of 13th September, 1920, removed.

From the above it may be noted that the highest level attained by freight rates was 74 per cent above the pre-war level, and the highest level of passenger fares 33·4 per cent. During 1920 wholesale prices—as an index of the cost of material and supplies used by the railways—were up as high as 164 per cent above 1914 level, and wages of railway employees were by the 1920 scale placed 135 per cent above the 1914 scale. No better evidence can be produced of the disparity between rates and operating costs with which the railways have recently had to contend.

WAGES

References have been made to the labour situation since the Canadian National Railways were established, and it is perhaps desirable to show the general relationship which wages have borne to gross revenue.

CANADIAN NATIONAL RAILWAYS

Year	Gross Revenue	Operating Labour	Per Cent of Operating Labour to Gross Revenue
1919	$105,036,176 37	$78,676,923 50	74.90
1920	125,641,752 31	98,767,720 16	78.61
1921	126,691,455 72	82,381,597 87	65.03

TRAIN SERVICE

Undoubtedly one of the greater handicaps placed on the National System is the necessity of operating—and consequently maintaining—duplicate main lines which generally may be said to have been designed as competing routes. In all there are 8,000 miles of main line in the National Railways not including what are recognized as trunk lines. This main line mileage is 47 per cent of the total, whereas the single main line of the privately owned competitor of the National System forms but 27 per cent of the total mileage. This situation, with the low traffic density existing on the National System and the general demand made by all communities for service has made it a matter of great concern to the directors and management as to just

how far they should go to meet these conditions in the way of train service. The problem is not confined to main lines, but is one that comes up in connection with every locality served in every province. Under the circumstances existing, it is considered that the results of operation in the latter months of 1921, when the business then being handled more than carried the service, indicated that the relationship between service and expenditure was not much out of line. Although freight and passenger rates have since been reduced it is considered that the better price conditions now prevailing and wage adjustments which reasonably may be expected, when made, will under normal traffic conditions enable an even better showing to be made provided that the railways' revenues are not depleted by further rate reductions.

It will be noted from the train mile statistics that the average train service performed in 1921 was less than in either of the two preceding years. For all trains the average was just over two and three-quarter trains each way per day for each mile of line operated.

FREIGHT TRAIN LOADING AND DENSITY OF TRAFFIC

Notwithstanding the drop in density of traffic the freight train loading was improved. The following figures show a steady improvement with respect to this important feature of operation:—

	1919	1920	1921
Freight density—			
Freight train loading—			
Average number of tons of revenue freight per train mile	359	377	409
Ton miles per mile of line	478,523	632,959	530,839

When the relatively light traffic movement is considered, the average freight train load of the National System may be considered satisfactory. In fact there is no comparable case on record where a train load as heavy as shown above has been obtained with such relatively light traffic movement. The freight train service on the National System in 1921 averaged one and a half freight trains each way per day for every mile of operated line, so that it is difficult to see how heavier train loading could be obtained under present traffic conditions as the situation could hardly be met with less frequent service.

TELEGRAPHS

The Canadian National Telegraph system embraces 23,169 miles of pole line and 109,672 miles of wire, and is the medium through which all the National Railways' telegraph lines are constructed and maintained. A commercial telegraph business is operated over practically all the National Lines including the Grand Trunk Railway System in Canada, also over the Michigan Central Railway (Canadian Division) the Great Northern Railway (in Manitoba), the Central Vermont Railway (in Canada) and other smaller railways, as well as over certain mileage of lines on highways.

The Canadian National Telegraph System embraces the lines of the Great North Western Telegraph Company, the Canadian Northern Telegraph Company and Grand Trunk Pacific Telegraph Company. The Canadian National Telegraph System has exclusive connections with the Western Union Telegraph Company.

EXPRESS

On September 1, 1921, the Canadian National Express Company (owned by the Canadian Northern Railway Company) and the Canadian Express Company (owned by the Grand Trunk Railway Company) were co-ordinated and one organization was formed from the staffs of the two companies, which now provides the express service over the Canadian National Railways and also over the lines of the Grand Trunk Railway System, operating as the Canadian National Express Company. The net

earnings of the company after allowing to the railways their contract divisions for train and other privileges, are divided between the Canadian National Railways and the Grand Trunk Railway on an agreed basis. The results for the four months ending December 31, indicate the favorable effect of co-ordination, the figures being as follows:—

	1921	1920	*Decrease or* Increase
Express Company's results—			
Gross earnings	$4,380,794 31	$4,475,061 51	*$94,267 20*
Less Express Privileges	1,924,247 49	1,980,830 69	*56,583 20*
Operating revenue	$2,456,546 82	$2,494,230 82	*$37,684 00*
Operating expenses	2,199,732 10	2,424,258 06	*224,525 96*
Net operating revenue	$ 256,814 72	$ 69,972 76	$186,841 96

STEAMERS

Grand Trunk Pacific passenger and freight steamers are operated between Seattle, Victoria, Vancouver and Prince Rupert. Car ferries are also operated between Victoria and Vancouver, between Cape Tormentine, N.B. and Borden, P.E.I., and between Mulgrave, N.S. and Pt. Tupper, C.B.

LANDS

Land sales for the years ending December 31, 1919, 1920 and 1921, were as shown in the following table. This table also shows the sales which had previously been entered into and which were by mutual arrangement cancelled during corresponding periods:—

Year	Actual Sales		Average
1919	79,053.303 acres	$1,535,608 44	$19 42
1920	84,002.172 "	1,738,801 46	20 70
1921	17,031.15 "	321,042 08	18 85

Year	Cancellations		Average
1919	32,403.299 acres	$467,370 15	$14 42
1920	34,188.76 "	412,457 19	13 22
1921	17,032.08 "	273,720 56	16 07

It will be seen that the actual sales for 1919 and 1920 were greatly in excess of the sales for the year 1921 and at higher prices. This condition is accounted for by the fact that during the war period and also during the years 1919 and 1920 prices of stock, grain and all farm products were very high and land prices increased accordingly. During the year 1921, however, the conditions changed, prices of farm products fell rapidly with the result that any sales that could be made were based on the lower prices of farm products.

As at December 31, 1921, there remained unsold 719,496 acres. As it is important from a traffic standpoint that the company's lands tributary to the railway should be occupied, it is felt that the terms and conditions of sale should be modified and special inducements will be offered to bona fide settlers.

ELEVATORS

Terminal elevators with modern equipment are owned at Port Arthur and Fort William.

Canadian Northern Railway, Port Arthur—Capacity 8,350,000 bushels.

Grand Trunk Pacific Railway, Fort William—Capacity 5,750,000 bushels.

DRYDOCK

A modern shipyard, drydock and ship repair plant at Prince Rupert is owned by the Grand Trunk Pacific Development Co.

CONCLUSION

In submitting this report the members of the board desire to direct attention to the modern character and general excellence of the physical property of the National System. The main lines of the Canadian National Railways were constructed to standards generally superior to those adopted by railways built in earlier years. Consequently in the matter of grades and curves there are no other transcontinental lines built throughout their length to the standards adopted for the main lines of the Canadian National Railways.

The improvement and betterment programme followed during the last three years has been developed with a view to bringing up to standard any facilities or sections of line which by experience were found to be limiting factors from an operating point of view.

While the amount of money advanced by the Government in the last three or four years is of itself a large sum, yet it forms but a relatively small percentage of the capital investment of the National System, nor is the sum expended out of line with the expenditures made by other great railway systems during the period of their physical improvement. In considering this feature it should be remembered that the amount of expenditure has been considerably augmented by the exceptionally high levels reached by material and labour costs during the three years in which this work has had to be done on the Canadian National Railways. These same conditions have made the purchase of necessary equipment and motive power run into very high figures.

In regarding the annual expenditures the magnitude of the National System should be kept in mind. It may be seen from the balance sheets included in this report that the physical assets of the National System total $1,280,000,000. The importance of maintaining the property in first class condition for the traffic movement which may reasonably be expected may be referred to. As a means of indicating this, it may be pointed out that if this great investment were permitted to deteriorate to the extent of 5 per cent it would involve a shrinkage in value of $63,750,000 or approximately four times the loss in actual operation sustained in 1921.

The three year period during which the present board has administered the Canadian National Railways has been full of operating difficulties and most disturbed economic conditions. In this period three separate groups of railways have been organized into one smooth working system. The physical property of the railways which, due to the war, was in an exhausted condition has been improved, many facilities have been added, proper rolling stock and motive power have been provided. The relation of the various lines to the main service under the co-ordination programmes has been worked out.

The system must be regarded as still in its probationary period. The main lines of the Canadian Northern, National Transcontinental and Grand Trunk Pacific Railways were not completed until 1915 and over 35 per cent of the system's mileage has been taken over for operation since the outbreak of the war. Since 1914 there has been practically no immigration and there has been little industrial or other commercial development. Under these circumstances the performance in 1921, when rates were admittedly low measured from cost of service point of view, and when expenses were exceptionally high, may be regarded as creditable. The directors knowing the general excellence of the territory served by a large percentage of the system's mileage, and with the knowledge that in many respects the system's lines are in premier position to reach the future traffic resources of the Dominion, are confident that sufficient traffic to sustain the National system can be developed within a reasonable period of normal progress. In the meantime the system has a carrying capacity considerably beyond the present volume of traffic.

Improvement of the system's relative position may be expected when the completion of the co-ordination programme provides short line connections that will

expedite the movement of business and reduce operating costs. As the system develops its services and facilities, a larger proportion of the better grade commodities will be routed by its lines with a consequent improvement in the average ton mile rate. It may be expected that the Government will at an early date formulate a plan for the encouragement of proper immigrants to the country, in which no doubt the Canadian National Railways will be asked to co-operate. From this much benefit may be expected.

The directors wish to record their appreciation of the loyal and efficient services rendered by officers and employees. There is every reason to believe that the employees fully participate in the spirit that dominates the official personnel in all departments and that the entire organization is a unit in its endeavour to secure a fair share of the country's transportation business for the National Lines. Loyal support to the consolidated management has been given and the best possible relationship exists with all classes of employees.

For the Directors,

D. B. HANNA,
President.

TORONTO, April, 1922.

CANADIAN NATIONAL RAILWAYS

APPENDICES

1. *Canadian Northern Railway*—
   - (*a*) Balance Sheet.
   - (*b*) Income Statement.
   - (*c*) Profit and Loss Statement.
   - (*d*) Funded Debt.
   - (*e*) Advances from Dominion Government.

2. *Grand Trunk Pacific Railway*—
   - (*a*) Balance Sheet.
   - (*b*) Income Statement.
   - (*c*) Profit and Loss Statement.
   - (*d*) Funded Debt.
   - (*e*) Advances from Dominion Government.

3. *Canadian Government Railways*—
   - (*a*) Balance Sheet.
   - (*b*) Income Statement.

Canadian National Railways

4. Operating Revenue, Operating Expenses and Net Earnings.
5. Combined Income Statement.
6. Operating Revenue and Proportion Paid in Labour.
7. Passenger, Freight and Miscellaneous Statistics.
8. Description of Freight Carried.
9. Summary of Equipment.
10. Mileage Statement.

(1.) CANADIAN NORTHERN RAILWAY SYSTEM

Appendix (*a*)

Consolidated Balance Sheet at December 31, 1921.

ASSETS

Investments—Property investment. Investment in road and equipment including portion of discount on funded debt	$603,268,845 00	
Acquired securities	47,834,181 81	
		$651,103,026 81
Cash and Victory bonds (at cost) in trust accounts held in respect of construction work, sinking funds and other special accounts—		
Dominion Government	1,371,498 44	
Province of Manitoba	56,138 51	
Province of Saskatchewan	1,220,917 19	
Province of Alberta	1,289,318 85	
Province of Ontario	102,835 01	
Province of British Columbia	331,880 37	
National Trust Company	1,783,536 66	
British Empire Trust Company	38,757 13	
Sinking funds	1,569,049 42	
C. N. Express Trust	30,424 74	
		7,794,356 32
Lands unsold		18,121,448 17
Other investments (at cost)		4,803,283 70
		681,822,115 00
Current Assets.		
Cash in bank	4,179,609 54	
Balance due from agents, station balances, etc. (net)	2,081,383 38	
Miscellaneous accounts receivable	14,282,411 24	
Deferred payments on account of land sales and accrued interest	7,937,757 08	
Material and supplies on hand as per books	27,835,477 00	
		56,316,638 24
Deferred charges.		
Portion of discount on funded debt	850,063 31	
Insurance premiums unexpired	512,567 96	
Unadjusted debits—Net balance	1,125,018 46	
		2,487,649 73
Advances by the Canadian Northern Railway Company to affiliated companies (per contra)		12,861,609 40
Profit and loss account—balance		85,167,760 29
		$ 838,655,772 66

Note.—The Ontario Government questions the title of the Canadian Northern Ontario Railway to the lands granted in respect of construction of lines in Ontario which are valued by the company at $6,000,000.

LIABILITIES

Stock—		
Capital stock—		
Common		$100,000,600 00
Affiliated companies	$ 77,192,400 00	
Less: Held in treasury	74,295,200 00	2,897,200 00
		102,897,800 00
Long term funded debt—		
Canadian Northern Railway	175,017,195 57	
Affiliated companies	127,321,811 79	
	302,339,007 36	
Five per cent income charge convertible debenture stock	24,999,388 00	
Equipment trust obligations	36,656,000 00	
		363,994,395 36
Short term loans secured by collateral or mortgage.		
Demand and short term loans		41,442,438 82
Dominion of Canada		286,279,459 69
Current liabilities—		
Audited Vouchers and other floating liabilities	14,110,003 13	
Pay rolls	2,354,690 12	
Interest and equipment obligations matured (since paid)	4,203,821 24	
Accrued interest on bonds, loans and equipment securities	2,495,251 88	
Taxes accrued	1,330,876 26	
		24,494,642 63
Reserves—		
Steamship replacement fund	3,310,019 45	
Equipment replacement fund	107,977 09	
Insurance fund	587,580 29	
Portion of profit on exchange reserved	2,679,849 93	
		6,685,426.76
Advances to affiliated companies by Canadian Northern Railway Company (per contra)		12,861,609 40
		$838,655,772 66

C. E. FRIEND,
Comptroller.

AUDITORS' CERTIFICATE

We have examined the books and records of the Canadian Northern Railway System for the twelve months ended 31st December, 1921, and we certify that in our opinion the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the affairs of the System at 31st December, 1921, and is in accordance with the books and the explanations and information given us.

GEORGE A. TOUCHE & Co.,
Chartered Accountants,
Auditors

Toronto, Canada,
April 5, 1922.

CANADIAN NORTHERN RAILWAY SYSTEM

Appendix (*b*)

INCOME ACCOUNT FOR FISCAL YEAR ENDED DECEMBER 31, 1921.

Railway operating revenue		$69,088,474 16
Railway operating expense		75,564,385 30
Net deficit on operation (operating ratio 109.37%)		$ 6,475,911 14
Railway tax accruals		1,191,890 84
		$ 7,667,801 98
Non-operating income		3,119,349 72
		$ 4,548,452 26
Deductions from gross income		1,011,242 14
		$ 5,559,694 40
Fixed charges—		
Canadian Northern Railway	11,703,146 27	
Affiliated companies	4,844,985 90	
Interest on demand and short term notes—		
Government	13,224,208 27	
Other (net balance)	1,047,575 34	
		$30,819,915 78
Deficit carried to Profit and Loss Statement		$36,379,610 18

CANADIAN NORTHERN RAILWAY SYSTEM

Appendix (*c*)

PROFIT AND LOSS STATEMENT AT DECEMER 31, 1921

Deficit on income account for the year		$36,379,610 18
Delayed income Drs. and Crs.—Dr. balance		555,543 16
Discount, etc., on funded debt		260,773 75
		$37,195,927 09
Less:—		
Transferred from reserve for exchange contingencies		2,000,000 00
		$35,195,927 09
Deficit brought forward at December 31, 1920	$50,140,977 66	
Less:—		
Canadian Northern coal and ore dock surplus, August 31, 1921	169,144 46	49,971,833 20
Deficit at December 31, 1921, carried to balance sheet		$85,167,760 29

CANADIAN NORTHERN RAILWAY SYSTEM

Appendix (*d*)

FUNDED DEBT

	Sterling	Currency
GUARANTEED AS TO PRINCIPAL AND INTEREST BY DOMINION OF CANADA		
3 % 1st mortgage debenture stock	£1,923,287	$ 9,359,996 72
3½% 1st mortgage debenture stock	1,622,586	7,896,588 26
4 % Dominion guaranteed debenture stock		17,060,333 33
6½% 25 year sinking fund debenture bonds		25,000,000 00
7 % 20 year sinking fund debenture bonds		24,793,000 00
GUARANTEED BY GOVERNMENT OF MANITOBA		
4 % 1st mortgage consolidated debenture bonds	2,215,900	10,784,046 65
Underlying bonds—		
4% Sifton branch bonds	233,700	1,137,340 00
4% Gilbert Plains branch bonds	500	2,433 33
4% Manitoba & S.E. bonds	105,300	512,460 00
4 % Ontario Division 1st mortgage debenture bonds	1,180,600	5,745,586 66
4 % Winnipeg terminal bonds	616,438	3,000,000 00
4 % 1st mortgage debenture stock	587,671	2,859,998 87

GUARANTEED BY GOVERNMENT OF SASKATCHEWAN		
4 % 1st mortgage debenture stock	1,650,000	8,029,999 99
GUARANTEED BY GOVERNMENT OF ALBERTA		
4 % 1st Mortgage debenture stock	1,147,945	5,586,665 64
4 % Perpetual consolidated debenture stock ..	9,234,867	44,943,019 40
4 % Land grant bonds (1909)	96,200	468,173 38
5 % Land mortgage debentures (1913)	1,477,100	7,188,553 34
4½% Prince Albert branch 1st mortgage bonds		300,000 00
Long term loan at 4% against deposit of $352,000 bonds of Minnesota and Manitoba R.R. Company payable 1930		349,000 00
		$175,017,195 57

CANADIAN NORTHERN RAILWAY SYSTEM

FUNDED DEBT AFFILIATED COMPANIES

	Sterling	Currency
The Canadian Northern Alberta Railway Company		
Guaranteed by Dominion Government		
3½% 1st mortgage debenture stock .. ..£	647,260.0.0	$ 3,149,998 66
Canadian Northern Western Railway Company		
Guaranteed by Government of Alberta		
4½% 1st mortgage debenture bonds (1943) ..	575,342.0.0	2,799,997 73
4½% 1st mortgage debenture stock (1942) ..	1,320,000.0.0	6,424,000 00
Canadian Northern Pacific Railway Company		
Guaranteed by Government of British Columbia		
4% 1st mortgage debenture stock	3,372,329.0.0	16,412,001 13
4½% terminal debenture stock..	1,770,000.0.0	8,614,000 00
The Canadian Northern Ontario Railway Company		
Guaranteed by Dominion Government		
3½% 1st mortgage debenture stock	7,033,561.0.0	34,229,996 87
Guaranteed by Government of Ontario		
3½% 1st mortgage debenture stock	1,615,068.0.0	7,859,997 59
4% perpetual consolidated debenture stock	1,866,499.0.0	9,083,628 46
Central Ontario Railway		
5% 1st mortgage bonds	168,400.0.0	819,546 71
The Bay of Quinte Railway Company		
5% 1st mortgage bonds		780,000 00
The Canadian Northern Quebec Railway Company		
4% perpetual guaranteed debenture stock	1,078,843.0.0	5,250,369 26
Great Northern Railway of Canada,		
4% 1st mortgage bonds		3,510,250 00
The Quebec and Lake St. John Railway Company		
4% 1st mortgage perpetual guaranteed debenture stock..	895,688.0.0	4,359,014 93
Duluth, Winnipeg and Pacific Railway Company		
4% 1st mortgage debenture stock..	1,440,683.0.0	7,011,323 93
The Halifax and Southwestern Railway Company		
3½% 1st mortgage bonds		4,447,000 00
The Niagara, St. Catharines and Toronto Railway Company		
5% 1st mortgage bonds		1,098,000 00
The Qu'Appelle, Long Lake and Saskatchewan Railroad and Steamboat Company		
4% 1st mortgage guaranteed debenture stock..	1,031,412.6.0	5,019,539 86

	Sterling	Currency
Mount Royal Tunnel and Terminal Company, Limited 5% 1st mortgage rent charge bonds..	426,400.0.0	2,075,146 66
The Toronto Suburban Railway Company 4½% 1st mortgage debenture stock.. ..	540,000.0.0	2,628,000 00
The Canadian Northern Coal and Ore Dock Company Ltd. 5% 1st mortgage bonds..		1,750,000 00
		$127,321,811 79

CANADIAN NORTHERN RAILWAY SYSTEM

Appendix (*e*)

LOANS FROM DOMINION OF CANADA

SUMMARY

Loans and advances	$251,088,248 88
Interest	35,191,210 81
	$286,279,459 69

Loan	Loans Security	Amount Outstanding
Advances under 1911 legislation ..	Mortgage dated October, 4, 1911	$ 2,396,099 68
Advances under 1914 legislation ..	Mortgage dated July 14, 1914	5,294,000 02
Advances under 1915 legislation ..	$12,500,000 C.N.R. 4% Dom. gtd. stock under mortgage July 15, 1914	10,000,000 00
Advances under 1916 legislation ..	Mortgage dated June 23, 1916	15,000,000 00
Advances under 1917 legislation ..	Mortgage dated November 16, 1917	25,000,000 00
Advances under 1918 legislation ..	Mortgage dated November 16, 1917	25,000,000 00
Advances under 1918 War Measures Act	£733,561 C.N. Alberta Ry. 3½% gtd. stock .. .. £316,439 C.N. Ont. Ry. 3½% gtd. stock.. .. .. £406,000 C.N. Ry. 4% Saskatchewan bonds .. £417,000 C.N. Pacific Ry. 4½% branch lines stock	4,731,522 64
Advances under 1919 appropriation..	Mortgage dated November 16, 1917	35,000,000 00
Equipment loans under Chapter No. 38, 1918	Notes of the Canadian Northern Ry. Co.	13,951,328 28
Advances under Vote 96, 1919	Notes of the Canadian Northern Ry. Co.	23,362,212 73
Advances under 1920 Appropriation Act, Vote No. 127	Mortgage dated November 16, 1917	48,611,077 00
Advances under 1920 Appropriation Act, Vote No. 115	Notes of the Canadian Northern Ry. Co.	15,503,426 34
Advances under 1921 Appropriation Act, Vote No. 113	Notes of the Canadian Northern Ry. Co.	579,344 85
Advances under 1921 Appropriation Act, Vote No. 126	Notes of the Canadian Northern Ry. Co.	45,714,662 69
Supplementary appropriations 1921-1922	Notes of the Canadian Northern Ry. Co.	7,172,737 68
		277,316,411 91
Deduct:— Proceeds of C.N.R. 6½% 20 year debenture bonds ($23,210,763.75) in New York funds representing an exchange of 13% ($3,017,399.28)		26,228,163 03
		$251,088,248.88

	Loan or advance	Interest
INTEREST		
Advances under 1911 legislation	$ 2,396,099 68	$ 37,681 13
" " 1914 "	5,294,000 02	282,540 05
" " 1915 "	10,000,000 00	1,585,616 44
" " 1916 "	15,000,000 00	4,967,753 41
" " 1916 War Measures Act repaid 15/1/21..		42,940 66
" " 1917 legislation	25,000,000 00	6,071,122 58
" " 1918 "	25,000,000 00	4,972,644 02
" " 1918 War Measures Act	4,731,522 64	1,122,539 63
" " 1919 Legislation	35,000,000 00	4,874,271 70
" " 1920 "	48,611,077 00	3,921,121 64
Equipment Loans under Ch. 38, 1918 ..	13,951,328 28	2,366,626 96
" " Vote, 96, 1919	23,362,212 73	3,228,419 81
" " Vote 115, 1920	15,503,426 34	1,115,533 46
" " Vote 113, 1921	579,344 85	20,442 78
Advances under 1921 legislation	45,714,662 69	1,152,086 88
" " Order in Council, 1921 ..	7,172,737 68	132,640 69
		35,893,981 84
Deduct:—		
Repayment of $23,210,763.75 out of C.N.R. 6½% 25 year bonds 621,921.29		
Exchange of $3,017,399.28 on these bonds 80,849.74		
		702,771 03
		$35,191,210 81

(2.) GRAND TRUNK PACIFIC RAILWAY

(IN RECEIVERSHIP)

Appendix (*a*)

CONSOLIDATED BALANCE SHEET

AT DECEMBER 31, 1921

Incorporating Accounts of Grand Trunk Pacific Branch Lines Company; Grand Trunk Pacific Saskatchewan Railway; Grand Trunk Pacific Development Company; Grand Trunk Pacific Terminal Elevator Company, and Grand Trunk Pacific Telegraph Company.

ASSETS

Fixed Assets—		
Investment in road and equipment (including preliminary and unallocated expenses, cost of guarantee of bonds) steamships, docks, wharves, hotels, etc.	$256,385,107 18	
Other investments	383,300 00	
		256,768,407.18
Current and Working Assets—		
Cash in bank and on hand	801,772 39	
Balance due from agents and conductors		
Miscellaneous accounts receivable (net)	2,991,703 53	
Material and supplies on hand as per books	891,497 24	4,830,455 09
Deferred charges		477,219 75
Profit and loss account		66,096,606 46
		$328,172,688 48

LIABILITIES

Capital Stock—		
Authorized 450,000 shares of $100 each		45,000,000 00
Issued 249,420 shares on which there is unpaid $36,600,000		24,905,400 00
Receivers' certificates	34,400,305 12	
Long term funded debt—		
Grand Trunk Pacific Railway Company	139,662,100 86	
Grand Trunk Pacific Branch Lines Company	16,775,262 00	
Grand Trunk Pacific Terminal Elevator Company	1,862,352 00	
		157,699,714 86
Dominion of Canada		62,809,237 34
Grand Trunk Railway System		36,872,142 07
Current liabilities—		
Audited vouchers and other floating liabilities	1,848,655 24	
Interest on funded debt past due and accrued	9,352,401 89	
Unadjusted credits (net)	35,639 18	11,236,696 31
Reserves—		
Insurance account	11,235 78	
Taxes accrued	237,957 00	249,192 78
		$328,172,688 48

C. E. FRIEND,
Comptroller.

AUDITORS' CERTIFICATE

We have examined the foregoing Consolidated Balance Sheet of the Grand Trunk Pacific Railway Company, the Grand Trunk Pacific Branch Lines Company, the Grand Trunk Pacific Saskatchewan Railway Company, the Grand Trunk Pacific Development Company, the Grand Trunk Pacific Terminal Elevator Company, and the Grand Trunk Pacific Telegraph Company, as at December 31, 1921, and, having compared it with the books and accounts of the Companies, certify that in our opinion it is properly drawn up so as to exhibit a true and correct view of the state of affairs of the combined companies at that date, according to the best of our information, the explanations given us and as shown by the books of the Companies.

MARWICK MITCHELL & Co.,
Chartered Accountants
Auditors

Toronto, Canada,
April 24, 1922

GRAND TRUNK PACIFIC RAILWAY

Appendix (*b*)

INCOME STATEMENT FOR FISCAL YEAR ENDED DECEMBER 31, 1921

Railway operating revenue		$16,638,677 64
Railway operating expenses		20,668,369 51
Net deficit on operation		4,029,691 87
(Operating ratio 124.218)		
Railway tax accruals		357,394 54
		4,387,086 41
Non-operating income		863,185 83
		3,523,900 58
Deductions from gross income		801,667 77
		4,325,568 35
Fixed charges—		
Grand Trunk Pacific Railway	$3,279,345 96	
Affiliated Companies	631,430 64	
Interest on demand and short term notes		
*Government	4,238,360 86	
Grand Trunk Railway	1,742,191 60	
Other interest and exchange	66,670 76	9,957,999 82
Deficit carried to profit and loss statement		$14,283,568 17

*NOTE: Fixed charges due Dominion Government include $1,000,000. Interest on 1909 and 1913 loans paid through the Grand Trunk Railway.

GRAND TRUNK PACIFIC RAILWAY

Appendix (*c*)

PROFIT AND LOSS STATEMENT AT DECEMBER 31, 1921

Deficit on income account for year		$14,283,568 17
Delayed income Drs. and Crs.—Dr.		
Balance applicable prior to 1st Sept., 1920		1,305,986 25
Balance applicable subsequent to 1st Sept., 1920		118,402 33
Deficit brought forward at December 31, 1920		50,388,649 71
Railway Company	$48,171,882 18	
Development Company	2,410,547 40	
	50,582,429 58	
Less: Elevator Company	193,779 87	
Deficit at December 31, 1921, carried to balance sheet		$66,096,606 46

GRAND TRUNK PACIFIC RAILWAY

Appendix (*d*)

FUNDED DEBT

GUARANTEED AS TO PRINCAPAL AND INTEREST BY THE DOMINION OF CANADA

3%	1st mortgage bonds (Prairie)		$11,908,000 00
*3%	1st mortgage bonds (Mountain)		56,132,000 00
4%	Sterling bonds due 1962		8,440,848 00
	GUARANTEED BY THE GRAND TRUNK RAILWAY COMPANY OF CANADA		
4%	Mortgage Prairie section "A" bonds		10,206,000 00
4%	Mortgage Mountain section "B" bonds		9,963,000 00
4%	1st mortgage Lake Superior branch bonds		7,533,000 00
†5%	Secured sterling notes	$9,720,000.00	
4%	Perpetual debenture stock (conditionally guaranteed)		34,879,252 86
			$139,062,100 86

* Interest payable by Dominion Government.
† Retired March 2, 1921.

GUARANTEED BY PROVINCE OF SASKATCHEWAN

4%	1st mortgage sterling bonds Saskatchewan lines	$11,315,052 00	
	Less in Treasury £1100	5,346.00	$11,309,706 00
4½%	Terminal sterling bonds		1,881,792 00

GUARANTEED BY PROVINCE OF ALBERTA

4%	1st mortgage sterling bonds Alberta lines	1,159,596 00	
	Less in Treasury £1200	5,832 00	1,153,764 00
4%	1st mortgage sterling bonds Alberta lines		2,430,000 00
			$16,775,262 00
	G.T.P. Terminal Elevator Company		
5%	1st mortgage sterling bonds		1,862,352 00
			$157,699,714 86

GRAND TRUNK PACIFIC RAILWAY

Appendix (*e*)

LOANS FROM DOMINION OF CANADA

SUMMARY

Loans and advances	$50,591,237 10
Interest on loans and advances	12,218,000 24
	$62,809,237 34

LOANS

Loan	Security	Amount Outstanding
G.T.P. Loan Act, 1909	$10,000,000 00 G.T.P. Ry.	$10,000,000 00
G.T.P. Loan Act, 1913	$15,000,000 00 4% Debs. due July 1/23	15,000,000 00
Appropriation Act, 1916		7,081,783 45
Appropriation Act, 1917		5,038,053 72
Appropriation Act, 1918		7,471,399 93
Orders in Council Sept 5, 26, Oct. 24, and Nov. 20, 1914	$ 7,499,952 00 G.T.P. Ry. 4% Sterling Bonds Guaranteed by Dom. Govt.	6,000,000 00
		$50,591,237 10

INTEREST

	Loan or Advance	Interest
G.T.P. Loan Act, 1909. Prairie Section	$10,000,000 00	$ 2,900,000 00
G.T.P. Loan Act, 1913	15,000,000 00	4,200,000 00
Appropriation Act, 1916	7,081,783 45	2,125,317 85
Appropriation Act, 1917	5,038,053 72	1,209,193 68
Appropriation Act, 1918	7,471,399 93	1,423,157 85
Orders in Council Sept, 5, 26, Oct. 24 and Nov. 20, 1914	6,000,000 00	2,220,000 00
Interest paid by Dominion Government on bonds guaranteed by Grand Trunk Railway Dominion, Saskatchewan and Alberta Governments		8,244,090 86
		$22,321,760 24
LESS—		
Interest on $56,132,000.00 G.T.P. 3% 1st Mortgage Bonds, Mountain Division, payable by Dominion Gov. under Chapter 71, 3 Edward VII.		10,103,760 00
		$12,218,000 24

GRAND TRUNK PACIFIC RAILWAY

(IN RECEIVERSHIP)

RECEIVERS' CERTIFICATES

Certificates		$31,889,066 56
G.T.P. Railway Co.	$31,684,585.66	
G.T.P. Development Co.	175,219.71	
G.T.P. Telegraph Co.	29,261.19	
Accrued interest on certificates		2,511,238 56
		$34,400,305 12

(3.) CANADIAN GOVERNMENT RAILWAYS

Balance Sheet at December 31, 1921

ASSETS

Investments—Property Investments—		
Investment in road and equipment. ..		$372,400,674 33
Current Assets—		
Cash on hand and in bank..	$ 6,739,474 08	
Balance due from agents—net..	571,659 13	
Miscellaneous accounts receivable.. ..	15,890,349 13	
Material and supplies on hand as per books..	9,280,228 40	
		32,481,710 74
Dominion of Canada Balance due on Deficit Account, as per contra.. ..		1,359,415 58
Receiver General Provident Fund Account, as per contra..		610,546 88
Deferred Charges—		
Unadjusted Debits and Credits—Net balance..		875,307 96
Income Account—		
Deficit for the year ended December 31, 1921—		
Canadian Government Railways.. ..	$ 6,010,755 87	
St. John & Quebec Railway..	316,044 60	
		6,326,800 47
		$414,054,455 96

LIABILITIES

Dominion of Canada—		
Advances for road and equipment.. ..		$369,408,222 51
Advances for material and supplies and open accounts..		20,466,498 55
Advances for operating deficit..	$ 4,967,384 89	
Deficit account balance—unpaid as per contra..	1,359,415 58	
		6,326,800 47
Branch Lines Purchase Account..		120,000 00
Current liabilities—		
Audited vouchers and other current liabilities..		15,853,635 04
Employees Provident Fund, as per contra..		610,546 88
Reserves—		
Equipment renewal account, etc..		1,268,752 51
		$414,054,455 96

Auditor's Certificate

We have examined the books and records of the Canadian Government Railways at Moncton for the twelve months ended December 31, 1921, and we certify that in our opinion the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the affairs of the Canadian Government Railways at the 31st December, 1921, and is in accordance with the information and explanations given us.

George A. Touche & Co.,
Chartered Accountants Auditors.

Toronto, Canada, May 16, 1922.

CANADIAN GOVERNMENT RAILWAYS

INCOME STATEMENT FOR FISCAL YEAR ENDED DECEMBER 31, 1921

	Canadian Government Rys.	St. John & Quebec Ry.	Total
Railway operating revenue. .	$40,964,303 92	$311,010 92	$41,275,314 84
Railway operating expenses. .	46,551,602 67	438,445 07	46,990,047 74
Net deficit on operations . . .	$ 5,587,298 75	$127,434 15	$ 5,714,732 90
Railway tax accruals	35,743 87	.....	35,743 87
	$ 5,623,042 62	$127,434 15	$ 5,750,476 77
Non-operating income	457,352 46	606 47	457,958 93
	$ 5,165,690 16	$126,827 68	$ 5,292,517 84
Deductions from gross income.	845,065 71	189,216 92	1,034,282 63
Deficit carried to Balance Sheet	$ 6,010,755 87	$316,044 60	$ 6,326,800 47

(4.) CANADIAN NATIONAL RAILWAYS

COMPARATIVE SUMMARY OF OPERATING RESULTS—TWELVE MONTHS ENDED DECEMBER 31, 1921, 1920 AND 1919

	1921	1920	1919
Gross Earnings			
Canadian Northern Ry... ..	$ 69,088,474 16	$ 66,695,398 80	$ 53,562,177 57
Canadian Government Ry. ..	40,964,303 92	44,537,803 85	40,179,380 93
Grand Trunk Pacific Ry. ..	16,638,677 64	14,408,549 66	11,294,617 87
Total..	$126,691,455 72	$125,641,752 31	$105,036,176 37
Distribution			
Freight..	$ 93,785,017 60	$ 90,951,115 73	$ 71,228,041 03
Passenger	21,110,052 83	23,583,571 58	23,999,309 67
Sleeping car..	1,740,506 05	1,414,009 24	1,093,279 08
Mail..	2,023,725 72	1,089,089 49	978,094 68
Express..	3,657,756 53	3,415,193 46	2,497,351 71
Miscellaneous..	4,374,396 99	5,188,772 81	5,240,100 20
Operating Expenses			
Canadian Northern Ry.	$ 75,564,385 30	$ 82,953,978 60	$ 60,034,023 92
Canadian Government Ry. ..	46,551,602 67	54,987,680 28	47,728,205 73
Grand Trunk Pacific Ry. ..	20,668,369 51	24,543,063 60	17,587,567 37
Total..	$142,784,357 48	$162,484,722 48	$125,349,797 02
Distribution			
Maintenance of way and structures	$ 33,707,956 47	$ 42,907,217 78	$ 33,533,548 95
Maintenance of equipment ..	31,649,007 49	34,834,703 34	25,202,304 33
Traffic..	2,555,090 60	2,456,715 09	1,772,276 52
Transportation—Rail.	71,601,188 73	76,695,606 01	59,180,351 87
Transportation—Water	120,970 66	350,135 79	782,316 69
Miscellaneous..	2,063,096 85	2,564,663 07	2,095,216 42
General..	3,074,590 13	3,378,724 34	2,783,782 24
Transportation for Invest, Cr..	1,987,543 45	703,042 94	.....
Operating Deficit			
Canadian Northern Ry. ...$	6,475,911 14	$ 16,258,579 80	$ 6,471,846 35
Canadian Government Ry. ..	5,587,298 75	10,449,876 43	7,548,824 80
Grand Trunk Pacific Ry. ..	4,029,691 87	10,134,513 94	6,292,949 50
Total..	$ 16,092,901 76	$ 36,824,970 17	$ 20,313,620 65
Operating Ratios			
Canadian Northern Ry... ..	109.37	124.38	112.08
Canadian Government Ry. ..	113.64	123.46	118.78
Grand Trunk Pacific Ry. ..	124.21	170.34	155.71
Total..	112.70	129.32	119.34

(5.) CANADIAN NATIONAL RAILWAYS

INCOME ACCOUNT FOR YEARS ENDED DECEMBER 31, 1921 AND 1920

Gross Operating Revenue

	1921	1920
Canadian Northern Railway System	$ 69,088,474 16	$ 66,695,398 80
Canadian Government Railways	40,964,303 92	44,537,803 85
Grand Trunk Pacific Railway	16,638,677 64	14,408,549 66
Canadian National Railways	$126,691,455 72	$125,641,752 31

Operating Expenses

Canadian Northern Railway System	$ 75,564,385 30	$ 82,953,978 60
Canadian Government Railways	46,551,602 67	54,987,680 28
Grand Trunk Pacific Railway	20,668,369 51	24,543,063 60
Canadian National Railways	$142,784,357 48	$162,484,722 48

Net Deficit From Railway Operations

Canadian Northern Railway System	$ 6,475,911 14	$16,258,579 80
Canadian Government Railways	5,587,298 75	10,449,876 43
Grand Trunk Pacific Railway	4,029,691 87	10,134,513 94
Canadian National Railways	$16,092,901 76	$36,842,970 17

Tax Accruals

Canadian Northern Railway System	$ 1,191,890 84	$ 1,185,652 28
Canadian Government Railways	35,743 87	60 50
Grand Trunk Pacific Railway	357,394 54	45,409 30
Canadian National Railways	$ 1,585,029 25	$ 1,231,122 08

Total Operating Deficit

Canadian Northern Railway System	$ 7,667,801 98	$17,444,232 08
Canadian Government Railways	5,623,042 62	10,449,936 93
Grand Trunk Pacific Railway	4,387,086 41	10,179,923 24
Canadian National Railways	17,677,931 01	$38,074,092 25

Non-Operating Income

Canadian Northern Railway System	$ 3,119,349 72	$ 1,845,994 62
Canadian Government Railways	457,352 46	1,737,978 51
Grand Trunk Pacific Railway	863,185 83	1,837,442 03
Canadian National Railways	$ 4,439,888 01	$ 5,421,415 16

Deductions from Gross Income

Canadian Northern Railway System	$ 1,011,242 14	$ 125,637 37
Canadian Government Railways	845,065 71	720,096 33
Grand Trunk Pacific Railway	801,667 77	812,404 79
Canadian National Railways	$ 2,657,975 62	$ 1,658,138 49

Total Deficit Before Fixed Charges

Canadian Northern Railway System	$ 5,559,694 40	$15,723,874 83
Canadian Government Railways	6,010,755 87	9,432,054 75
Grand Trunk Pacific Railway	4,325,568 35	9,154,886 00
Canadian National Railways	$15,896,018 62	$34,310,815 58

INCOME ACCOUNTS FOR YEARS ENDED DECEMBER 31, 1921 AND 1920—*Concluded*

FIXED CHARGES

	1921	1920
Canadian Northern Railway System		
Interest due public	$17,595,707 51	$13,993,695 36
Interest due Government	13,224,208 27	10,326,260 69
	$30,819,915 78	$24,319,956 05
Grand Trunk Pacific Railway		
Interest due public	$ 3,977,447 36	$ 4,270,244 38
Interest due Government	1,535,474 22	1,539,224 00
Interest on Receiver's certs	1,702,886 64	808,351 63
Interest due Grand Trunk Railway	2,742,191 60	2,256,467 90
	$ 9,957,999 82	$ 8,874,287 91
Canadian National Railways	$40,777,915 60	$33,194,243 96

TOTAL DEFICIT

Canadian Northern Railway System	$36,379,610 18	$40,043,830 88
Canadian Government Railways	6,010,755 87	9,432,054 75
Grand Trunk Pacific Railway	14,283,568 17	18,029,173 91
Canadian National Railways	$56,673,934 22	$67,505,059 54
St. John and Quebec Railway (Leased)	316,044 60	346,015 49
	$56,989,978 82	$67,851,075 03

(6.) CANADIAN NATIONAL RAILWAYS

STATEMENT SHOWING OPERATING REVENUE PAID IN LABOUR AND AVERAGE NUMBER OF EMPLOYEES. YEARS 1921 AND 1920

GROSS EARNINGS

	1921	1920	Increase or *Decrease*	Inc. or *Dec. %*
Can. Nor. Railway	$ 69,088,474 16	$ 66,695,398 80	$2,393,075 36	3.59
Can. Govt. Railways	40,964,303 92	44,537,803 85	*3,573,499 93*	*8.02*
Grand Trunk Pac.	16,638,677 64	14,408,549 66	2,230,127 98	15.48
System	$126,691,455 72	$125,641,752 31	$1,049,703 41	0.84

OPERATING LABOUR

Can. Nor. Railway	$ 42,233,504 97	$47,563,113 08	*$5,329,608 11*	*11.20*
Can. Govt. Railways	28,649,972 81	35,941,959 31	*7,291,986 50*	*20.28*
Grand Trunk Pac.	11,498,120 09	15,262,647 77	*3,764,527 68*	*24.66*
System	$ 82,381,597 87	$98,767,720 16	*$16,386,122 29*	*16.59*

RATIO OF LABOUR TO GROSS EARNINGS

Can. Nor. Railway	61.13	71.31	*10.18*	*14.27*
Can. Govt. Railways	69.94	80.70	*10.76*	*13.33*
Grand Trunk Pac.	69.10	105.92	*36.82*	*34.76*
System	65.03	78.61	*13.58*	*17.28*

COMPARISON OF PAYROLL (INCLUDING BETTERMENTS)

Can. Nat. Railways	$88,755,060 20	$105,109,808 29	$16,354,748 09	15.56

AVERAGE NUMBER OF EMPLOYEES

	1921	1920	*Decrease %*	*Dec.*
Canadian Government Railways	20,658	23,849	*3,191*	*13.38*
Canadian Northern Railway	32,384	33,654	*1,270*	*3.77*
Grand Trunk Pacific	7,281	7,821	*540*	*6.90*
Canadian National	60,323	65,324	*5,001*	*7.66*

CANADIAN NATIONAL RAILWAYS

TRAIN TRAFFIC STATISTICS FOR TWELVE MONTHS ENDED DECEMBER 31, 1921, 1920 AND 1919

—	1921	1920	1919
Train Mileage			
Passenger trains	12,578,548	13,322,587	11,919,559
Freight trains	18,715,076	20,988,345	18,359,522
Mixed trains	3,269,508	3,496,965	3,355,381
Total train miles (excluding special train miles)	34,563,132	37,807,897	33,634,462
Car Mileage			
Passenger—			
Coaches, parlour, sleeper and dining cars	61,361,293	55,744,463	57,030,694
Baggage, mail, express, etc	30,242,272	38,149,446	32,973,665
Total passenger car miles	91,603,565	93,893,909	90,004,349
Freight—			
Loaded freight car miles	389,090,694	420,074,960	356,133,867
Empty freight car miles	211,283,957	168,809,115	147,006,593
Caboose miles	29,507,800	21,224,990	19,232,736
Total freight car miles	629,882,451	610,109,065	522,373,196
Passenger cars per traffic train mile	5·78	5·58	5·89
Freight cars per traffic train mile	28·65	24·92	24·06
Passenger Traffic			
Passengers carried (earning revenue)	11,856,620	13,572,245	12,578,970
Passengers carried (earning revenue) one mile	711,867,853	841,636,864	915,173,565
Passengers carried (earning revenue) one mile per mile of road	42.027	50,957	56,136
Average journey per passenger ..... miles	60·04	62·01	72·8
Average amount received per passenger ..... $	1·70	1·66	1·84
Average amount received per passenger mile ..... cts.	2·83	2·68	2·52
Average number of passengers per train mile	44·92	50·04	59·91
Average number of passengers per car mile	11·60	15·10	16·04
Revenue from passengers per passenger car mile ..... cts.	32·79	40·52	40·48
Total passenger train earnings per train mile ..... $	1·76	1·71	1·83
Total passenger train earnings per mile of road ..... $	1,650·98	1,738·52	1,714·77
Freight Traffic			
Tons of revenue freight carried	21,182,466	25,089,376	22,100,455
Tons of revenue freight carried one mile	8,991,467,782	9,221,370,748	7,801,309,879
Tons of non-revenue freight carried one mile	1,300,553,019	1,232,876,909	908,328,733
Total tons (all classes) freight carried one mile	10,292,020,801	10,454,247,657	8,709,638,612
Tons of revenue freight carried one mile per mile of road	530,839	558,314	478.523
Tons of non-revenue freight carried one mile per mile of road	76,782	74,645	55,716
Total tons (all classes) freight carried one mile per mile of road	607,621	632,959	534,239
Average amount received per ton per mile revenue freight.cts.	1.039	0·983	0·909
Average number of tons revenue freight per train mile	408·99	376·61	359·26
Average number of tons non-revenue freight per train mile	59·16	50·35	41·83
Average number of tons (all classes) freight per train mile	468·15	426·96	401·09
Average number of tons revenue freight per loaded car mile	23·11	21·95	21·91
Average number of tons non-revenue freight per loaded car mile	3·34	2·93	2·55
Average number of tons (all classes) freight per loaded car mile	26 45	24 88	24 46
Average haul, revenue freight ..... miles	424·48	367·54	352·99
Freight train earnings per loaded car mile ..... cts.	24·02	21·58	19·92
Freight train earnings per train mile ..... $	4·25	3·70	3·27
Freight train earnings per mile of road ..... $	5,516·56	5,489·12	4,351·85

CANADIAN NATIONAL RAILWAYS

DESCRIPTION OF FREIGHT CARRIED YEAR ENDED DECEMBER 31, 1921

—	Quantity	Tons	Per cent
Flour and other mill products	8,349,220 Sacks	417,461	1·97
Wheat	119,266,200 Bush	3,577,986	16·89
Oats	68,099,529 "	1,157,692	5·47
Barley and other grains	17,133,810 "	435,695	2·06
Hay and straw		208,808	0·99
Fruit (fresh)		96,826	0·46
Vegetables and other agricultural products		188,379	0·89
Horses	40,387 head	34,329	0·16
Cattle	270,075 "	162,045	0·76
Sheep and hogs	454,250 "	45,425	0·21
Other animal products		118,882	0·56
Coal and coke		4,184,781	19·76
Building material, stone, etc.		769,854	3·63
Ores		109,056	0·51
Other mine products		205,497	0·97
Logs, lumber, etc.	1,994,906 M. Ft.	2,992,359	14·13
Cordwood	257,338 Cds.	360,273	1·70
Pulpwood		1,968,710	9·29
Other forest products		114,870	0·54
Immigrants' effects and household goods		82,226	0·39
Petroleum products		385,587	1·82
Paper, wood-pulp, etc.		424,829	2·01
Other manufactures		1,133,060	5·35
Merchandise and miscellaneous		2,007,836	9·48
Total tons		21,182,466	100·00

CANADIAN NATIONAL RAILWAYS

STATEMENT SHOWING DETAILS OF EQUIPMENT ON HAND DECEMBER 31, 1920; RETIREMENTS, DELIVERIES AND POSITION AT DECEMBER 31, 1921

—	Dec. 31, 1920	Retirements during the year	Delivered during the year	Dec. 31, 1921
Locomotives—				
Passenger	1,730	9	12	1,733
Freight				
Switching	226		1	227
Electric locomotives	13			13
Total locomotives	1,969	9	13	1,973
Passenger Equipment—				
First class cars	477	14	14	477
Second class cars	249	19		230
Combination cars	192		3	195
Colonist cars	348	6		342
Dining cars	62	1	12	73
Parlor cars	67	3	3	67
Sleeping cars	202	1	21	222
Postal cars	55			55
Baggage and express	509	14	70	565
Business and pay cars	66	2	2	66
Other cars in passenger service	61	4	26	83
Total	2,288	64	151	2,375
Freight Equipment—				
Box cars	55,824	706	715	55,833
Flat cars	9,768	182		9,586
Stock cars	3,494	19	350	3,825
Coal cars	8,371	112		8,259
Tank cars	78	7		71
Refrigerator cars	1,719	23	104	1,800
Other cars in freight service	1,435	29	189	1,595
Total	80,689	1,078	1,358	80,969
Work Equipment—				
Gravel cars	271	7	215	479
Derrick cars	181	14	20	187
Caboose cars	1,074	55	30	1,049
Other road cars	3,497	251	173	3,419
Total	5,023	327	438	5,134
Total cars	88,000	1,469	1,947	88,478

(10.) CANADIAN NATIONAL RAILWAYS

Mileage of Railways as of December 31, 1921

MARITIME DISTRICT

	Miles	
Halifax Ocean Terminals to Mont Joli	480.17	
Sydney to Truro	224.27	
Moncton to St. John	89.34	
Pacific Junction to Monk	343.54	
Point Tupper to St. Peter's	30.64	
New Glasgow to Pictou Landing	8.30	
Stellarton to Oxford Junction	79.40	
Ferrona Junction to Sunny Brae	12.51	
Pictou to Brown Point	1.92	
Pugwash Junction to Pugwash	4.60	
Windsor Junction to Stewart	81.92	
Halifax to Deep Water Terminals	3.68	
Sackville to Cape Tormentine	36.05	
Painsec Junction to Point Du Chene	11.98	
Moncton to Buctouche	29.93	
Salisbury to Albert	44.77	
Elgin to Havelock	26.11	
St. Martins to Hampton	28.73	
Fredericton to Derby Junction	110.64	
Stanley Junction to Stanley	5.46	
Nelson Junction to Loggieville	13.77	
Gloucester Junction to Tracradie	73.16	
Pokemouche Junction to Shippegan	6.85	
Tide Head to St. Leonard	105.12	
Connection with B. & A. Ry. at St. Leonard (leased line)	0.62	
Dalhousie Junction to Dalhousie	6.67	
		1,860.15

Prince Edward Island Railway—

Charlottetown to Tignish	115.26	
Emerald Junction to Borden	12.63	
Royalty Junction to Souris	55.00	
Harmony Junction to Elmira	9.89	
Mt. Stewart Junction to Georgetown	24.29	
Montague Junction to Montague	6.36	
Charlottetown to Murray Harbour	47.83	
Lake Verde to Vernon	4.43	
Alberton to Alberton Wye	0.30	
		275.99

Halifax & South Western Railway—

Southwestern Junction to Yarmouth	245.78	
Mahone Junction to Lunenburg	7.06	
Bridgewater Junction to Port Wade	92.56	
Caledonia Junction to Caledonia	22.11	
Liverpool to Milton	4.78	
Middleton Junction to Middleton (Running rights on D.A.R.)	0.60	
		372.89

Vale Railway. (*Leased Line*)—

Thorburn to New Glasgow		5.95

St. John & Quebec Railway. (*Leased Line*)—

Westfield Beach to Centerville	158.11	
St. John to Westfield Beach (Running rights on C.P.R.)	13.96	
		172.07
Total Mileage Maritime District		2,687.05

QUEBEC DISTRICT

	Miles	
Mont Joli to St. Rosalie Junction (via Lévis)	323.41	
St. Rosalie Junction to Montreal (Joint Section G.T.R.)	37.62	
Monk to Diamond Junction	101.01	
Joffre to Armstrong	956.60	
Quebec to St. Marc	48.40	
St. Prospere to Montreal	115.80	
Montreal (Tunnel Terminal) to Hurdman (Ottawa)	111.60	
St. Charles Junction to Joffre	16.84	
Cap Rouge to Cadorna	5.88	
Cadorna to Quebec (Palais Sta.) (Running rights C.P.R.)	3.20	
Rivière à Pierre Junction to Garneau Jct	39.70	
Joliette to Cushing Junction	61.60	
Rivière Ouelle Junction to Rivière Ouelle	6.48	
Lyster to Deschaillons	29.59	
St. Leonard Junction to Nicolet	16.76	
Bridge to Champlain Market	6.48	
Aldred Junction to Shawinigan Falls	3.80	
Paradis to Rawdon	15.70	
Rinfret Junction to Huberdeau	45.30	
Arundel to China Clay Mines	9.20	
Cartierville Spur	0.80	
		1,955.77
Quebec and Saguenay Railway—		
Cap Tourmente to Murray Bay	62.31	
St. Joachim to Cap Tourmente (Leased Line)	5.30	
		67.61
Quebec and Lake St. John Railway—		
Parent (Parent Sq.) to Chicoutimi	226.0	
Montmorency Junction to Montmorency Mills	7.2	
Loretteville to Stoneham	10.0	
Valcartier to Clark's	5.4	
Lynton Junction to La Tuque	39.6	
		288.20
James Bay and Eastern Railway—		
Chambord Junction to St. Felicien		29.70
Total Mileage Quebec District		2,341.28

ONTARIO DISTRICT

Hurdman to Current River	901.30	
Current River to Pt. Arthur (Running rights C.P.R.)	2.10	
Riverside to Ottawa (Central Sta.) Running rights G.T.R)	1.70	
Rideau Junction to Sydenham	80.80	
Deseronto to Todmorden	132.90	
Toronto (Union Sta.) to Rosedale (Running rights G.T.R.)	3.80	
Todmorden to Capreol	272.20	
Duncan to Donlands	2.10	
Donlands to Dovercourt Rd. (Joint Section C.P.R.)	6.70	
Harrowsmith to Kingston (Running rights C.P.R.)	18.60	
Oshawa to Oshawa Town	2.40	
Brockville to Westport	44.40	
Udney to Orillia (Includes 2.80 M running rights C.P.R.)	10.20	
Key Junction to Key Harbour	6.20	
Sudbury Junction to Sudbury	5.20	
Garson Junction to Garson	3.70	
Algo to C.N. Junction, Algoma Eastern Connection	2.40	
Connection with T. & N. O. Railway	0.25	
Sellwood Junction to Sellwood	3.97	
		1,500.92
Central Ontario Railway—		
Trenton to Picton	30.60	
Trenton to Wallace	117.60	
Belmar to Cordova	9.60	
Ormsby Junction to Coe Hill	7.20	
		165.00

	Miles	
Bessemer & Barry's Bay Railway—		
Bessemer Junction to Bessemer		4.80
Irondale, Bancroft and Ottawa Railway—		
York River Junction to Howland		51.00
Bay of Quinte Railway—		
Yarker to Bannockburn	54.50	
Deseronto to Sydenham	31.00	
		85.50
Total Mileage Ontario District		1,807.22

ELECTRIC LINES IN PROVINCE OF ONTARIO

Toronto, Niagara and St. Catharines Railway—		
Port Dalhousie to Niagara Falls	16.74	
Thorold to Port Colborne	18.54	
Niagara Falls to Fallsview	4.63	
St. Catharines to Niagara-on-the-Lake	12.18	
Local Lines, St. Catharines	9.51	
		61.6
Toronto Suburban Railway—		
Toronto to Woodbridge	12.0	
Toronto to Lambton	2.1	
Lambton to Guelph	46.1	
Local Lines in Toronto	4.1	
		64.6
Total Mileage Electric Lines in Ontario		126.20

CENTRAL DISTRICT

Armstrong to Winnipeg	390.54	
Fort William to Superior Junction (includes 0.53 miles running rights C.P.R.)	191.84	
Port Arthur to Rainy River	285.97	
International Boundary to Winnipeg (St. Boniface)	106.75	
Winnipeg to Watrous	406.60	
Beaver to Dauphin	102.59	
West Tower to M. & B. Junction	77.07	
Twin City Junction to North Lake, North Lake Branch	59.15	
South Junction to Emerson Junction	72.69	
Junction Emerson Br. to end of steel	2.86	
G. N. Junction to International Boundary	0.08	
Paddington Junction to Victoria Beach	72.75	
Junction Transcona to end of steel	4.02	
St. James Junction to Gypsumville	158.04	
Steep Rock Junction to Steeprock	12.36	
Grosse Isle to Hodgson	80.98	
Oakland to Amaranth	44.18	
Ochre river to end of track	14.90	
Carman Junction to Somerset Junction	78.67	
Junction Carman S. D. to Notre Dame de Lourdes	2.63	
Greenway to Deloraine	80.18	
Muir to Neeepawa to McCreary Junction	70.41	
Brandon Junction to Carberry Junction	22.85	
Rossburn Junction to Ross Junction	190.57	
Hallboro to Beulah	75.43	
Wroxton to Willowbrook	41.37	
Melvile to Canora	54.63	
Connections at Yorkton (Running rights C. P. R. 0. 38)	0.87	
Connections at Canora (Running rights C. P. R.)	0.08	
		2,701.06
Minnesota and Manitoba Railway, (Leased Line)—		
Rainy River to International Boundary		43.72
Duluth, Winnipeg & Pacific Railway—		
International Boundary to D. W. & P. Jct.	169.00	
Duluth Junction to Centre of lift span	1.51	
Connections at Duluth (Running rights Nor. Pacific Railway	5.63	
Connections at Duluth (Running rights L.S.T. and T. Railway)	0.87	
Connections at Duluth (Running rights C. St. P. M. & O. Railway)	0.88	
		177.89

ONTARIO DISTRICT—*Concluded*

	Miles	
Northern Pacific and Manitoba Railway, (Leased Line)—		
Portage Junction to Portage la Prairie	52.44	
Portage Junction to Emerson	62.81	
Morris to Belmont	102.21	
M. & B. Junction to Brandon	2.36	
Winnipeg Transfer Railway	1.20	
		221.02
Red River Valley Railway. (Leased Line)—		
Winnipeg (South side Water Ave.) to Portage Junction	2.92	2.92
Portage and North Western Railway—		
Portage La Prairie to Beaver	19.67	
Delta Junction to Delta	15.05	
		34.72
Total mileage Central District		3,181.33

PRAIRIE DISTRICT

Dauphin to North Battleford	394.90	
Watrous to Biggar	118.30	
Brandon to C. N. Junction, Regina	220.02	
Melville to Regina	97.50	
Saskatoon to Kindersley	125.84	
North Junction to Denholm via Prince Albert	477.17	
Sifton Junction to Winnipegosis	21.06	
Thunderhill Junction to Lintlaw	100.26	
Canora to Sturgis Junction	21.44	
Hudson Bay Junction to M.P. 214	302.06	
Humbolt to Melfort	54.15	
Young to Prince Albert	111.50	
Shellbrook to Big River	56.97	
Dalmeny to Carlton	36.80	
Hartney to Virden	38.06	
Maryfield to Bengough	184.35	
Luxton to Estevan	25.08	
Regina to Northgate	154.21	
Talamage to Weyburn	15.21	
Bengough Junction to Moose Jaw	86.99	
Gravelbourg Junction to Gravelbourg	80.62	
Regina to Riverhurst	112.58	
Delisle to Demaine	88.22	
Tichfield to Eatonia	114.40	
Connections at Regina	1.71	
Prince Albert branch connection	0.79	
Saskatoon, (Running rights C.P.R.)	11.95	
Spur lines on district	17.15	
		3,069.29
Northern Pacific and Manitoba Railway (Leased Line)—		
Hartney Jct. to M. & B. Junction	37.45	
Belmont to Hartney	54.13	
		91.58
Qu'Appelle L.L. and Saskatchewan Railway—		
Regina to Saskatoon	160.42	
Saskatoon to East Prince Albert	89.60	
Craven Junction to Craven	4.38	
C. N. Junction, Regina, to Junction with Q.L.L. and S. Ry. (running rights C. P. R.)	1 12	
		255.52
Total mileage Prairie District		3,416.39

WESTERN DISTRICT

North Battleford to Lobstick Junction	332.92
Biggar to Edmonton	262.60
Kindersley to Calgary	273.65
North Battleford to Turtleford	55.70
Battleford Junction to Old Battleford	7.91
Oban to Battleford	48.57
Battleford to end of steel (Cut Knife branch)	49.86
Biggar to Loverna	104.08
Eatonia to Alsask	33.73

	Miles	
WESTERN DISTRICT—*Concluded*		
Camrose S. E. Junction to Alliance	59.70	
Medicine Hat Junction to Steveville	58.82	
Vegreville Junction to Munson Junction	161.28	
Tofield to Calgary	201.41	
Warden to Otway	114.76	
Otway to Ullen (Running rights C.P.R.)	4.27	
Ullen to Brazeau	55.38	
Camrose Junction to Terminal Junction (South Edmonton)	45.77	
St. Paul Junction to St. Paul	120.91	
St. Albert to Athabaska	85.36	
Cardiff Junction to Cardiff	2.45	
Peace River Junction to Whitecourt	72.40	
Edmonton Junction to Stony Plains	19.94	
Spur lines Calgary branch	3.71	
Connections at Camrose, Canora & Calgary (Running rights C.P.R.)	0.61	
		2,175.79
Edmonton, Yukon and Pacific Railway—		
Junction at Edmonton to Strathcona		9.21
Total mileage Western District	2,185.00	
MOUNTAIN DISTRICT		
Edmonton to Prince Rupert	957.17	
Bickerdike to Lovett	56.33	
Mountain Park Coal Spur	30.57	
Alberta Coal & Mountain Park branch	7.78	
Alberta Coal & Pacific Pass branches	2.54	
Snaring Junction to Pocahontas	15.58	
Spurs on Mountain district	19.11	
Total mileage Mountain district		1,089.08
PACIFIC DISTRICT		
Red Pass Junction to Fraser River Junction	471.60	
Jct. with G. N. Railway to new depot, Vancouver	0.80	
New Westminster to Government bridge (Running rights)	1.00	
Government bridge to Vancouver (Running rights G. N. Railway)	13.00	
Kamloops Jct. to Kamloops	2.85	
Patricia Bay to Victoria	15.50	
Total mileage Pacific District		504.75
Total mileage in operation December 31, 1921		17,338.30
MILEAGE SUMMARY BY DISTRICTS		
Maritime District	2687.05	
Quebec District	2341.28	
Ontario District	1807.22	
Central District	3181.33	
Prairie District	3416.39	
Western District	2185.00	
Mountain District	1089.08	
Pacific District	504.75	
Electric Lines—Ontario	126.20	
		17,338.30
Average mileage operated during 1921.		
Can. Nat. Railways (Steam and Electric)		17,064.43
St. John & Quebec Railway. (Leased Line)		172.07
		17,236.50
SUMMARY		
Mileage used in C.N.R. traffic returns		16,938.23
Mileage of St. John & Quebec railway		172.07
Mileage of Electric Railways		126.20
Total average operated mileage 1921		17,236.50

CANADIAN GOVERNMENT RAILWAYS

REPORT OF W. A. KINGSLAND, GENERAL MANAGER, FOR THE CALENDAR YEAR ENDED DECEMBER 31, 1921

Intercolonial Railway

CAPITAL ACCOUNT

The cost of road and equipment on December 31, 1920	$142,672,840 23
The expenditure during the year ended December 31, 1921	2,479,224 15
Making the total cost on December 31, 1921	$145,152,064 38

The gross earnings and working expenses for the year ended December 31, 1921, compare as follows:—

Gross earnings—I.C.R. rail account		$ 24,326,641 41
Incidentals		279,245 78
		$ 24,605,887 19
Working expenses, I.C.R. rail account	$ 28,342,019 34	
Water account	7,875 99	
	$ 28,349,895 33	
New Brunswick and Prince Edward Island Ry. (interest	3,540 00	
		$ 28,353,435 33
Working expenses over gross earnings (deficiency)		$ 3,747,548 14

REVENUE

The earnings per train mile compare as follows:

Nine months ended December 31, 1920	$ 3 74
Calendar year 1921	3 62

WORKING EXPENSES

The averages, not including water line, compare with those of last year as follows:—

Per mile run by engine nine months ended December 31, 1920	$ 3 25
Per mile run by engine during calendar year 1921	3 25
Per mile run by train nine months ended December 31, 1920	4 22
Per mile run by train during calendar year 1921	4 17

The mileage of the railway for the calendar year 1921 was 1,670·38 miles, including Vale Railway (5·95 miles), New Brunswick and Prince Edward Island Railway (36·05 miles), and Intercolonial Railway (105·74 miles).

Note.—Earnings and working expenses include operation of electric car in passenger service on portion of Campbellton Division.

STORES

The value of general stores on the Canadian Government Railways, including St. John and Quebec Railway, carried over from the previous year was	$ 9,760,011 34
The value of stores purchased and charged from other departments was	30,909,947 00
Total of	$ 40,669,958 34
The value of stores used and sold	31,389,729 94
Balance of general stores on hand December 31, 1921	$ 9,280,228 40

Prince Edward Island Railway

The length of railway in operation at December 31, 1921, was 275·99 miles. The gauge is 3 feet 6 inches. On 60·98 miles of railway there has been a third rail laid for standard gauge.

The cost of road and equipment to December 31, 1920.. ..	$ 12,806,036 27
The expenditure during year ended December 31, 1921.. ..	30,086 29
Making the total cost on December 31, 1921..	$ 12,836,122 56
Gross earnings..	$ 888,394 77
Working expenses..	1,514,808 99
Deficiency..	$ 626,414 22

New Brunswick and Prince Edward Island Railway

The length of railway in operation at December 31, 1921, was 36.05 miles.

The cost of road and equipment to December 31, 1920, was..	$ 618,314 86
The expenditure during the year ended December 31, 1921, was.	170,636 10
Making the total cost on December 31, 1921..	$ 788,950 96

An amount of $3,540 was paid as interest.
This railway is included in the operation of the Intercolonial Railway.

International Railway of New Brunswick

The length of railway in operation at December 31, 1921 was 105.12 miles.

The cost of road and equipment to December 31, 1920..	$ 2,896,354 43
The expenditure during the year ended December 31, 1921. ..	39,709 86
Making the total cost on December 31, 1921..	$ 2,936,064 29

This railway is included in the operation of the Intercolonial Railway.

National Transcontinental Railway

This line extends from Moncton to Winnipeg and is 2,006.73 miles in length, which included the Grand Trunk Pacific branch line from Fort William to Superior Junction.

The cost of the National Transcontinental Railway to December, 31, 1920, was..	$167,812,592 55
Expenditure during the year ended December 31, 1921..	596,451 03
Making the total cost on December 31, 1921..	$168,409,018 58

The gross earnings and working expenses for the year ended December 31, 1921, compare as follows:—

Gross earnings..	$ 14,585,286 04
Working expenses (including $600,000 rental Lake Superior Branch..	15,697,234 75
Deficiency..	$ 1,111,948 71

Moncton and Buctouche Railway

This railway extends from Moncton to Buctouche and is 29.93 miles in length.

The cost of road and equipment to December 31, 1920	$ 149,615 75
Expenditure during the year ended December 31, 1921	106,395 35
Making the total cost on December 31, 1921	$ 256,011 10
Gross earnings	$ 53,165 91
Working expenses	98,043 60
Deficiency	$ 44,877 69

Salisbury and Albert Railway

This railway extends from Salisbury to Albert and is 44.77 miles in length.

The cost of road and equipment to December 31, 1920	$ 215,385 10
Expenditure during the year ended December 31, 1921	279,536 61
Making the total cost on December 31, 1921	$ 494,925 71
Gross earnings	$ 58,488 97
Working expenses	$ 117,870 87
Deficiency	$ 59,381 90

Elgin and Havelock Railway

This railway extends from Petitcodiac to Havelock and from Petitcodiac to Elgin and is 26.11 miles in length.

The cost of road and equipment to December 31, 1920	$ 84,674 15
Expenditure during the year ended December 31, 1921	52,414 27
Making the total cost on December 31, 1921	$ 137,088 42
Gross earnings	$ 20,729 52
Working expenses	60,900 19
Deficiency	$ 40,170 67

St. Martins Railway

This railway extends from Hampton to St. Martins and is 28.73 miles in length.

The cost of road and equipment to December 31, 1920	$ 217,313 65
The expenditure during the year ended December 31, 1921	70,527 82
Making the total cost on December 31, 1921	$ 287,841 47
Gross earnings	$ 23,288 76
Working expenses	66,677 23
Deficiency	$ 43,388 47

York and Carleton Railway

This railway extends from Cross Creek to Stanley and is 5.46 miles in length.

The cost of road and equipment to December 31, 1920	$ 22,047 85
The expenditure during the year ended December 31, 1921	6,992 56
Making the total cost on December 31, 1921	$ 29,040 41
Gross earnings	$ 7,957 07
Working expenses	24,429 02
Deficiency	$ 16,471 95

NOTE.—Gross earnings and working expenses include operation of motor-car between Cross Creek and Stanley in passenger service.

Quebec and Saguenay Railway

This railway extends from St. Joachim to Murray Bay and is 62.31 miles in length.

The cost of road and equipment to December 31, 1920	$	587,429 50
The expenditure during the year ended December 31, 1921		33,628 93
Making the total cost on December 31, 1921	$	621,058 43
Gross earnings	$	129,557 95
Working expenses		163,362 18
Deficiency	$	33,804 23

Caraquet and Gulf Shore Railway

This railway extends from Gloucester Junction to Tracadie and from Pokemouche Junction to Shippegan and is 80.01 miles in length.

The cost of road and equipment to December 31, 1920	$	79,600 00
The expenditure during the year ended December 31, 1921		433,352 84
Making the total cost on December 31, 1921	$	512,952 84
Gross earnings	$	99,170 02
Working expenses		262,111 41
Deficiency	$	162,941 39

Lotbiniere and Megantic Railway

This railway extends from Lyster to Deschaillons and is 29.59 miles in length.

The cost of road and equipment to December 31, 1920	$	9,840 00
The expenditure during the year ended December 31, 1921		333,748 77
Making the total cost on December 31, 1921	$	343,588 77
Gross earnings	$	14,591 41
Working expenses		41,240 69
Deficiency	$	26,649 28

Cape Breton Railway

This railway extends from Point Tupper to St. Peters and is 30.64 miles in length.

The cost of road and equipment to December 31, 1920	$	4,470 65
The expenditure during the year ended December 31, 1921		100,000 00
Making the total cost on December 31, 1921	$	104,470 65
Gross earnings	$	24,853 93
Working expenses		50,092 07
Deficiency	$	25,238 14

Hudson Bay Railway

This railway extends from The Pas, a distance of 238.17 miles, of which 214.0 miles is under operation.

There was expended on account of construction and betterments during the year ended December 31, 1921	$	61,030 48
Gross earnings	$	29,475 26
Working expenses	$	101,396 34
Deficiency	$	71,921 08

St. John and Quebec Railway

This railway extends from Centreville to Westfield Beach and is 158.11 miles in length, not including 13.96 miles running right Westfield Beach to St. John.

The gross earnings and working expenses for the year ended December 31, 1921, compare as follows:—

Gross earnings	$ 247,098 56
Working expenses	438,445 07
Deficiency	$ 191,346 51
In addition to above amount 40 per cent of gross earnings charged to rental was	124,698 09
Total deficit	$ 316,044 60

CANADIAN GOVERNMENT RAILWAYS

Statement showing miscellaneous rolling stock charged against rolling stock vote for the calendar year ended December 31, 1921.

Locomotives		$ 106,000 43
Freight cars—(Safety appliances to freight cars)		280 85
Passenger—		
Postal cars equipped with steel underframes	$4,486 31	
Compartment observation car (converted)	6,283 81	
Sleeper and café parlor car (converted)	6,428 40	
Baggage and smoker (converted)	7,998 68	
Café coach (converted)	491 05	
		25,688 25
Work equipment		49,792 13
Miscellaneous		1,076 06
		$ 182,837 72

Fatal Accidents

The number of fatal accidents on the Canadian Government Railways amounted to thirty-one, of which twelve were employees, two passengers and seventeen others, the railway being exonerated in twenty-eight cases.

W. A. KINGSLAND,
General Manager.

CANADIAN GOVERNMENT RAILWAYS

Telegraph Report

Statement showing miles of railway operated by the Canadian Government Railways, by telegraph, by telephone and by both during the year ending December 31, 1921.

Railways	Telegraph	Telephone	Telegraph and Telephone	Pole Mileage	Wire Mileage
National Transcontinental	1,559·98	423·84	6·50	1,989·32	6,519·00
Intercolonial	852·43	490·99		212·35	5,104·32
Prince Edward Island	229·08	47·70		57·55	103·96
International Railway of New Brunswick			105·73	105·73	211·46
Salisbury and Albert	44·77			44·77	44·77
St. John and Quebec		157·86		157·86	315·72
Moncton-Buctouche					
Elgin and Havelock					
York and Carleton					
Cape Breton		31·00		31·00	31·00
Lotbiniere and Megantic		30·00		30·00	30·00
Quebec and Saguenay			67·4		151·6
Caraquet and Gulf Shore			73·16	12·00	73·16
Canada Eastern	109·75				109·75
Hudson Bay Railway	332·00			332·00	664·00
Dartmouth and Deans		66·16		66·16	66·16

CANADIAN GOVERNMENT RAILWAYS

STATEMENT SHOWING EARNINGS, EXPENDITURE AND DEFICIT FOR THE YEAR ENDING DECEMBER 31, 1921.

Operating Expenses—		
Maintenance of way and structures	$ 10,393,395 17	
Maintenance of equipment	10,032,801 58	
Traffic expenses	721,060 91	
Transportation—Rail line	24,224,332 37	
Transportation—Water line	7,875 99	
Miscellaneous operations	660,304 20	
General expenses	511,831 95	
Total operating expenses		46,551,602 67
Operating Revenue—		
Freight	$ 29,140,446 61	
Passenger	7,597,928 20	
Mails and express	2,250,610 07	
Miscellaneous	1,051,507 82	
Incidental	909,421 40	
Joint facility	14,389 82	
Total operating revenue		40,964,303 92
Net operating deficit		$ 5,587,298 75
Charges to Income—		
Railway tax accruals	$ 35,743 87	
Rental leased lines	604,740 00	
Joint facility rents	240,325 71	
		880,809 58
		$ 6,468,108 33
Credits to Income—		
Hire of equipment	$ 381,031 28	
Income—Lease of road	28,125 00	
Miscellaneous	48,196 18	
		457,352 46
Net deficit		$ 6,010,755 87

CANADIAN GOVERNMENT RAILWAYS

CAPITAL ACCOUNT, YEAR ENDING DECEMBER 31, 1921

Intercolonial Railway—		
To cost of Intercolonial Railway to December 31, 1920	$142,672,840 23	
Construction and betterments	2,479,224 15	
		$145,152,064 38
Prince Edward Island Railway—		
Cost of railway to December 31, 1920	$ 12,806,036 27	
Construction and betterments	30,086 29	
		12,836,122 56
New Brunswick and Prince Edward Island Railway—		
Cost of Railway to December 31, 1920	$ 618,314 86	
Construction and betterments	170,636 10	
		788,950 96
International Railway—		
To cost of Railway to December 31, 1920	$ 2,896,354 43	
Construction and betterments	39,709 86	
		2,936,064 29
National Transcontinental Railway—		
To cost of railway to December 31, 1920	$167,812,567 55	
Construction and betterments	596,451 03	
		168,409,018 58

Moncton and Buctouche Railway—			
To cost of railway to December 31, 1920..	$ 149,615 75		
Construction and betterments..	106,395 35		
			256,011 10
Salisbury and Albert Railway—			
To cost of railway to December 31, 1920..	$ 215,389 10		
Construction and betterments..	132,360 69		
Account purchase price..	147,175 92		
			494,925 71
St. Martins Railway—			
To cost of railway to December 31, 1920..	$ 217,313 65		
Construction and betterments..	56,053 28		
Account purchase price..	14,474 54		
			287,841 47
Elgin and Havelock Railway—			
To cost of railway to December 31, 1920..	$ 84,674 15		
Construction and betterments..	16,345 88		
Account purchase price..	36,068 39		
			137,088 42
York and Carleton Railway—			
To cost of railway to December 31, 1920..	$ 22,047 85		
Construction and betterments..	236 30		
Account purchase price..	6,756 26		
			29,040 41
Quebec and Saguenay Railway—			
To cost of railway to December 31, 1920..	$ 587,429 50		
Construction and betterments..	33,628 93		
			621,058 43
Caraquet and Gulf Shore Railway—			
To cost of railway to December 31, 1920..	$ 79,600 00		
Construction and betterments..	287,282 77		
Account purchase price..	146,070 07		
			512,952 84
Lotbinière and Megantic Railway—			
To cost of railway to December 31, 1920..	$ 9,840 00		
Construction and betterments..	9,894 09		
Account purchase price..	323,854 68		
			343,588 77
Cape Breton Railway—			
Construction and betterments..	$ 4,470 65		
Account purchase price..	100,000 00		
			104,470 65
Hudson Bay Railway—			
Construction and betterments..	$ 61,030 48		
			61,030 48
Canadian Government Railways—			
Rolling stock to December 31, 1920..	$ 39,542,544 52		
Expenditure..	182,837 72		
			39,725,382 24
Rail loan account..	$ 127,326 51		
Branch lines aid suspense..	57,691 21		
Capital suspense—Vale Railway..	49,234 31		
Capital suspense—Miscellaneous..	37,693 62		
Capital suspense—Hudson's Bay Railway..	870 72		
Branch lines purchased—Balance of Purchase account—			
Moncton and Buctouche Railway....	$ 70,000 00		
Caraquet and Gulf Shore Railway..	50,000 00		
	120,000 00		
	$ 392,816 37		
DEDUCT—			
Capital account — Overseas rails..	$682,039 93		
Capital account — Moncton and Buctouche Ry.	5,713 40		
	687,753 33		
			294,936 96
			$372,400.674 33

CANADIAN GOVERNMENT RAILWAYS

Summary of Revenue and Expenses, Year Ended December 31, 1921

—	Revenue	Expenses	Deficit	Surplus
	$ cts.	$ cts.	$ cts.	$ cts.
Intercolonial Railway	24,605,887 19	28,353,435 33	3,747,548 14	
Prince Edward Island Railway	888,394 77	1,514,808 99	626,414 22	
Transcontinental Ry.—Eastern Lines	6,851,460 88	8,835,022 60	1,983,561 72	
Transcontinental Ry.—Western Lines	7,733,825 16	6,862,212 15		871,613 01
Moncton and Buctouche Railway	53,165 91	98,043 60	44,877 69	
Elgin and Havelock Railway	20,729 52	60,900 19	40,170 67	
St. Martins Railway	23,288 76	66,677 23	43,388 47	
York and Carleton Railway	7,957 07	24,429 02	16,471 95	
Salisbury and Albert Railway	58,488 97	117,870 87	59,381 90	
Lotbiniere and Megantic Railway	14,591 41	41,240 69	26,649 28	
Caraquet and Gulf Shore Railway	99,170 02	262,111 41	162,941 39	
Cape Breton Railway	24,853 93	50,092 07	25,238 14	
Quebec and Saguenay Railway	129,557 95	163,362 18	33,804 23	
Hudson Bay Railway	29,475 26	101,396 34	71,921 08	
	40,540,846 80	46,551,602 67	6,882,368 88	871,613 01

CANADIAN GOVERNMENT RAILWAYS

Revenue Account, Year Ended December 31, 1921

Working Expenses		*Earnings*		
Maintenance of way and structures	$10,393,395 17	Freight traffic		$29,457,372 27
Maintenance of equipment	10,032,801 58	Passenger traffic		8,971,051 13
Traffic expenses	721,060 91	Mails, express, etc.		2,336,132 12
Transportation rail line	24,224,332 87			$40,764,555 52
Transportation water line	7,875 99	Less—		
Miscellaneous operations	660,304 20	Rentals	$604,740 00	
General expenses	511,831 95	Hire of equipment, Cr.	381,031 28	
				223,708 72
				$40,540,846 80
		Balance		6,010,755 87
	$46,551,602 67			$46,551,602 67

CANADIAN GOVERNMENT RAILWAYS

(INCLUDING ST. JOHN AND QUEBEC RAILWAY)

GENERAL BALANCE, YEAR ENDED DECEMBER 31, 1921

DEBIT			CREDIT	
Investment in road and equipment		$372,400,674 33	Advances for road and equipment	$369,408,222 51
Receiver General Provident Fund Account		610,546 88	Advances for material and open accounts	20,466,498 55
General stores		9,280,228 40	Intercolonial and Prince Edward Island Employees Provident Fund account	610,546 88
Loss and damage freight suspense—East		34,154 48	Dominion of Canada — Advances for operating deficit	6,326,800 47
Loss and damage freight suspense—West		3,137 49	Freight in transit	145,875 48
Cash in transit		634,140 83	Vouchers	9,707,832 77
Station agents		571,659 13	Equipment renewals	1,147,307 54
Victory Loan suspense		23,352 96	Fire renewal account	67,962 41
Sleeping and dining car clearing account		70,360 15	Rail renewal account	52,411 38
Unadjusted debits and credits—			Apprentice Fund	1,071 18
Operating expenses	$766,911 84		Government sales tax	6,257 32
Capital	6,428 40		I. & C. suspense ledger	2,229,557 96
		773,340 24	Branch lines purchase account	120,000 00
Income account—Deficit for year		6,326,880 47	Stores suspense	40,797 80
Receiver General deficit for year 1921—Unpaid		1,359,415 58	Reserve for bad and doubtful debts	100,000 00
Unadjusted debits and credits reserve for bad debts		100,000 00	St. John and Quebec Railway	25,564 51
Equipment pool suspense		112,427 62	Surcharge account—Freight	140,176 96
Bank of Montreal — General account		1,447,460 08	Surcharge account — Passenger	6,175 89
Bank of Montreal — Special account		4,657,873 17	Grand Trunk Pacific suspense rental	100,000 00
Individuals and companies ledger		12,062,365 64	Auditor disbursements — Suspense	84,775 28
Car service ledger		405,358 62	Traffic ledger	158,157 95
Rents ledger		19,825 91	Auditors' suspense	28,113 27
Advances		80,484 13		
		$410,974,106 11		$410,974,106 11

MONCTON, N.B.

S. L. SHANNON,
Comptroller and Treasurer.

CANADIAN GOVERNMENT RAILWAYS

(INCLUDING ST. JOHN AND QUEBEC RAILWAY)

General Stores Account, Year Ended December 31, 1921

Debit			Credit		
To Balance December 31, 1920.		$ 9,760,011 34	By Issues during year ending December 31, 1921.. ..	$23,121,811 98	
Purchases for year ending December 31, 1921	$23,925,559 76		Sales of material, fuel, etc.	7,910,929 31	
Charges from other departments.	6,415,260 48		Sales of material..	356,988 65	
Labour	326,831 92				$31,389,729 94
Staff pay-rolls.	242,244 84		Balance—		
		30,909,947 00	Ordinary stores, including fuel.	$ 6,302,912 80	
			Roadway and bridge material.. ..	2,977,315 60	
					9,280,228 40
		$40,669,958 34			$40,669,958 34

CANADIAN GOVERNMENT RAILWAYS

Statement of Cash Received, Year Ended December 31, 1921

Debit		Credit		
To Balance on hand January 1, 1921..	$ .02	By amounts deposited in Bank of Montreal, Moncton, during year ended December 31, 1921—		
Amounts received during year and credited as follows—		General account.		$55,073,159 70
Station agents	39,143,721 09	Special account..		12,674,022 74
Traffic ledger..	9,889,087 15	Amount transferred to miscellaneous revenue to adjust difference in account..		02
Car service ledger	820,384 86			
Individuals and companies ledger..	11,779,096 91			
Rents ledger	103,522 11			
General ledger	6,011,360 32			
	$67,747,182 46			$67,747,182 46

CANADIAN GOVERNMENT RAILWAYS

Rail Renewal Account, Year Ending December 31, 1921

On January 1, 1921, there was a balance to the credit of rail renewal account of	$52,411 38
Nothing has been charged during the year against the above amount.	
Leaving a credit balance to the credit of the rail renewal account on December 31, 1921, of	$52,411 38

CANADIAN GOVERNMENT RAILWAYS

Fire Renewal Account, Year Ended December 31, 1921

On January 1, 1921, there was a balance to the credit of the fire renewal account of	$86,700 71
There was credited during the year for an overcharge the previous year	2,963 94
	$89,664 65
There has been charged during the year against the above amount	21,702 24
Leaving a credit balance to the credit of the fire renewal account on December 31, 1921, of	$67,962 41

CANADIAN GOVERNMENT RAILWAYS

Equipment Renewal Account, Year Ended December 31, 1921

	Dr.	Cr.
There was a credit balance at January 1, 1921, to the credit of equipment renewal account of		$1,052,421 29
Cash received from sale of old rolling stock and machinery		97,207 93
		$1,149,629 22
There has been charged during the year against the above account for rolling stock repaired and changed.		
Changing twenty hospital cars to bagagge and smoking cars	$2,321 68	
		2,321 68
Leaving a credit balance to the credit of equipment renewal account on December 31, 1921, of		$1,147,307 54

NEW BRUNSWICK AND PRINCE EDWARD ISLAND RAILWAY

Rental Account, Year Ended December 31, 1921

Debit			Credit		
1921			1921		
Dec. 31.	To interest for one year to December 1, 1921	$3,540	Dec. 31.	By Dominion of Canada.	$3,540

NATIONAL TRANSCONTINENTAL RAILWAY

Rental Account, Year Ended December 31, 1921

Debit			Credit		
1921 Dec. 31.	To amount paid Grand Trunk Pacific Railway for rental Lake Superior Branch from January 1, to December 31, at $50,000 per month.	$600,000 00	1921 Dec. 31.	By Dominion of Canada.	$600,000 00
		$600,000 00			$600,000 00

VALE RAILWAY

Rental Account, Year Ended December 31, 1921

Debit			Credit		
1921 Dec. 31.	To amount paid Acadia Coal Company for one year's rental of Vale Railway to April 30, 1921..	$ 1,200 00	1921 Dec. 31.	By Dominion of Canada.	$1,200 00
		$1,200 00			$1,200 00

SAINT JOHN AND QUEBEC RAILWAY

Earnings, Expenditure and Deficit, Year Ended December 31, 1921

Operating Expenses—		
Maintenance of way and structures..	$224,772 53	
Maintenance of equipment..	37,524 92	
Traffic expenses..	2,859 35	
Transportation rail line..	169,037 25	
General expenses..	4,251 02	
Total operating expenses..		$438,445 07
Operating Revenue—		
Freight..	$205,459 60	
Passenger..	90,144 02	
Mails and express	11,073 76	
Miscellaneous..	1,202 25	
Incidental..	3,131 29	
Total operating revenue..		311,010 92
Net operating deficit..		$127,434 15
Charges to Income—		
Rentals..	$124,698 09	
Hire of equipment..	64,518 83	
	$189,216 92	
Miscellaneous credit..	606 47	
		188,610 45
Net deficit..		$316,044 60

SAINT JOHN AND QUEBEC RAILWAY

Revenue Account, Year Ended December 31, 1921

Expenditure		Earnings	
Maintenance of way and structures	$224,772 53	Freight	$207,232 57
Maintenance of equipment	37,524 92	Passenger	91,274 98
Traffic	2,859 35	Mails, express, etc	13,109 84
Transportation of rail line	169,037 25		$311,617 39
General	4,251 02	Less—	
	$438,445 07	Hire of equipment	64,518 83
Rental	124,698 09		$247,098 56
		Balance	316,044 60
	$563,143 16		$563,143 16

SAINT JOHN AND QUEBEC RAILWAY

Statement of Cash Received, Year Ended December 31, 1921

Debit		Credit	
To Balance on hand January 1, 1921	Nil	By Amounts deposited in Bank of Montreal, Moncton, during year ended December 31, 1921—	
Station agents	$323,122 80	General account	$521,032 36
Traffic ledger	31,709 55	Special account	554 96
I. & C. ledger	17,025 46		
Rents ledger	393 42		
General legder	140,336 09		
	$521,587 32		$521,587 32

CANADIAN

STATEMENT OF AVERAGES,

		Intercolonial Railway	P. E. Island Railway	National Transcontint'l Railway	Moncton & Buctouche Railway	Elgin and Havelock Railway	Hampton & St. Mary Railway
1	Mileage of railway	1,670 38	275 99	2,006 73	29 93	26 11	28 73
2	Total engine mileage	8,690,084	435,054	4,329,553	21,064	18,059	19,162
3	Total train mileage	6,794,045	343,199	3,744,231	20,096	16,927	18,195
4	Total car mileage	109,885,094	2,512,378	105,494,587	126,559	52,502	60,178
	Earnings—	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
5	Transportation—Rail	24,326,641 41	888,394 77	14,585,286 04	53,165 91	20,729 52	23,288 76
6	Transportation—Water						
7	Incidentals	279,245 78					
	Total	24,605,887 19	888,394 77	14,585,286 04	53,165 91	20,729 52	23,288 76
	Operating Expenses—						
8	Transportation—Rail	28,345,559 34	1,514,808 99	15,697,234 75	98,043 60	60,900 19	66,677 23
9	Transportation—Water	7,875 99					
	Total	28,353,435 33	1,514,808 99	15,697,234 75	98,043 60	60,900 19	66,677 23
	Ratio of Earnings to Gross Earnings—	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.
10	Earnings from transportation—rail	98 87	100 00	100 00	100 00	100 00	100 00
11	" " " water						
12	" Incidentals	1 13					
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
13	Earnings per mile of railway	14,730 71	3,218 94	7,268 19	1,776 34	793 93	810 61
14	" engine mile	2 83	2 04	3 37	2 52	1 15	1 22
15	" train mile	3 68	2 59	3 90	2 65	1 22	1 28
16	" car mile.....cts.	22 39	35 36	13 83	42 01	39 49	38 70
	Ratio of expenses to gross earnings—	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.
17	Rail	115 20	170 51	107 62	184 41	293 78	286 31
18	Water						
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
19	Expenses per train mile	4 17	4 41	4 19	4 88	3 60	3 66
20	Expenses per mile of railway	16,969 53	5,488 64	7,822 29	3,275 76	2,332 45	2,320 82
21	Repairs of locomotives	2,234,966 38	72,849 91	1,252,724 21	3,360 43	2,882 85	3,021 60
22	Repairs of freight cars	1,688,895 39	28,965 53	1,782,472 34	1,522 40	618 17	797 09
23	Repairs of passenger cars	1,211,292 21	49,622 17	503,670 83	2,359 24	882 72	952 34
24	Coast of repairs per locomotive	5,590 84	3,469 04	6,140 80	1,680 21	2,882 85	1,510 80
25	Cost of repairs per freight car	139 78	46 49	141 72	152 24	61 82	99 64
26	Cost of repairs per passenger car	2,121 61	1,102 71	3,730 17	1,179 62	441 36	952 34

Intercolonial Railway train and car miles each include 17.986 miles for electric car.
York & Carleton Railway train and car mileage each include 2.789 miles for motor car.
Canadian Government Railways train and car mileage each include 20.775 miles for electric and motor car.
Operating expenses includes 40 p.c. gross earnings paid St. John & Quebec Railway Company.

SESSIONAL PAPER No. 32

GOVERNMENT RAILWAYS

Year Ended December 31, 1921

York and Carlton Railway	Salisbury and Albert Railway	Quebec and Saguenay Railway	Lotbinière & Megantic Railway	Caraquet and G. S. Railway	Cape Breton Railway	Hudson Bay Railway	Canadian Government Railways	St. John and Quebec Railway	
5.46	44.77	92.71	29.59	80.01	30.64	238.17	4,559.22	172.07	1
5,831	34,389	49,156	10,480	65,236	23,300	9,419	13,710,778	174,768	2
7,223	33,279	47,655	10,022	60,681	19,282	9,419	11,124,254	165,668	3
12,886	182,074	331,698	47,188	387,231	58,119	105,411	219,255,905	964,460	4
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	
7,957 07	58,488 97	129,557 95	14,591 41	99,170 02	24,853 93	29,475 26	40,261,601 02	247,098 56	5
.....	.....	.....	.....	.....	.....	.....	.....	.....	6
.....	.....	.....	.....	.....	.....	.....	279,245 78	.....	7
7,957 07	58,488 97	129,557 95	14,591 41	99,170 02	24,853 93	29,475 26	40,540,846 80	247,098 56	
24,429 02	117,870 87	163,362 18	41,240 69	262,111 41	50,092 07	101,396 34	46,543,726 68	563,143 16	8
.....	.....	.....	.....	.....	.....	.....	7,875 99	.....	9
24,429 02	117,870 87	163,362 18	41,240 69	262,111 41	50,092 07	101,396 34	46,551,602 67	563,143 16	
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	
100.00	100.00	100.00	100.00	100.00	100.00	100.00	99.31	100.00	10
.....	.....	.....	.....	.....	.....	.....	.....	.....	11
.....	.....	.....	.....	.....	.....	.....	0.69	.....	12
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	
1,457 34	1,306 43	1,397 45	493 12	1,239 47	811 16	123 76	8,892 06	1,436 03	13
1 36	1 70	2 64	1 39	1 52	1 07	3 13	2 96	1 41	14
1 10	1 76	2 72	1 45	1 63	1 29	3 13	3 64	1 49	15
61 75	32 12	39 06	30 92	25 61	42 76	27 96	18 49	25 62	16
p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	
307 01	201 55	126 28	282 64	264 30	201 55	344 00	114 81	227 90	17
.....	.....	.....	.....	.....	.....	.....	.....	.....	18
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	
3 88	3 54	3 43	4 12	4 32	2 60	10 77	4 18	2 65	19
4,474 18	2,632 81	1,762 08	1,393 74	3,275 98	16,348 86	425 73	10,208 70	3,272 76	20
950 13	5,537 79	8,312 64	1,667 38	11,620 61	3,637 84	581 75	3,602,113 52	34,917 71	21
72 42	2,354 59	3,650 79	395 96	5,264 36	459 38	458 69	3,515,927 11	40 80	22
238 89	2,926 31	6,834 70	1,339 61	5,704 06	1,904 23	.....	1,787,727 31	2,266 41	23
950 13	1,845 93	2,078 16	1,667 38	2,905 15	3,637 84	No return	5,540 82	†	24
10 35	35 68	146 03	39 60	75 21	30 62	"	136 76	†	25
238 89	1,463 15	976 39	669 80	1,901 35	317 37	"	2,297 85	†	26

† Included in Intercolonial Railway.

CANADIAN

SUMMARY of the Passenger and Freight Traffic of the Canadian Government

		Intercolonial Railway	Prince Edward Island Railway	Transcontinental Railway	M. & B. Railway	S. & A. Railway	E. & H. Railway
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1	Passenger traffic	6,194,635 67	236,506 63	2,390,021 85	18,649 71	10,435 00	5,045 49
2	Freight traffic	16,084,020 52	555,955 10	12,519,889 65	31,551 03	45,309 24	14,158 50
3	Mails and express	1,870,646 05	84,820 88	265,163 76	3,848 69	6,918 60	2,435 53
4	Miscellaneous	182,079 17	20,367 45	66,588 18	48 00	167 50	10 00
5	Joint facility No 151			14,388 32			
	Total	24,331,381 41	897,650 06	15,266,051 76	54,097 43	62,830 34	21,649 52
6	Income account—Rental (misc.)	33,547 53	1,268 23	12,891 12	90 48	302 63	
7	" " " (joint facility)	63,801 78		179,307 93			
8	" " " taxes	9,619 89		26,115 79			
9	" " " leased lines	4,740 00		600,000 00			
10	Income from lease of road	28,125 00					
	Total	24,314,892 27	898,918 29	14,463,519 16	54,187 91	63,132 97	21,649 52
11	Hire of equipment	290,994 92	10,523 52	121,766 88	1,022 00	4,644 00	920 00
12	Net revenue	24,605,887 19	888,394 77	14,585,286 04	53,165 91	58,488 97	20,729 52
	Passenger Statement						
	Local traffic—						
13	Number of passengers	4,199,483	298,355	1,272,983	29,101	13,012	14,746
14	Mileage	152,747,094	7,054,846	36,243,181	636,787	310,834	161,416
	Through traffic—						
15	Number of passengers	265,994	35,468	124,466	7	61	2
16	Mileage	58,264,143	1,699,316	38,251,558	230	1,605	26
17	Total number of passengers	4,465,477	333,823	1,397,449	29,108	13,073	14,748
18	Total mileage	211,011,237	8,754,162	74,494,739	637,017	312,439	161,442
	Freight Statement						
	Local traffic—						
19	Tons	2,025,784	64,587	589,603	13,511	31,174	11,192
20	Mileage	319,638,233	2,610,230	148,378,139	299,468	704,528	116,047
	Through traffic—						
21	Tons	2,996,787	135,492	3,994,864	4,109	14,927	1,618
22	Mileage	904,854,618	7,546,592	1,316,345,538	125,086	391,434	21,612
23	Total tons	5,022,571	200,079	4,584,467	17,620	46,101	12,810
24	Total mileage	1,224,492,851	10,156,822	1,464,723,677	424,554	1,095,962	137,659

SESSIONAL PAPER No. 32

GOVERNMENT RAILWAYS

Railways and St. John and Quebec Railway, Year ending December 31, 1921

St. Martins Railway	York and Carleton Railway	Cape Breton Railway	C. & G. S. Railway	Q. & S. Railway	L. & M. Railway	Hudson Bay Railway	Canadian Government Railways	St. John and Quebec Railway	
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	
5,627 10	2,185 59	7,697 62	25,979 49	66,402 73	3,467 80	4,396 45	8,971,051 13	91,274 98	1
16,976 94	5,914 87	15,614 84	77,090 37	55,629 22	11,699 16	23,562 83	29,457,372 27	207,232 57	2
2,017 59	297 61	2,255 47	4,341 49	7,362 18	250 24	251 98	2,250,610 07	11,073 76	3
12 78	20 00	.....	195 54	105 07	50 00	1,264 00	270,882 13	1,429 61	4
.....	.....	.....	.....	.....	.....	.....	14,388 32	.....	5
24,608 85	8,418 07	25,567 93	107,606 89	129,499 20	15,467 20	29,475 26	40,964,303 92	311,010 92	
18 91	.....	4 00	77 13	46 25	50 40	.....	48,196 18	606 47	6
.....	.....	.....	.....	2,784 00	.....	.....	240,325 71	.....	7
.....	.....	.....	.....	.....	8 19	.....	35,743 87	.....	8
.....	.....	.....	.....	.....	.....	.....	604,740 00	.....	9
.....	.....	.....	.....	.....	.....	.....	28,125 00	.....	10
24,627 76	8,418 07	25,653 93	107,684 02	132,236 95	15,509 41	29,475 26	40,159,815 52	311,617 39	
1,339 00	461 00	710 00	8,514 00	2,679 00	918 00	.....	381,031 28	64,518 83	11
23,288 76	7,957 07	24,853 93	99,170 02	129,557 95	14,591 41	29,475 26	40,540,846 80	247,098 56	12
10,815	9,052	9,933	16,940	17,826	7,126	1,016	5,900,388	81,673	13
177,245	52,274	205,149	666,304	330,888	95,827	82,514	198,764,359	2,776,076	14
1	45	454	74	34,953	246	.....	461,771	1,403	15
30	270	13,669	4,816	1,640,261	5,019	.....	99,880,943	104,288	16
10,816	9,097	10,387	17,014	52,779	7,372	1,016	6,362,159	83,076	17
177,275	52,544	218,818	671,120	1,971,149	100,846	82,514	298,645,302	2,880,364	18
15,445	3,285	10,214	29,506	2,985	5,502	1,532	2,804,320	32,108	19
218,967	19,355	240,090	1,433,567	58,801	71,496	121,545	473,910,466	1,541,467	20
1,103	3,247	1,569	18,088	38,025	3,823	.....	7,213,652	92,084	21
29,679	18,871	47,934	1,163,346	1,774,502	44,588	.....	2,232,363,800	4,674,263	22
16,548	6,532	11,783	47,594	41,010	9,325	1,532	10,017,972	124,192	23
248,646	38,226	288,024	2,596,913	1,833,303	116,084	121,545	2,706,274,266	6,215,730	24

REPORT OF THE AUDITOR OF STORES AND MECHANICAL ACCOUNTS

Locomotives—Purchased on capital account	Nil
Passenger Cars—Purchased on capital account	Nil
Freight Cars—Purchased on capital account	Nil
Work Equipment—Purchased on capital account	Nil

GENERAL STATEMENT OF WORK DONE IN THE CANADIAN GOVERNMENT RAILWAY SHOPS, JANUARY 1, 1921, TO DECEMBER 31, 1921

Locomotive Department—	
Locomotives rebuilt	40
" repaired	492
" converted to superheater	21
" equipped with latest type electric headlight	33
" equipped with power reverse gear	8
" equipped with brick arch tubes	111
" equipped with coal pushers	11
" equipped with 8½" cross compound pump	15
" equipped with coal boxes	27
" equipped with air fire doors	7
" equipped with automatic driving box wedges	6
" equipped with power grate shakers	3
" equipped with Okadee front end hinges	14
" qeuipped with handrails	45
" and tenders painted	188
" boilers tested	66
" fire boxes patched	6
Tender tanks, tender frames, largely rebuilt	6
Repairs to Work Equipment—	
Ditchers	12
Steam shovels	19
Ledgerwood unloaders	6
Spreaders	9
Pile drivers	7
Well boring machines	2
Rail loaders	7
Ballast plough	8
Concrete mixers	1
Yard—Coal and wreck cranes	33
Hoisting engine	5
Jordan spreaders	3
Snow plough	1
Gas compressor	1
Vertical high-speed engines	2
Car Department—	
Built	Nil
Purchased	Nil
Cars Remodelled—	
Second-class to auxiliary	1
Box to pulp-wood	76
Sleeper to compartment observation car	1
Box to flanger	5
Flat to flanger	10
Flat to road repair car	1
Cars Repaired—	
Passenger cars—Heavy	659
" " Light	491
Freight and work cars	13,896
Cars equipped with safety appliances	268
" " " steel draft arms	1,077
" " " Winslow roofs	32
" " " Hutchins steel roofs	39
" " " inside metal roofs	90
Passenger cars equipped with steel underframes—Business	2
" " " " " " Postal	1
" " " " " " Passenger	7
Cars equipped with Economy draft arms	573
" " " Universal draft arms	155
" " " short draft arms (Man. Steel Fdy.)	84

REPORT OF THE AUDITOR OF STORES AND MECHANICAL ACCOUNTS.—*Con.*

New Machinery Installed in Shops—

Moncton	1-600-ton driving wheel press 1-Split pattern moulding machine 1-10-ton overhead travelling crane 1-Southwark flue welder for welding superheater tubes 1-96-inch tire boring mill 1-Ryerson hot saw and tube expander 1-42-inch coach wheel lathe 1-80-inch driving wheel lathe.
St. Malo	6-Jib cranes 1-Annealing welding outfit 1-Tip-it welding outfit 6-New electric motors.
Transcona	1-20" light drill 1-Standard cylinder boring bar 1-Wood chopping hog 1-Coil winding equipment 3-Rivet heating furnaces 1-Heavy type acetylene generator.

Shop machinery and tools at all points were repaired and kept in good working condition.

Cars of all descriptions were kept in proper condition for traffic and were painted and repaired when necessary.

Safety appliances were kept in good repair and new ones installed where necessary.

Reclamation plant was put in operation at Moncton in July, 1920, and large quantities of material reclaimed and made serviceable.

W. C. ROBERTS,
Auditor of Stores and Mechanical Accounts.

CANADIAN NATIONAL RAILWAYS

Canadian Government Railway—Eastern and Western Lines

Statement Showing the Number of Locomotives and the Various Classes of other Rolling Stock on the Lines, December 31, 1920, and December 31, 1921

	Passenger Cars															Freight Cars															
	Locomotives	Sleeping	Parlour	Dining	Colonist	1st Class	2nd Class	Postal	Baggage	Hospital	Vision Test	Box Baggage	Air Brake Inspection	Steam Motor	Total Passenger Cars	Box	Refrigerator	Platform	Oil Tank	Pitch Tank	Hopper	Gondola	20-ton Coal	Hart-Otis	Stock	Hart Convertible	Pulpwood	Pit Cars	Eastman Heaters	Caboose	Total Freight Cars
On hand serviceable and repairing, December 31, 1920	756	77	30	21	63	176	108	44	121	2	1	25	1	0	669	16,308	381	2,312	60	20	102	381	6	923	1,238	1,118	1,035	4	199	388	24,475
To be replaced, December 31, 1920	11	2	...	...	...	2	5	2	5	...	...	1	...	1	18	207	24	1,473	2	...	651	256	368	1	23	9	27	...	1	26	3,068
Total equipment, December 31, 1920	768	79	30	21	63	178	113	46	126	2	1	26	1	1	687	16,515	405	3,785	62	20	753	637	374	924	1,261	1,127	1,062	4	200	414	27,543
Converted on capital—2 official to baggage and smoker, 1 sleeping to observation, 1 tourist to baggage and smoker, 1 first-class to dynamo-meter, 5 box to flangers	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Converted on maintenance—76 box to pulp, 10 flat to flangers, 1 flat to road repair	...	...	...	...	*1*	*1*	...	...	3	...	...	...	...	...	3 *2*	*81*	...	*11*	...	...	...	...	...	...	...	76	...	...	...	76 *92*
Total equipment, December 31, 1921	768	79	30	21	62	177	113	46	129	2	1	26	1	1	688	16,434	405	3,774	62	20	753	637	374	924	1,261	1,127	1,138	4	200	414	27,527
To be replaced, December 31, 1920, as above	11	2	...	...	...	2	5	2	5	...	...	1	...	1	18	207	24	1,473	2	...	651	256	368	1	23	9	27	...	1	26	3,068
Condemned, year ending December 31, 1921	3	...	...	...	...	...	1	...	2	...	...	...	...	...	3	87	5	40	...	...	...	79	...	...	10	4	10	...	1	6	242
Total condemned and destroyed to December 31, 1921	14	2	...	...	...	2	6	2	7	...	...	1	...	1	21	294	29	1,513	2	...	651	335	368	1	33	13	37	...	2	32	3,310
Replaced on equipment renewal—Nil.																															
Total to be replaced, December 31, 1921	14	2	...	...	...	2	6	2	7	...	...	1	...	1	21	294	29	1,513	2	...	651	335	368	1	33	13	37	...	2	32	3,310
Add serviceable and repairing	754	77	30	21	62	175	107	44	122	2	1	25	1	0	667	16,140	376	2,261	60	20	102	302	6	923	1,228	1,114	1,101	4	198	382	24,217
Total equipment, December 31, 1921	768	79	30	21	62	177	113	46	129	2	1	26	1	1	688	16,434	405	3,774	62	20	753	637	374	924	1,261	1,127	1,138	4	200	414	27,527

(Figures in italics are deductions.)

CANADIAN NATIONAL RAILWAYS

Canadian Government Railways—Eastern and Western Lines

Statement Showing Number of Locomotives and the Various Classes of other Rolling Stock on the Line, December 31, 1920, and December 31, 1921

	Work Cars																																			
	Auxiliary	Stores Supply	Business	Pintsch Gas	Snow Ploughs—Common	Snow Ploughs—Winged	Snow Ploughs—Rotary	Snow Ploughs—Double Track	Snow Ploughs—Double End	Flangers	Steam Crane	Ballast Spreader—Rodgers	Ballast Trimmers	Centre Ballast Plow	Side Ballast Plow	Ballast Plough Unloader	Ballast Plough Wing	Concrete Mixer	Sand Ballast Machine	Well Boring Machine	Ditchers	Steam Derrick	Hand Derricks	Steam Shovels	Rail Sawing and Boring	Pile Drivers	Survey and Inspection	Scale Car	Rail Unloaders	Wrecking Cars	Steep Air Dump	Boarding Cars	Steel Snow Ploughs	Track Layers	Cinder Cars	Total Work Cars
On hand serviceable and repairing, December 31, 1920	56	6	27	5	52	28	2	3	4	76	35	12	2	15	5	12	2	5	1	1	6	1	7	18	1	4	28	1	5	71	36	207	35	1	81	851
To be replaced, December 31, 1920					1					2		1																				3			14	21
Total equipment, December 31, 1920	56	6	27	5	53	28	2	3	4	78	35	13	2	15	5	12	2	5	1	1	6	1	7	18	1	4	28	1	5	71	36	210	35	1	95	872
Converted on capital—2 official to baggage and smoker, 1 sleeping to observation, 1 tourist to baggage and smoker, 1 first-class to dynamo-meter, 5 box to flangers																																				
Converted on maintenance—76 box to pulp, 10 flat to flangers, 1 flat to road repair			1																																	17
	1		*2*							15																										*2*
Total equipment, December 31, 1921	57	6	26	5	53	28	2	3	4	93	35	13	2	15	5	12	2	5	1	1	6	1	7	18	1	4	28	1	5	71	36	210	35	01	95	887
To be repaired, December 31, 1920, as above					1					2		1																				3			14	21
Condemned, year ending December 31, 1921					1																															1
Total condemned and destroyed to December 31, 1921					2					2		1																				3			14	22
Replaced on equipment renewal—Nil.																																				
Total to be replaced, December 31, 1921					2					2		1																				3			14	22
Add serviceable and repairing	57	6	26	5	51	28	2	3	4	91	35	12	2	15	5	12	2	5	1	1	6	1	7	08	1	4	28	1	5	71	36	207	35	1	14	865
Total equipment, December 31, 1920	57	6	26	5	53	28	2	3	4	93	35	13	2	15	5	12	2	5	1	1	6	1	7	18	1	4	28	1	5	71	36	210	35	1	95	887

(Figures in italics are deductions.)

PRINCE EDWARD ISLAND RAILWAY

STATEMENT Showing the Number of Locomotives and the Various Classes of other Rolling Stock on the Line, on December 31, 1920, and December 31, 1921

	Locomotives	Passenger Cars							Freight Cars								Work Cars				
		First-class Passenger	Second-class Passenger	Combination Second and Baggage	Postal and Smoking	Combination Postal and Baggage	Baggage	Total Passenger Cars	Box Cars	Refrigerator Cars	Stock Cars	Oil Tank Car	Hart Convertible Cars	Coal Cars	Platform Cars	Caboose	Total Freight Cars	Dump Cars	Snow Plows	Flangers	Steam Shovels	Total Work Cars
On hand serviceable and repairing December 31, 1920	21	19	10	5	2	3	6	45	338	2	28	1	15	10	202	3	599	15	11	0	0	26
To be replaced, December 31, 1920	14	5	4	2	2	1	2	16	5	1	...	...	...	2	5	1	14	...	2	8	1	11
Total equipment, December 31, 1920	35	24	14	7	4	4	8	61	343	3	28	1	15	12	207	4	613	15	13	8	1	37
Condemned, year ending December 31, 1921	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	2	...	...	...	...	...
To be replaced December 31, 1920, as above	14	5	4	2	2	1	2	16	5	1	...	...	...	2	5	1	14	...	2	8	1	11
Total to be replaced	14	5	4	2	2	1	2	16	5	1	...	...	...	4	5	1	16	...	2	8	1	11
Add serviceable and repairing	21	19	10	5	2	3	6	45	338	2	28	1	15	8	202	3	597	15	11	0	0	26
Total equipment, December 31, 1921	35	24	14	7	4	4	8	61	343	3	28	1	15	12	207	4	613	15	13	8	1	37

CANADIAN GOVERNMENT RAILWAYS

REPORT OF A. F. STEWART, CHIEF ENGINEER, FOR THE YEAR ENDED DECEMBER 31, 1921

LINE CHANGES AND NEW LINES PUT INTO OPERATION

Grade and alignment revisions commenced in 1920 on Nashwaak Subdivision were carried to completion, thus greatly facilitating the traffic on this line. There was no change in mileage in consequence of above revision.

Direct connection between Charny and Quebec bridge was completed and put into operation.

ROADBED AND TRACK

The operated mileage of Canadian Government Railways on December 31, 1921, was as follows:—

	Main Line	Second Main Line	Passing Siding	Other Passings and Spurs	Total
Western Lines	390·54	4·80	35·46	84·72	515·52
Eastern Lines	3·816·75	74·14	319·32	684·07	4,894·12
Leased Lines	203·18	.....	21·77	49·31	274·26
Joint Sections and Running Rights	57·55	37·62	.....	.....	95·17
Totals	4,468·02	116·56	376·55	818·10	5,779·07

ROADBED AND TRACK MILEAGE—*Concluded*

	Inter-colonial Railway	Prince Edward Island Railway	New Brunswick and Prince Edward Island Railway	Inter-national Railway	Moncton and Buctouche Railway	Elgin and Havelock Railway	Hampton and St. Martins Railway	York and Carleton Railway	Salisbury and Albert Railway
Main Line.....Miles	1,482·78	275·99	36·05	105·12	29·93	26·11	28·73	5·46	44·77
2nd Main Line "	72·83								
Passing Sidings "	159·13	7·72	1·72	3·09	0·67	0·48	0·49		1·33
Other Sidings and Spurs "	451·83	30·30	5·05	3·93	1·24	0·71	0·77	1·35	3·03
Total	2,166·57	314·01	42·82	112·14	31·84	27·30	29·99	6·81	49·13

	National Trans-continental Railway	St. John and Quebec Railway	Caraquet and Gulf Shore Railway	Lotbinière and Megantic Railway	Cape Breton Railway	Quebec and Saguenay Railway	Leased Lines	Joint Sections and Running rights	Total
Main Line.....Miles	1,811·69	158·11	80·01	29·59	30·64	62·31	203·18	57·55	4,468·02
2nd Main Line "	6·11							37·62	116·56
Passing Sidings "	171·08	5·19	1·89		0·49	1·50	21·77		376·55
Other Sidings and Spurs "	253·63	6·86	4·57	2·94	1·55	1·03	49·31		818·10
Totals	2,242·51	170·16	86·47	32·53	32·68	64·84	274·26	95·17	5,779·23

WEIGHT OF RAIL IN MAIN TRACK

	Inter-colonial Railway	Prince Edward Island Railway	New Brunswick and Prince Edward Island Railway	Inter-national Railway	Moncton and Buctouche Railway	Elgin and Havelock Railway	Hampton and St. Martins Railway	York and Carleton Railway	Salisbury and Albert Railway
50-lb.		108·06				18·56			
56-lb.	15·84	155·86			19·13	1·00	27·78	5·46	31·47
60-lb.				51·30					
67-lb.	183·38	0·80		40·86	1·05	6·55			3·60
67½-lb.		67·53							
70-lb.	16·21								
72-lb.									1·20
80-lb.	440·98	4·72	36·05	12·27	9·75		0·95		8·50
85-lb.	899·20			0·69					
Totals	1,555·61	336·97*	36·05	105·12	29·93	26·11	28·73	5·46	44·77

*Mileage of rails Prince Edward Island Railway includes 60·98 miles of 3rd rail track for standard and narrow gauge.

WEIGHT OF RAIL IN MAIN TRACK—*Concluded*

	National Trans-continental Railway	St. John and Quebec Railway	Caraquet and Gulf Shore Railway	Lotbinière and Megantic Railway	Cape Breton Railway	Quebec and Saguenay Railway	Leased Lines	Joint Sections and Running Rights	Totals
50-lb.			43·20						169·82
56-lb.			16·71	29·59			4·80		307·64
60-lb.					25·03	15·59	0·50		92·42
67-lb.		0·19				9·41	1·84		247·68
67½-lb.						33·89			101·42
70-lb.									16·21
72-lb.					5·61		4·34		11·15
80-lb.	1,682·05	140·42	16·10			3·42	154·05		2,509·22
85-lb.	135·75	17·50	4·00				37·65		1,094·79
Totals	1,817·80	158·11	80·01	29·59	30·64	62·31	203·18		4,550·39

RAIL AND TIE RENEWALS, BALLASTING, DITCHING— NEW SIDINGS, ETC.

Titles		Inter-colonial Railway	Prince Edward Island Railway	New Brunswick and Prince Edward Island Railway	Inter-national Railway	Moncton and Buctouche Railway	Elgin and Havelock Railway	Hampton and St. Martins Railway	York and Carleton Railway	Salisbury and Albert Railway
New 85-lb. rails laid	miles	133·08								
" 85-lb. rails laid relay	"									
" 80-lb. " "	"	4·29	0·07		1·14	3·75		0·95		1·60
" 72-lb. " "	"									
" 70-lb. " "	"									
" 67½-lb. " "	"		0·23							
" 67-lb. " "	"				0·44		1·85			
" 60-lb. " "	"				0·38					
" 56-lb. " "	"									
" 50-lb. " "	"									
Tie renewals—Main line	No.	563,832	44,150	9,403	22,800	5,863	8,655	10,421	907	13,452
" Sidings	"	74,854	1,950	396	325	308	171	316		708
" Switch ties	sets	386	43	7	5	2	2	1		4
Tie plates placed	number	11,000								
Rail anchors placed	"	13,700								
Ballasting	miles	87·35	7·94		10·58					
Ditching	"	218·03		16·00	1·50				0·25	
Bank widening and trimming	"	15·65								
Tile underdraining	"	0·72								
Rip-rap protection	lin. ft.	10,300			800					
Cribwork protection	"		100		880					
Dangerous rocks removed	cu. yds.	21,713			2,600					
Wire fencing erected	miles	4·56	8·75			1·15	3·00			1·20
Snow fencing erected	"	5·55	0·50							
Board fencing erected	"	0·03								
Clearing right-of-way	acres						24·0	15·0		6·0
Farm crossings built	number									
Sidings, additional—passing	lin. ft.	1,217			1,057					1,125
" " business	"	37,945								
" " private	"	10,275	1,406							
Sidings taken up—passing	"									
" " business.—	"	4,424	616							
" " private	"	1,864								
Yard tracks		6,410								

RAIL AND TIE RENEWALS, BALLASTING, DITCHING, NEW SIDINGS, ETC.—*Continued*

		Grand Trunk Pacific Railway	National Trans-continental Railway	St. John and Quebec Railway	Caraquet and Gulf Shore Railway	Lotbinière and Megantic Railway	Cape Breton Railway	Quebec and Saguenay Railway	Leased Lines	Totals
New 85-lb. rails laid	miles	24·8	77·36							235·24
" 85-lb. " relay	"				4·00					4·00
" 80-lb. " "	"	8·17	18·70		16·10					54·77
" 72-lb. " "	"									
" 70-lb. " "	"									
" 67½-lb. " "	"									0·23
" 67-lb. " "	"									2·29
" 60-lb. " "	"									0·38
" 56-lb. " "	"				0·06					0·06
" 50-lb. " "	"									
Tie renewals—Main line	number	54,203	439,498	96,045	28,036	2,880	5,616	5,287	2,041	1,313,088
" Sidings	"	11,249	20,251	12,309	3,114	315				126,266
" Switch ties	sets		78	12	16	4				552
Tie plates placed	number	20,000	77,576							108,576
Rail anchors placed	"	26,100	16,500							56,300
Ballasting	miles	15·0	44·73		11·16					176·76
Ditching	"	2·0	23·05	4·77	0·90			2·0		268·50
Bank widening and trimming	"		28·50		1·10					45·25
Tile underdraining	"		3·31							4·03
Rip-rap protection	lin. ft.									11,100
Cribwork protection	"									980
Dangerous rocks removed	cu. yds.		21·25							25,838
Wire fencing erected	miles	1·4	14·21					0·64		34·91
Snow fencing erected	"		2·75		1·90					10·70
Board fencing erected	"									0·03
Clearing right-of-way	acres		300		50·0					395·00
Farm crossings built	number		7							7
Sidings additional—passing	lin. ft.		447		1,978					5,824
" " business	"		3,007		1,590					42,542
" " private	"		13,133		384			5,791		30,989
Sidings taken up—passing										
" " business						400				5,400
" " private			789			2,300				4,953
Yard tracks			7,982		3,569					17,961

TERMINAL IMPROVEMENTS

Intercolonial Railway—Halifax.—The approaches to passenger depot were paved with concrete 6 inches thick. Roadways from Barrington street to sheds 24, 25 and 28 were macadamized. Fire pump room at shed No. 24 was made fireproof and provided with separate entrance from outside. Yards generally cleaned up and buildings repaired.

Deepwater Terminals.—The unpaved portion of approach to deep water freight shed was partly paved with concrete 8 inches thick and the remainder with scoria blocks taken from ruins of old North Street station. Filling and grading of new roadway between pier 4 and the dockyard property was extended by using material removed from rock cuttings on Main Line and excavation for new locomotive terminal at Fairview. Alterations were made to the interior of pier 2 for the convenience of the Department of Public Works, who paid the entire cost. A special spring fender was placed on the south side of pier 2, at a cost of $20,800. A portion of the low water walling was removed from pier 3. The trestle approach to pier 4 was partially rebuilt. Minor repairs were made to piers 3 and 4. The ruins of old pier 5 which were a menace to navigation, were removed. The site of old North Street station was cleaned up and considerable material reclaimed.

Fairview.—Excavating and grading for new locomotive terminal at Fairview was completed and twenty carloads of brick unloaded at site.

Truro.—Old 75-foot turntable at Truro was replaced with a new 85-foot T.P.G. turntable. New shelters were built for fuel and ashpit men to replace that destroyed by fire.

Stellarton.—The new air compressor was installed in machine shop at Stellarton, and buildings generally repaired.

Pirate Harbour.—New 100-ton mechanical coaling plant at Pirate Harbour, commenced in 1920, was completed.

Point Tupper.—New 100-ton mechanical coaling plant at Point Tupper, commenced in 1920, was completed and old buildings torn down.

St. John.—The additional land required for new station and extension of Island Yard at St. John has been purchased. Surveys, boring tests, and preliminary plans for new station have been completed.

Moncton.—Grading of new terminal yard at Moncton is practically completed and 7·03 miles of tracks laid. A new 40-stall engine-house, stores building, machine shop and power house—all built of brick—were completed and put into service December 19. A new three-track mechanical coaling plant, two double-track ash pits, 150,000 gallon steel water tank with four stand-pipes were also constructed, sewer system constructed and 85-foot turntable transferred from old round-house, completing the engine facilities at this point.

Moncton Shops.—At Moncton shops, the roof over space between boiler and erecting shops was completed. The concrete roofs of boiler and machine shops were insulated by sheathing under side. Mechanical stokers installed in power-house. New electric transmission line constructed from power-house to various shops. New oil storage tank on concrete pit erected.

Bathurst.—A three-stall engine-house was constructed at Bathurst, with second hand material from H.O.T. engine-house, to provide terminal facilities for Caraquet and Gulf Shore Branch Line engines. The old 75-foot turntable from Truro was installed here. The necessary additional tracks for terminal facilities, constructed. A shed was built at end of engine-house to shelter electric car No. 100.

Campbellton.—A new 150-ton track scale was installed at Campbellton and 1,308 feet of scale siding constructed.

Mont Joli.—Installation of electric ice crusher in ice house at Mont Joli, commenced in 1920, was completed. Enginemen's bunk house, commenced in 1920, was completed and furnished. The bad portion of engine-house roof was reconstructed. A new platform for loading automobiles was built.

Rivière du Loup.—Power-house boiler repaired with brick arches. Truck turntables in round-house repaired. Cribwork in front of station, and station platform repaired. Round-house roof repaired. Steel water tank scraped and painted. Ties renewed in engine pit of engine-house. Engine-house doors repaired. Deck of turntable renewed.

Levis.—Coaling plant repaired. Wharf in rear of freight shed repaired. Boiler-house smokestack repaired. Shingled tool house built for St. Edward. Gas house repaired and painted. Boiler-house repaired and painted. New station painted with patent stucco and umbrella roof completed.

Joffre.—East yard extended from 775 to 985 cars capacity. Additional fifteen stalls built to engine-house, and four stalls extended 36 feet. New machine shop, 350-ton coaling plant, two double track ash pits, and standard two car capacity cattle pen constructed. Two stand-pipes installed. Ice house repaired and new 67 feet 9 inches by 24 feet 6 inches extension built to same. Train order signal installed.

Ste. Rosalie Junction.—Steam pipes for heating Grand Trunk Railway passenger cars renewed. Rest house, agent's dwelling, water tank and turntable repaired. Ash pit extended 70 feet. New water supply from St. Hyacinthe and new drainage system completed, coal shop, ashpit and van sidings rearranged.

Salisbury and Albert Railway

Albert.—Spur siding in Albert yard extended and made into through siding. Engine-house siding extended to ease sharp curve at turn out; 1,125 feet of additional yard tracks constructed. Dyke strengthened to protect railway property.

Caraquet and Gulf Shore Railway

Gloucester Junction.—A crossover constructed between main lines of Bathurst and Caraquet subdivisions to permit branch trains to transfer to and from main line without running rear end on as formerly.

New Brunswick and Prince Edward Island Railway

Dredging of turning basin of Cape Tormentine car ferry terminals carried on from May 25 to October 14; 4,200 cubic yards of rock and 42,300 cubic yards of other material excavated. A spring bumper was placed on fender piles of Cape Tormentine ferry landing. Repairs to stone approach of Port Borden ferry landing carried on as long as weather permitted.

National Transcontinental Railway

Monk.—Turntable cleaned, painted and repaired. Floors renewed in station and engine-house. Four new smokejacks installed on round-house. Agent's dwelling repaired. Pump-house and boiler-house painted. Ash pit repaired. Coaling plant repaired. New machinery installed in same and new trestle built.

Champlain Market Station.—Office accommodation on ground floor, first and top floors of Champlain Market station rearranged.

Bridge.—Bridge terminal closed up. Part of round-house torn down and machinery transferred to other locations. New train terminal now at Chaudiere Junction.

Palais Station.—Steam-driven gas compressor has been converted into electric motor compressor, effecting great saving.

St. Malo Shops.—Casting shed erected in 1920, painted and doors hung. Dock built for loading scrap material.

Fitzpatrick.—Six smokejacks renewed on round-house. Steam pipes in round-house and from round-house to station renewed. Round-house roof, drains, water line, ash pit, pits in round-house, and station platform repaired. New crossover built between coal and shop tracks. New waterproof cement floor built in toilet.

Parent.—Six-inch drain laid from turntable pit to sewer. New 100-foot standard ash pit constructed. Engine pits Nos. 4, 5, 6, 7 and 8 in round-house extended 12 feet to accommodate Mikado engines. Fifty K. W. generator set installed in power-house, old set transferred to Fitzpatrick. Three smokejacks renewed. Steam lines, air lines, water lines, store platform and station platform repaired. The first floor of station has been converted into Division offices, and toilet floors water-proofed. Construction commenced on ten double staff dwellings; five of these are 30 per cent completed. Station drain renewed with 24-inch concrete pipe.

Doucet.—Six-inch drain laid from turntable pit to sewer. Eight-inch cast-iron pipe laid from lake to well, to insure constant water supply. Steam lines in round-house renewed. Other steam lines, air lines and boxing of steam line to station repaired. Steel work in engine-house painted.

O'Brien.—Two No. 1 section-houses with bath-room constructed. Steam line and boxing from round-house to station, brick walls of storehouse, water lines and other steam lines, repaired. Steel in machine shop and boiler-house, and two smoke-jacks painted.

Cochrane.—General Office building painted. Glass renewed in engine-house windows. New valves put in standpipes. New steps built to storehouse platform. New cable supplied for cinder hoist. New crossing built at 6th avenue. Roof of engine-house, steam and water lines to trainmen's rest house, stair in rest house, roof of temporary boarding house, water line to stock pen and door of ice house, repaired. Station platform repaired and extended 270 feet at west end, stockpen whitewashed.

Hearst.—Water tank painted. Glass renewed in engine-house windows. Conveyor of coal chute renewed. Standpipes, interior of freight shed and section houses, station toilet, and ice house roof repaired.

Grant.—Glass renewed in windows of engine-house. Roof and inside of engine-house, coal chutes, standpipes, interior of trainmen's rest house and storehouse repaired.

Armstrong.—Stockpen, water line to stockpen, hydrants, coal chutes, round-house roof, and ice house doors repaired.

WATER SERVICE AND SEWERS

Intercolonial Railway

New Glasgow Division.—Engine-house water lines repaired at Stellarton, Pirate Harbour, Point Tupper and Sydney. Steam and water lines at Sydney extended to car-cleaning plant.

Moncton Division.—A new well was bored at Athol for station water supply. Second-hand standpipe installed opposite tank at Calhouns to enable engines to take water from passing track. At Moncton shops 240 feet of 6-inch tile pipe replaced by 10-inch tile pipe. Reservoir dam at Hampton repaired. New pumphouse built at Petitcodiac, replacing one destroyed by fire. Water service at Moncton included in terminal improvement report.

Campbellton Division.—New well bored at Harcourt to increase water supply for tank. New 6-inch and 8-inch sewer laid from Newcastle Station to connect with town sewer. Water pipes in Mont Joli engine-house renewed and laid underground instead of overhead as formerly.

Levis Division.—Water tanks at Isle Verte and D'Lotbiniere repaired and painted. Water tanks at L'Islet, St. Pierre and Bagot repaired. Auxiliary steam pump installed at Drummondville.

Moncton and Buctouche Railway

Twenty thousand-gallon water tank at Notre Dame operated by hydraulic ram: completed in January.

Salisbury and Albert Railway

Ten thousand-gallon gravity tank at Albert, completed.

Hampton-St. Martins Railway

Five thousand-gallon tank at Mile 27·2, all complete except standpipe.

Caraquet and Gulf Shore Railway

Twenty thousand-gallon tank operated by hydraulic ram at Mile 12·2, Caraquet Subdivision, complete, except valve, spout and fittings, which are being made at Moncton shops. One 11,000-gallon gravity tank at Mile 73·4 complete except for pipe fittings. One 11,000-gallon tank, with gasolene engine pump at Pokemouche Wye. Mile 0·7, Shippegan Subdivision, complete, except spout and fittings.

International Railway

Domestic water supply installed at Kedgwick for agent. Well bored at Falls Brook for domestic supply, but work not fully completed.

Transcontinental Railway

Edmundston Division.—Reservoir dam at Pacific Junction repaired. Pipe lines repaired at Bantalor, St. Leonard and Edmundston.

Levis Division.—Reservoir dam at Armagh repaired. Vapourizer installed on pump at St. Anselme to burn kerosene, proved unsatisfactory and was discarded.

St. Maurice Division.—Auxiliary pumping plant installed at Darey, making this tank either gravity or pumped supply.

Cochrane Division.—Water tank pipe lines repaired at LaSarre, Goodwin, Cochrane, Hearst, Grant, Exton and Armstrong. Tank repaired at Low Bush, Hughes, Hearst and Ameson. Tank at Hearst painted. Steam line to tank at Grant repaired. Suction pipe extended at Cochrane and Fauquier. New suction pipes installed at Low Bush. New elbow on suction pipe at Willet. Stand pipes at Cochrane painted. Pump and discharge pipe repaired at Mile 106·4. New wells dug for tank supply and stand pipes repaired at Armstrong.

Fort William Division.—Pipe lines repaired at Yeliff, Webster, Redditt, Dott and Elma. Well sunk at Superior Junction for domestic supply. New 50,000-gallon steel tank in course of erection at Transcona, replacing tank destroyed by fire. Connection made between railway service main and Transcona town pumping station, which gives cheaper and more adequate supply for terminal and shops.

Grand Trunk Pacific Railway

Fort William Division.—New 50,000-gallon steel tank erected at Graham, supplied by 6-inch cast-iron pipe and 10-horsepower pumping outfit, drawing water from lake. Pipe lines repaired at Larson and Oscar. Tanks repaired at Mission and Hunt.

Quebec and Saguenay Railway

Saguenay Division.—Syphon installed at St. Joachim.

On all railways repairs were made where necessary to keep the water service in good working order.

BUILDINGS

Intercolonial Railway.—One station, one freight shed, six buildings and seven platforms constructed. One agent's dwelling, eighty-nine buildings and sixty-one platforms repaired, two platforms and two stockpens extended, one building relocated, nine buildings painted, two ashpits repaired, ten engine-houses, thirteen smokejacks and two water tanks repaired, 850 feet of platforms replaced with cinder.

Prince Edward Island Railway.—One platform and one stockpen built, one platform extended and 235 feet of platform replaced with cinders.

International Railway.—One station and one platform built, one building repaired.

Cape Breton Railway.—Three buildings and one engine-house repaired.

St. John and Quebec Railway.—One platform built and one extended, two buildings, four platforms and one ashpit repaired.

Lotbiniere and Megantic Railway.—One tool-house built and one building repaired.

Transcontinental Railway.—Nine stations and shelters, one freight shed, two bunkhouses and three miscellaneous buildings erected, seven platforms built; four extended; twenty-eight repaired and 150 feet replaced with cinder; six buildings extended, three relocated, fourteen repaired and four painted; fifteen section dwellings built, two engine-houses; four smokejacks and two ashpits repaired. Five staff dwellings at Parent 25 per cent complete. New station and platform at Barraute 50 per cent complete.

Grand Trunk Pacific Railway.—One bunkhouse erected and six buildings repaired. On all railways the necessary alterations, repairs and painting were made to buildings to keep them in good repair.

DAMAGE BY FLOODS AND HIGH TIDES

High tides, freshets and ice jams caused considerable damage to roadbed and track on the Sydney, Springhill, Nashwaak, Montmagny, Grand Falls, Centreville, Grant and Sioux Lookout Subdivisions. Where the damages occurred, repairs were at once made to put the roadbed and track in good condition again.

DAMAGE BY FIRE

Intercolonial Railway.—On May 13, 1921, a small shim shanty near Mile 62, Bedford Subdivision, was destroyed by bush fires. Loss about $50.

On October 11, 1921, fire of unknown origin destroyed the shelter used by workmen on the ashpit at Truro. Loss about $50.

On August 23, 1921, the freight shed at Wallace, Oxford Subdivision was completely destroyed by fire. Loss about $3,000.

In September about 1,360 rods of fencing on the Oxford Subdivision between Miles 28 and 33 were burned, necessitating replacement at a cost of $2,600.

Pump-house at Petitcodiac was completely destroyed by fire. Slight fires occurred in dwelling-houses owned by the railway at Moncton, blacksmith shop and general offices at Moncton. Amount of damage in each case was $1,100, $140, $200 and $20 respectively.

International Railway.—On June 8, 1921, about 1,400 track ties were burned between Mile 16 and 17 by reason of forest fires. Loss about $2,000.

Transcontinental Railway—On August 6, 1921, station at St. Eleuthere, Glendyne, S.D., was destroyed by fire; origin unknown. Loss estimated at $7,000.

On October 20, 1921, rest-house at Edmundston was partially destroyed by fire; one employee lost his life. Loss of property about $6,000.

On March 2, 1921, station at Hervey Junction was totally destroyed by fire.

On June 10, 1921, tool-house at Greening destroyed by fire.

On June 23, 1921, station at Natagan, Amos, S.D., destroyed by fire.

On July 30, 1921, station at Vilmontel, Amos, S.D., destroyed by fire.

On December 6, 1921, at La Ferme, Amos, S.D., 50,000-gallon water tank was totally destroyed by fire.

On July 1, 1921, Kapuskasing S.D., 240 feet of snow fence burned.

On February 21, 1921, Driftwood Station on Kapuskasing S.D. destroyed by fire.

On August 14, 1921, Mattice station on Kapuskasing S.D. destroyed by fire.

On March 13, 1921, hay barns of stock pen partially destroyed by fire at Mile 131·2 Kowkash S.D.

On January 5, 1921, at Transcona, 50,000-gallon water tank destroyed by fire.

BRIDGES AND CULVERTS

The following is a brief summary of the work carried out in connection with bridges and culverts during the year:—

	Locations
Intercolonial Railway—	
New steel bridges erected	1
Culverts filled	1
New culverts built	12
Repairs to timber bridges	13
Steel bridges repaired	11
Farm crossing culverts replaced	25
New concrete piers and abutments	5
Steel bridges painted	26
Repairs to concrete and stone foundations	26
Bridge decks repaired	13
New concrete pipe culverts	49
Steel and wooden stringers replaced with concrete slab	2
Repairs to concrete and stone culverts	20
New tile pipe culverts	1
New cast-iron pipe culverts	1
New wood box culverts	2
Wood box culverts repaired	9
Overhead crossings repaired	5
Prince Edward Island Railway—	
New culverts built	2
Steel bridges repaired	2
New concrete piers and abutments	1
Bridge decks repaired	1
New concrete pipe culverts	1
New wood box culverts	2
Moncton and Buctouche Railway—	
New steel bridges erected	1
New concrete pier and abutment	1
New concrete pipe culverts	7
Elgin and Havelock Railway—	
New concrete pipe culverts	9
St. Martins Railway—	
New steel bridges erected	4
New concrete pipe culverts	9
Salisbury and Albert Railway—	
New steel bridges erected	1
New concrete pipe culverts	8
Caraquet and Gulf Shore Railway—	
Repairs to timber bridges	10
Wood box culverts repaired	69
Cape Breton Railway—	
Repairs to timber bridges	1
Bridge decks repaired	2
Lotbiniere and Megantic Railway—	
Repairs to timber bridges	3
Steel bridges painted	1
Bridge decks repaired	1
National Transcontinental Railway—	
Bridge and culverts filled in	3
New culverts built	1
Repairs to timber bridges	10
Steel bridges repaired	4
New concrete piers and abutments	2
Steel bridges painted	15
Repairs to concrete and stone foundations	5
Repairs to bridge decks	54
New concrete pipe culverts	8
Repairs to concrete and stone culverts	9
New wood box culverts	12
Wood box culverts repaired	1
Overhead bridges repaired	1
Track scales painted	1
Turntable cleaned and painted	3
Grand Trunk Pacific Railway—	
New culverts built	1
Repairs to timber bridges	18
Steel bridges painted	1

At Mile 62.0 reinforced concrete trestle, commenced in 1920, was completed this year and old trestle cut out.

Leased Railways.—New overhead bridge erected on the Vale Railway.

NOTE.—In addition to work listed, all repairs necessary to keep bridges and culverts safe for traffic were made.

STATION BEAUTIFICATION

The work of beautifying the station grounds and yards with grass plots and flower beds was continued.

TRACK SCALES

These were maintained and kept in proper working condition throughout the system. At Campbellton a new 150-ton track scale was installed. At Edmundston the levers were renewed and the pit repaired. At Hearst track scales repaired and tested.

SURVEYS AND TRACK CENTERING

Surveys for plans of station yards, bridges, culverts, sidings, road diversions and other improvements along the railway has been carried on. Yard plans and records have been revised, deed and lease plans made and other miscellaneous information secured for reports and appropriation. 6.05 miles of track were centred and curves spiralled.

SIGNALS AND INTERLOCKING

Intercolonial Railway

Sydney.—Crossing bell installed at Brooklands street, Sydney.

St. Pascal.—Two crossing bells installed at St. Pascal.

Charny.—Four two-arm home signals and four distant electric signals installed for protection of main line crossover and Junctions at Charny.

Springhill, S.D.—Sixty absolute permissive block signals installed between Painsec Junction, and Sackville.

St. John, S.D.—Control of existing automatic signals between St. John and Hampton changed from an overlap circuit to absolute permissive blocking.

Joffre, S.D.—Four electric home signals installed protecting the Junction at Joffre.

Transcontinental Railway

Bridge and Cadorna Subdivisions.—Installed metallic circuit on the absolute staff between Cadorna, Cap Rouge and Bridge.

Hervey Junction.—Two home and two distant automatic signals installed at Hervey Junction.

ELECTRIC POWER AND LIGHTING

Intercolonial Railway

New Glasgow Division.—Installed electric circuits for motor air compressor at Stellarton. Installed wiring in coaling plants at Pirate Harbour and Point Tupper.

Moncton Division.—Installed car battery charging equipment St. John coach yard. Installed electric transmission and distributing service for power and lighting at new engine terminal, Moncton. Installed lighting for water standpipes, new engine terminals, Moncton. Installed electric lighting in stores and office building. New engine terminal, Moncton. Installed lead covered feeder cables of increased capacity between power house and shops at Moncton. Also step-up and step-down transformers.

Campbellton Division.—Installed electrical circuit in interlocking plant at Newcastle. Installed car battery charging sets at Campbellton and Bathurst for charging batteries for electric car No. 100 operating between those places. Installed power and lighting circuits for the ice crushing plant in Mont Joli ice house.

Levis Division.—Installed lighting circuit and two ornamental cast-iron lighting posts, on west platform of Levis station. Installed power and lighting circuits in new engine facilities Chaudiere Junction. Installed lighting in six stall extension of St. Rosalie Junction engine-house.

MISCELLANEOUS

Installed hot-air heating and engine-house piping system in new engine terminal, Moncton.

A. F. STEWART,
Chief Engineer.

CANADIAN GOVERNMENT RAILWAYS EMPLOYEES' RELIEF AND INSURANCE ASSOCIATION

STATEMENT of Receipts and Expenditures from January 1 to December 31, 1921

RECEIPTS

Credit balance on December 31, 1920		$110,170 91
Amount of premiums collected from Canadian Government Railways pay lists	$194,357 52	
Premiums collected from railway vouchers	2,111 67	
Cash premiums collected by railway	48 62	
Contribution from Canadian Government Railways	15,000 00	
		211,517 81
Cash, members not on duty, refunds, etc	$ 1,508 50	
Premiums from S. and A. vouchers	2,289 53	
Premiums from retired members	4,970 41	
Annual fees	1,352 50	
Examination fees	74 00	
Victory Bonds and interest	9,783 56	
Interest on Victory Bonds	4,015 00	
Interest on monthly balances	1,072 69	
		25,066 19
Total receipts		$346,754 91

EXPENDITURES

Victory Bonds and interest purchased	$ 9,783 56	
Sick and accident indemnity	84,043 75	
Medical and surgical attendance	43,998 88	
		$137,826 19
Temporary Employees' Accident Fund		22,881 30
Death and total disability claims		49,750 00
Examination fees		40 00
		$210,497 49

OPERATING EXPENSES

Sick and Accident Fund, Temporary Employees' Accident Fund, Retired Employees' Death and Total Disability Fund	$ 20,683 57	
		$231,181 06
Difference		$115,573 85
Less outstanding liabilities		9,000 00
Estimated net surplus December 31, 1921		$106,573 85

SICK AND ACCIDENT FUND

(Regular and Temporary)

This fund shows a surplus December 31, 1921	$ 82,344 84

DEATH AND TOTAL DISABILITY FUND

The statement shows an expenditure on account of death and total disability claims, of	$ 49,750 00
This statement shows that one hundred and ten death and total disability claims were assessed and paid during the year.	
Ninety-two death claims, due to natural causes, aggregating	43,000 00
Thirteen death claims, due to accidental injuries, aggregating	4,750 00
	$ 47,750 00
Five total disability claims, aggregating	2,000 00
	$ 49,750 00

C. B. TRITES,
Secretary.

W. F. SEARS,
Auditor.

The death and total disability, also the Temporary Employees' Accident Fund, show 120 death claims during the year.

Canadian Government Railways

Statement showing the amount credited to the Canadian Government Railways Employees' Relief and Insurance Association by the Canadian Government Railways, during the year ended December 31, 1921.

Amount of premiums collected from the Canadian Government Railways' pay lists	$194,357 52
Premiums collected from railway vouchers	2,111 67
Annual contributions from the Canadian Government Railways	15,000 00
Canadian Government Railways cash premiums	48 62
Total	$211,517 81

S. L. SHANNON,
Comptroller and Treasurer, C. G. Railways.

INTERCOLONIAL AND PRINCE EDWARD ISLAND RAILWAY EMPLOYEES' PROVIDENT FUND

STATEMENT of Receipts and Expenditures during the year ended December 31, 1921.

Balance to the credit of the fund on December 31, 1920		$580,419 13
The contributions made by employees during the year, being one and one-half per cent of their monthly salary and wages were	$322,646 40	
The contributions made by the railways were	100,000 00	
Amount received to increase retiring allowances of all retired employees receiving less than $30 per month, in order that the minimum allowance now paid under the Act, viz. $20, might be increased to $30 per month for the departmental fiscal year ending March 31, 1922, in accordance with vote No. 473, whereby an amount was placed in the Estimates to supplement retiring allowances payable under the provisions of the I. C. and P. E. I. Railways Employees' Provident Fund, including from April 1 to December 31, 1921	36,145 78	
		$458,792 18
Amounts received for refunds, etc.		831 67
Interest accrued (at three per cent)		15,956 41
		$1,055,999 69

The amount contributed by the employees is shown to exceed by $222,646.40 the amount contributed by the railways. By reference to section No. 4 of the Provident Fund Act, it will be noted that the maximum sum the railways are authorized to contribute to the fund in any one year must not exceed $100,000.

The expenditures were:—

For retiring allowances	$377,338 69	
For allowances made to retired employees receiving less than $30 per month, to increase the minimum allowance in accordance with vote No. 473, whereby an amount was placed in the Estimate to supplement retiring allowances payable under the provisions of the I. C. and P. E. I. Railways Employees' Provident Fund, including from April 1 to December 31, 1921	36,145 78	
For contributions refunded in cases of deceased employees	10,704 34	
For contributions refunded, which were deducted in error	3,434 34	
For contributions refunded to discharged employees, etc.	6,647 10	
Medical examinations for probationers entering the service, etc.	2,196 00	
Medical examinations for employees retiring from service	60 50	
For election expenses	1,433 30	
For salaries and travelling expenses, secretary's office, and proportion of salary of chief medical officer	14,100 79	
For stationery, printing, postage, etc.	476 67	
		$452,537 51
Balance to the credit of the fund on December 31, 1921		$603,462 18
It will be noted by the above statement of receipts and expenditures that the amount of contributions received from the railways and from the employees during the year were		458,792 18
And the expenditures were		452,537 51
Showing that during the year the receipts exceeded the expenditures		5,254 67
The gross surplus, including interest, to the credit of the fund on December 31, 1921, was		603,462 18

W. A. KINGSLAND, *Chairman.*

C. B. TRITES, *Secretary.*

SESSIONAL PAPER No. 32

THE GRAND TRUNK RAILWAY COMPANY OF CANADA

To the Stockholders of the Grand Trunk Railway Company of Canada:

The Board of Directors submits the following report of the operations for the year ended December 31, 1921:—

INCOME ACCOUNT

CONDENSED STATEMENT

	Year 1921	Year 1920
Operating revenues	$76,858,032 27	$81,442,647 32
Operating expenses	71,179,292 80	76,213,815 16
Net operating revenue	$ 5,678,739 47	$ 5,228,832 16
Railway taxes and uncollectible railway revenue	1,334,485 96	1,303,067 25
Railway operating income	$ 4,344,253 51	$ 3,925,764 91
Non-operating income	8,634,101 55	7,706,272 77
Gross income	$12,978,355 06	$11,632,037 68
Deductions from gross income	27,042,797 42	16,231,142 21
Net income transferred to profit and loss	*$14,064,442 36*	*$ 4,599,104 53*

(Italics denote loss.)

OPERATING REVENUES

The operating revenues for the year were $76,858,032, a decrease as compared with the year 1920 of $4,584,615 or 5·63 per cent.

Revenue from freight traffic was $54,239,903, a decrease of $3,862,150 or 6·65 per cent.

Number of revenue tons carried 21,687,749, a decrease of 4,634,674 or 17·61 per cent.

Revenue tons carried one mile 4,052,564,411, a decrease of 976,087,113 or 19·41 per cent.

Average haul per revenue ton was 186·86 miles, a decrease of 2·19 per cent.

Freight revenue per train mile was $5.62, an increase of 35 cents or 6·64 per cent.

Average revenue per ton was $2·50095, an increase of ·29363 or 13·30 per cent.

Average revenue per ton mile was $0·01338, an increase of ·00183 or 15·84 per cent.

Revenue from passenger traffic was $15,510,164, a decrease as compared with the year 1920 of $1,438,016 or 8·48 per cent.

Number of passengers carried was 11,609,762, a decrease of 597,215 or 4·89 per cent.

Average revenue per passenger was $1·33596, a decrease of 0·05244 or 3·78 per cent.

Average revenue per passenger mile was $0·03045, a decrease of 0·00154 or 4·81 per cent.

Average distance per passenger was 43·87 miles, an increase of ·47 miles or 1·08 per cent.

Revenue from mails was $1,133,737, an increase of $553,498 or 95·39 per cent.

Revenue from express was $3,285,110, an increase of $625,539 or 23·52 per cent.

Revenue from milk was $242,755, an increase of $8,805 or 3·76 per cent.

Revenue from switching was $561,858, a decrease of $223,489 or 28·46 per cent.

Revenue from dining and buffet was $328,045, a decrease of $21,385 or 6·12 per cent.

Revenue from demurrage was $315,802, a decrease of $262,255 or 45·37 per cent.

OPERATING EXPENSES

Operating expenses for the year 1921 were $71,179,292, a decrease of $5,034,523 under the year 1920 or 6·61 per cent, as compared with a decrease of 5·63 per cent in operating revenues.

Maintenance of way and structures increased $857,413 or 7·14 per cent.

Maintenance of equipment decreased $3,293,924 or 15·61 per cent.

Traffic expenses increased $279,724 or 21·45 per cent.

Transportation expenses decreased $2,943,436 or 7·64 per cent.

Average loaded cars per freight train mile were 19·64, a decrease of ·83 or 4·05 per cent.

Average empty cars per freight train mile were 11·31, an increase of 3·38 or 42·62 per cent.

Average total cars per freight train mile were 30·95, an increase of 2·55 or 8·98 per cent.

Average load per loaded freight car mile was 22·26 tons, a decrease of 1·35 tons or 5·72 per cent.

Average load per freight train mile was 419·55 tons, a decrease of 36·34 tons or 7·97 per cent.

Miscellaneous operations decreased $39,040 or 7·78 per cent.

General expenses increased $116,324 or 4·17 per cent.

DECREASES IN WAGES AND IN RATES

The United States Labour Board by decision No. 147 ordered a decrease in wages to employees of approximately 13 per cent, effective July 16, 1921, which order was also made effective by the Canadian railways. The 40 per cent increase in freight rates established by the Board of Railway Commissioners in September, 1920, was reduced by order of that board to 35 per cent, effective January 1, 1921, and to 25 per cent, December 1, 1921. The 20 per cent increase in passenger fares established by the board in September, 1920, was reduced to 10 per cent, effective January 1, 1921, and the remaining 10 per cent was cancelled as of July 1, 1921.

PAY ROLLS

	No. employees	Total pay roll	Increase per cent
1918	25,342	$30,152,476 36	over 1918
1919	30,617	42,617,415 93	41.34 per cent
1920	31,686	53,375,736 60	77.02 per cent
1921	29,128	45,865,171 10	52.11 per cent

TAXES

Taxes for the year 1921 were $1,325,577, an increase over the year 1920 of $45,515 or 3·56 per cent.

Taxes per mile of road operated were $367, as compared with $354.42 in the year 1920.

CAPITAL STOCK

The capital stock outstanding at December 31, 1921, was $241,237,588.83 as under, there having been no change during the year:—

4 per cent guaranteed stock	$ 60,833,333 33
1st preference stock	16,644,000 00
2nd preference stock	12,312,666 67
3rd preference stock	34,884,535 43
Ordinary stock	116,563,053 40
	$241,237,588 83

DEBENTURE STOCK

The debenture stock outstanding at December 31, 1921, was $155,373,808 34 as follows, there having been no change during the year:—

Grand Trunk 5 per cent debenture stock	$ 20,782,491 67
Great Western 5 per cent debenture stock	13,252,322 67
Grand Trunk 4 per cent debenture stock	119,839,014 33
Northern Railway 4 per cent debenture stock	1,499,979 67
	$155,373,808 34

INTEREST BEARING OBLIGATIONS

The total of interest bearing obligations outstanding at December 31, 1921, was $371,042,194.75.

Principal retirements during the year were $4,866,666.67, 6 per cent, three-year secured notes, due January 14, 1921; $14,600,000, 6 per cent, three-year secured notes, due October 1, 1921; and $719,780, 6 per cent, second equipment mortgage bonds, due July 1, 1921. Principal issues during the year were $25,000,000 6 per cent fifteen-year sinking fund gold debenture bonds, dated September 1, 1921; $12,000,000 6½ per cent fifteen-year equipment trust certificate F., dated February 1, 1921. $4,807,725 loan from Dominion Government under Appropriation Act, 1920-21, and $47,553,621 loan from Dominion Government under Appropriation Act, 1921-22.

CAPITAL EXPENDITURE

The capital expenditure account at December 31, 1921, amounted to $465,462,954, an increase of $24,765,040.21 during the year.

The board desires to express its appreciation to the officers and employees of the company for their faithful and efficient services.

HOWARD G. KELLEY,
President.

GRAND TRUNK RAILWAY COMPANY OF CANADA

Operated Mileage December 31, 1921

CANADIAN LINES

	First Track	Second Track	Yard Track and Sidings
Portland Division	55.00	.....	20.49
Montreal Division	480.76	173.28	116.85
Montreal Terminals	25.86	13.30	132.31
Belleville Division	650 38	201.71	195.98
Ottawa Division	466.11	1.58	123.52
Toronto Terminals	26.94	20.01	170.51
Barrie Division	444.02	1.30	152.77
Stratford Division	809.46	9.40	198.44
London Division	407.50	202.82	228.39
St. Thomas Division	244.61	88.34	142.94
International Bridge	1.02	.58	5.83
Suspension Bridge	.25	.25	.....
Total	3,611.91	712.57	1,488.03

Of this mileage, 3,336·74 of first track and 689·99 of second track is owned. 250·51 of first and 8·40 of second track leased, and 22·29 of first and 4·32 of second track operated under trackage rights. In addition, there are 7·53 miles of third track and 7·43 of fourth track (Toronto Terminals) owned by the company, and 2·37 of first and ·86 of second owned by subsidiary companies and operated without formal lease.

WESTERN LINES

	First Track	Second Track	Yard Track and Sidings
Grand Trunk Western Railway	335.94	326.78	212.47
Chicago and Kalamazoo Terminal Railway	1.91		11.25
Chicago, Kalamazoo and Saginaw Railway	9.51		.53
Detroit, Grand Haven and Milwaukee Ry.	188.32	15.72	143.42
Grand Rapids Terminal Railway	1.51		3.08
Toledo, Saginaw and Muskegon Railway	116.28		14.58
Pontiac, Oxford and Northern Railway	99.89		17.30
Detroit and Huron Railway	18.58		3.62
Chicago, Detroit and Canada G.T. Jct. R.R.	59.55	11.08	92.04
Michigan Air Line	105.92		19.90
Cincinnati, Saginaw and Mackinaw Ry.	53.10		42.85
Bay City Terminal Railway	1.17		2.43
Grand Trunk Milwaukee Car Ferry (85.9 miles)			
Total	991.68	353.58	563.47

NEW ENGLAND LINES

Atlantic and St. Lawrence Railroad, including line from Island Pond to International Boundary	165.28	.99	91.29
Lewiston and Auburn Railroad	5.43		1.28
Norway Branch Railroad	1.50		.45
Total	172.21	.99	93.02
Grand Trunk Railway System operated mileage	4,775.80	1,067.14	2,144.52

Of the Grand Trunk Western Lines 733·83 of first track, and 337·65 of second track are owned, 232·38 of first and 11·08 of second leased, and 25·47 of first and 4·85 of second track operated under trackage rights. The New England mileage is all leased. In some of the leased lines the Grand Trunk owns all or part of the capital stock.

GRAND TRUNK RAILWAY COMPANY OF CANADA

Condensed Balance Sheet at December 31, 1921

ASSETS

Investments—		
Capital expenditure	$465,462,954 64	
Improvements on leased railway property	442,251 95	
Sinking funds	269,764 09	
Miscellaneous physical property	1,485,038 00	
Investments in affiliated companies	44,367,781 94	
Other investments	659,491 58	
Total		$512,687,282 20
Current Assets—		
Cash	$ 1,087,311 48	
Special deposits	4,009,721 49	
Loans and bills receivable	7,200 00	
Traffic and car service balances receivable	1,643,480 37	
Net balance receivable from agents and conductors	2,510,299 27	
Miscellaneous accounts receivable	9,828,162 22	
Material and supplies	18,142,347 74	
Interest and dividends receivable	191,008 85	
Rents receivable	43,472 57	
Other current assets	310,674 15	
Total		37,773,678 14
Deferred Assets—		
Working fund advances	$ 152,828 63	
Insurance and other funds	1,537,282 65	
Other deferred assets	1,886,344 36	
Total		3,576,455 64
Unadjusted Debits—		
Rents and insurance premiums paid in advance	$ 181,253 71	
Discount on funded debt	2,029,554 12	
Other unadjusted debits	35,406,362 81	
Securities issued or assumed—Unpledged	157,655 00	
Total		37,774,825 64
		$591,812,241 62

LIABILITIES

Stock—		
Capital stock	$241,237,588 83	
Debenture stock	155,373,808 34	
Total		$396,611,397 17
Governmental Grants—		
Grants in aid of construction		15,142,633 33
Long Term Debt—		
Funded debt unmatured	$ 81,132,898 66	
Dominion Government loans and interest thereon	76,965,322 10	
Non-negotiable debt to affiliated companies	1,780,682 58	
Total		159,878,903 34
Current Liabilities—		
Loans and bills payable	$ 1,151,233 73	
Traffic and car service balances payable	4,369,659 42	
Audited accounts and wages payable	11,596,935 41	
Miscellaneous accounts payable	136,405 58	
Interest matured unpaid	1,711,797 43	
Dividends matured unpaid	3,564,155 34	
Funded debt matured unpaid	215,619 97	
Unmatured rents accrued	500,765 00	
Other current liabilities	684,142 94	
Total		23,930,714 82
Deferred Liabilities—		
Liability for provident funds	$ 221,382 14	
Other deferred liabilities	5,597,317 20	
Total		5,818,699 34
Unadjusted Credits—		
Tax liability ..Dr.	$ *2,006 60*	
Insurance and casualty reserves	1,582,615 51	
Operating reserves	24,152 97	
Other unadjusted credits	6,300,627 72	
Total		7,905,389 60
Corporate Surplus—		
Profit and loss balance ..Dr.		*17,475,495 98*
		$591,812,241 62

J. M. Rosevear,
Comptroller.

GRAND TRUNK RAILWAY COMPANY OF CANADA

INCOME ACCOUNT

Italics denote loss

	Year 1921	Year 1920
Operating Income—		
Railway operating revenues	$76,858,032 27	$81,442,647 32
Railway operating expenses	71,179,292 80	76,213,815 16
Net revenue from railway operations	$ 5,678,739 47	$ 5,228,832 16
Railway tax accruals	1,325,577 28	1,280,062 62
Uncollectible railway revenues	8,908 68	23,004 63
Total operating income	$ 4,344,253 51	$ 3,925,764 91
Non-Operating Income—		
Hire of freight cars—Cr. balance	1,306,972 18	675,862 47
Rent from locomotives	586,600 83	522,426 86
Rent from passenger train cars	185,095 04	121,708 50
Rent from floating equipment	951 01	.....
Rent from work equipment	40,261 35	8,899 77
Joint facility rent income	822,764 28	871,376 43
Income from lease of road	10,000 00	10,000 00
Miscellaneous rent income	262,059 74	179,592 42
Miscellaneous non-operating physical property	90,049 51	90,822 75
Dividend income	157,819 00	141,986 00
Income from funded securities	2,586,783 73	2,150,914 19
Income from unfunded securities and accounts	672,125 98	1,464,399 99
Income from sinking and other reserve funds	11,842 54	.....
Miscellaneous income	1,900,776 36	1,468,283 39
Total non-operating income	$ 8,634,101 55	$ 7,706,272 77
Gross income	$12,978,355 06	$11,632,037 68
Deductions from Gross Income—		
Rent for locomotives	$ 101,791 34	$ 516,442 47
Rent for passenger train cars	238,647 37	119,912 19
Rent for floating equipment	16,429 41	.....
Rent for work equipment	7,953 16	2,370 23
Joint facility rents	93,762 99	101,867 88
Rent for leased roads	477,832 31	474,459 89
Miscellaneous rents	65,462 95	68,716 16
Separately operated properties (loss on Grand Trunk Western and Grand Trunk New England lines, etc.)*	6,857,092 97	2,926,024 97
Interest on funded debt	16,492,614 70	10,054,582 79
Interest on unfunded debt	613,237 83	770,636 85
Amortization of discount on funded debt	275,804 35	253,933 71
Miscellaneous income charges	1,802,168 04	942,195 07
Total deductions from gross income	$27,042,797 42	$16,231,142 21
Income balance	*$14,064,442 36*	*$ 4,599,104 53*

* See Statement next ensuing.

LOSSES OF SUBSIDIARY COMPANIES, AS CHARGED TO THE GRAND TRUNK RAILWAY COMPANY OF CANADA

(Italics denote Loss)

	Year to December 31, 1921		Year to December 31, 1920	
	Grand Trunk New England Lines	Grand Trunk Western Lines	Grand Trunk New England Lines	Grand Trunk Western Lines
	$ cts.	$ cts.	$ cts.	$ cts.
Operating Income—				
Railway operating revenues	2,910,515 43	22,193,256 82	2,936,869 55	22,106,707 15
Railway operating expenses	3,592,005 72	22,641,181 93	3,712,544 75	21,389,912 07
Net revenue from railway operations	*681,490 29*	*447,925 11*	*775,675 20*	716,795 08
Railway tax accruals	223,549 43	863,786 21	199,428 41	645,728 94
Uncollectible railway revenues	52 99	14,957 71	55 93	2,761 17
Total operating revenue	*905,092 71*	*1,326,669 03*	*975,159 54*	68,304 97
Non-operating Income—				
Hire of freight cars—Cr. balance				
Rent from locomotives	1,854 45	5,731 91		2,571 24
Rent from passenger train cars		9,008 18		8,631 34
Rent from work equipment		19,199 30	98 00	5,896 94
Joint facility rent income		23,625 74		9,178 94
Income from lease of road				
" " " (U.S.R.A.)			9,823 25	224,376 02
Miscellaneous rent income	10,318 93	283,370 27	5,071 93	174,414 12
Miscellaneous non-operating Phys. Pty				532 43
Dividend income		161,520 00		101,520 00
Income from funded securities		73,150 00		73,180 00
Income from unfunded securities and accts.	8,594 62	8,263 20	10,586 10	19,793 85
Miscellaneous income	43,110 64	72,991 74	*1,688 56*	*22,669 00*
" " (U.S. Govt. guaranty)	28,376 66	1,909,849 42	1,041,154 37	3,330,238 39
Total non-operating income	92,255 30	2,566,709 76	1,065,315 09	3,927,664 27
Gross income	*812,837 41*	1,240,040 73	90,155 55	3,995,969 24
Deductions from Gross Income—				
Hire of freight cars—Dr. balance	337,053 16	2,020,766 51	403,943 87	3,610,369 60
Rent for locomotives	70,306 47	244,981 84	66,376 17	139,174 45
Rent for passenger train cars	44,404 92	98,939 00	54,321 57	85,385 22
Rent for work equipment	28 00	1,297 97		1,270 48
Joint facility rents	54 30	453,557 11		382,838 06
Rent for leased roads	565,766 50	296,030 53	566,341 50	292,662 76
Miscellaneous rents	6 00	15,134 81	12 00	17,564 26
Miscellaneous tax accruals		810 02		6,006 00
Interest on funded debt		2,077,098 70		1,935,583 49
Interest on unfunded debt	75 90	137,876 36	0 54	119,223 50
Amortization of Dis. on funded debt		31,088 64		124,493 53
Miscellaneous income charges	39,612 79	678,656 64		38,804 70
Profit and loss items	10,948 39	*19,019 85*	*9,971 07*	177,749 13
Total deductions from gross income	1,068,256 43	6,037,218 28	1,081,024 58	5,931,125 18
Net income or loss	*1,881,093 84*	*4,797,177 55*	*990,869 03*	*1,935,155,94*
Grand Trunk New England Lines (as above)		*1,881,093 84*		*990,869 03*
Grand Trunk—Western Lines (as above)		*4,797,177 55*		*1,935,155 94*
Ottawa Terminal Railway		*104,994 20*		
Canada Atlantic Transit Co		*73,827 38*		
Total		*6,857,092 97*		*2,926,024 97*

PROFIT AND LOSS ACCOUNT

(All lines but not including Central Vermont)

	Debit	Credit
Dr. balance at December 31, 1920	$ 4,282,840 52	.....
Debit balance transferred from income	14,064,442 36	.....
Profit or loss on road and equipment (net)	12,463 65	.....
Delayed income debits and credits (net)	525,147 35	.....
Unrefundable overcharges	.....	$ 167 41
Donations	.....	10,418 09
Miscellaneous credits and debits (net)	.....	3,419,030 37
Debt discount extinguished	2,020,217 97	.....
Dr. balance at December 31, 1921, as per balance sheet	.....	17,475,495 98
	$20,905,111 85	$20,905,111 85

OPERATING REVENUES

(Canadian lines only)

Freight	$54,239,903 65	$58,102,053 78
Passenger	15,510,164 08	16,948,180 21
Excess baggage	92,451 06	85,113 20
Parlor and chair car	120,141 98	120,530 49
Mail	1,133,737 52	580,239 33
Express	3,285,110 86	2,659,571 69
Other passenger train	104,132 10	83,830 71
Milk	242,755 14	233,950 66
Switching	561,858 32	785,347 23
Special service train	48,076 06	72,244 01
Dining and buffet	328,045 59	349,430 16
Hotel and restaurant	94,191 50	107,957 81
Station, train and boat privileges	47,890 78	54,649 50
Parcel room	46,649 00	51,707 15
Storage—Freight	82,217 47	75,231 84
Storage—Baggage	27,604 32	30,172 68
Demurrage	315,802 01	578,057 01
Telegraph and telephone	1,978 48	4,883 39
Grain elevator	275,967 37	201,216 91
Rents of buildings and other property	88,661 60	135,940 23
Miscellaneous	252,278 59	266,619 39
Joint facilities—Cr	4,121 55	13,567 94
Joint facilities—Dr	*45,706 76*	*97,848 00*
Total operating revenues	$76,858,032 27	$81,442,647 32

OPERATING EXPENSES

(Canadian lines only)

	Year to Dec. 31, 1921	Year to Dec. 31, 1920
Maintenance of Way and Structures—		
Superintendence	$ 485,886 51	$ 404,248 31
Roadway maintenance	759,857 09	1,067,037 58
Bridges, trestles and culverts	698,050 33	567,822 58
Ties	3,308,237 06	1,832,335 59
Rails	2,319,082 26	1,014,906 58
Other track material	1,084,370 56	692,692 78
Ballast	65,186 55	329,756 16
Track laying and surfacing	3,150,127 39	3,609,522 85
Right of way fences	217,340 09	216,675 58
Snow and sand fences and snowsheds	15,286 75	19,612 54
Crossings and signs	218,957 17	250,373 10
Station and office buildings	463,458 73	830,973 92
Railroad buildings	15,013 52	62,526 87
Water stations	115,039 37	169,898 09
Fuel stations	54,659 75	72,755 46
Shops and enginehouses	541,373 56	1,034,637 71
Grain elevators	24,443 45	32,774 75
Wharves and docks	56,863 14	22,100 35
Coal and ore wharves	1,634 53	1,362 97
Telegraph and telephone lines	50,483 92	44,680 81

OPERATING EXPENSES—*Continued*

(Canadian lines only)

	Year to Dec. 31, 1921	Year to Dec. 31, 1920
Signals and interlockers	99,639 16	143,786 65
Power plant buildings	725 00	*63 24*
Miscellaneous structures	5,427 46	18,955 15
Paving	611 99	842 86
Roadway machines	64,449 00	45,933 42
Small tools and supplies	86,873 39	138,619 57
Removing snow, sand and ice	110,150 57	519,119 89
Assessments for public improvements	*67 31*	68 73
Injuries to persons	114,938 23	50,270 75
Insurance	63,702 45	60,929 87
Stationery and printing	11,218 65	13,062 20
Other expenses	5,304 94	12,475 76
Maintaining Jt. tracks, yards, etc.—Dr.	180,163 99	155,119 03
" " " " " —Cr.	*1,525,691 78*	*1,430,431 05*
Total Maintenance of Way and Structures	$12,862,797 47	$12,005,384 17
Maintenance of Equipment—		
Superintendence	$ 469,338 68	$ 443,235 66
Shop machinery	507,170 80	736,674 16
Power plant machinery	6,967 74	8,078 43
Steam locomotives—Repairs	7,035,513 30	9,319,149 96
" " —Renewals	92,425 60	
" " —Retirements		
Freight train cars—Repairs	7,119,317 67	7,675,112 30
" " " —Renewals	249,037 48	
Passenger train cars—Repairs	1,839,356 10	2,250,353 58
" " " —Renewals	51,080 00	
Floating equipment—Repairs	51,512 56	78,828 38
Work equipment—Repairs	350,850 22	588,705 84
" " —Renewals	29,110 29	
Miscellaneous equipment—Repairs	9,449 30	293 53
Injuries to persons	136,769 78	79,581 04
Insurance	60,258 73	95,647 82
Stationery and printing	36,341 51	46,113 36
Other expenses	32,537 75	57,320 46
Maintaining Jt. equipment at terminals—Dr.	12,747 18	11,701 46
Maintaining Jt. equipment at terminals—Cr.	*215,211 78*	*287,374 21*
Total maintenance of equipment	$17,809,497 41	$21,103,421 77
Traffic Expenses—		
Superintendence—Freight	$ 502,481 91	$ 401,990 49
Outside agencies	670,455 81	614,386 42
Advertising	235,134 94	116,939 43
Traffic association	26,855 02	38,555 43
Fast freight lines		
Industrial and Immigration Bureaus	18,164 75	13,654 97
Insurance	1,630 21	1,012 97
Stationery and printing	128,405 26	116,966 52
Other expenses	702 18	600 71
Total traffic expenses	$ 1,583,830 08	$ 1,304,106 94
Transportation Rail Line—		
Superintendence	$ 900,414 37	$ 874,896 48
Despatching trains	315,449 26	336,755 21
Station employees	6,288,409 05	6,630,579 04
Weighing, Inspection and Demurrage Bureaus	30,956 96	22,744 00
Station supplies and expenses	481,416 34	467,946 10
Yardmasters and yard clerks	1,054,117 83	992,218 99
Yard conductors and brakemen	1,811,940 76	2,030,806 32
Yard switch and signal tenders	439,993 65	454,755 98
Yard enginemen	1,383,979 41	1,527,821 25
Yard motormen		*1,764 40*
Fuel and yard locomotives	1,897,002 27	2,305,288 26
Water for yard locomotives	68,268 08	68,036 56

OPERATING EXPENSES—*Concluded*

(Canadian lines only)

	Year to Dec. 31, 1921	Year to Dec. 31, 1920
Lubricants for yard locomotives	25,426 01	20,876 11
Other supplies for yard locomotives	26,965 07	31,813 55
Engine house expenses—Yard	527,339 52	558,942 29
Yard supplies and expenses	30,896 44	40,385 35
Operating Jt. yards and terminals—Dr.	1,457,262 05	502,068 64
" " " " " —Cr.	*1,617,350 13*	*1,410,852 87*
Train enginemen	3,182,479 60	3,675,796 95
Fuel for train locomotives	7,963,451 95	9,480,485 41
Water for train locomotives	273,510 83	290,550 81
Lubricants for train locomotives	106,097 09	92,204 39
Other supplies for train locomotives	73,666 82	94,524 23
Engine house expenses—Train	1,340,594 05	1,558,683 01
Trainmen	3,614,638 40	4,156,240 71
Train supplies and expenses	1,435,354 99	1,343,211 14
Signal and interlocker operation	54,578 01	54,422 02
Crossing protection	380,420 77	385,963 98
Drawbridge operation	78,610 45	82,222 73
Telegraph and telephone operation	152,646 78	108,456 04
Operating floating equipment	127,677 29	203,865 00
Stationery and printing	309,649 59	326,797 00
Other expenses	75,897 50	64,428 06
Operating Jt. tracks and facilities—Dr.	116,638 60	24,852 47
" " " " " —Cr.	*384,435 35*	*320,867 26*
Insurance	95,133 07	56,301 12
Clearing wrecks	103,586 10	234,464 08
Damage to property	26,588 66	26,440 00
Damage to live stock on right of way	11,683 53	18,852 55
Loss and damage—Freight	874,553 75	848,049 07
" " " Baggage	13,652 36	14,341 86
Injuries to persons	422,635 79	244,630 12
Total transportation rail line	$35,574,797 57	$38,518,233 35
Miscellaneous Operations—		
Dining and buffet service	$ 348,082 45	$ 365,819 19
Hotels and restaurants	91,589 41	104,068 28
Grain elevators	22,648 18	31,473 48
Total miscellaneous operations	$ 462,320 04	$ 501,360 95
General Expenses—		
Salaries and expenses of general officers	$ 280,256 43	$ 306,345 68
Salaries and expenses of clerks and attendants	1,894,429 64	1,739,565 28
General office supplies and expenses	146,158 65	132,251 01
Law expenses	133,157 75	123,600 58
Insurance	873 10	1,576 72
Relief department expenses	12,500 00	12,499 98
Pensions	243,346 88	218,577 77
Stationery and printing	143,787 48	151,723 62
Valuation expenses	1,906 47	1,179 06
Other expenses	64,170 82	112,677 12
General joint facilities—Dr.	2,939 49	192 62
General joint facilities—Cr.	*19,502 39*	*12,489 18*
Total general expenses	$ 2,904,024 32	$ 2,787,700 26
Transportation for investment—Cr.	*$ 17,974 09*	*$ 6,392 28*
Maintenance of way and structures	$12,862,797 47	$12,005,384 17
Maintenance of equipment	17,809,497 41	21,103,421 77
Traffic expenses	1,583,830 08	1,304,106 94
Transportation rail line	35,574,797 57	38,518,233 35
Miscellaneous operations	462,320 04	501,360 95
General expenses	2,904,024 32	2,787,700 26
Transportation for investment—Cr.	*17,974 09*	*6,392 28*
Total operating expenses	$71,179,292 80	$76,213,815 16

RATIOS

(CANADIAN LINES)

	1921	1920
Ratio of each Class of Revenue to Total Operating Revenue—		
Freight	**70.57%**	71.34%
Passenger	20.18	20.81
Mail	1.48	0.71
Express	4.27	3.27
Miscellaneous	1.52	1.70
Incidental	2.03	2.28
Joint facilities—Net Dr	*0.05*	*0.11*
Total	100.00%	100.00%
Ratio of each Class of Expenses to Total Operating Expenses—		
Maintenance of way and structures	18.07%	15.75%
Maintenance of equipment	25.02	27.69
Traffic	2.22	1.71
Transportation	49.98	50.54
Miscellaneous operations	0.65	0.66
General	4.08	3.66
Transportation for investment—Cr	*0.02*	*0.01*
Total	100.00%	100.00%
Ratio of each Class of Expenses to Total Operating Revenue—		
Maintenance of way and structures	16.74%	14.74%
Maintenance of equipment	23.17	25.91
Traffic	2.06	1.60
Transportation	46.28	47.30
Miscellaneous operations	0.60	0.62
General	3.78	3.42
Transportation for investment—Cr	*0.02*	*0.01*
Total	92.61%	93.58%

STATISTICS OF RAIL-LINE OPERATIONS

(CANADIAN LINES)

	Year 1921	Year 1920
Average Mileage of Road Operated	3,611.91	3,611.68
Train Miles—		
Freight—Ordinary	8,759,191	9,770,088
" —Light	397,442	520,095
" —Total	9,156,633	10,290,183
Passenger	7,733,973	7,618,020
Mixed	714,067	740,243
Special	9,023	11,574
Total transportation service	17,613,696	18,660,020
Work service	547,379	990,252
Locomotive Miles—		
Transportation service	25,109,664	27,263,736
Work service	667,287	1,148,045
Car Miles—		
Freight train—Loaded	179,864,821	210,713,528
" " —Empty	103,561,884	81,652,164
Sum of loaded and empty	283,426,705	292,365,692
Freight train—Caboose	9,106,324	10,304,753
" " —Total	292,533,029	302,670,445

	Year 1921	Year 1920
Passenger train—Passenger	19,015,093	19,609,836
" " —Sleeping, parlor and observation	8,348,919	7,814,477
" " —Dining	842,567	797,629
" " —Other	17,459,046	16,885,547
" " —Total	45,665,625	45,107,489
Mixed train	4,617,456	4,828,835
Special train	107,008	144,266
Total transportation service	342,923,118	352,751,035
Work service	2,861,808	7,180,050
Freight Service—		
Tons—Revenue freight	21,687,749	26,322,423
" —Non-revenue freight	3,339,690	3,162,686
" —Total	25,027,439	29,485,109
Ton-miles—Revenue freight	4,052,564,411	5,028,651,524
" " —Non-revenue freight	284,232,200	280,968,104
" " —Total	4,336,796,611	5,309,619,628
Passenger Service—		
Passengers carried	11,609,762	12,206,977
Passenger miles	509,330,321	529,809,165
Revenues and Expenses—		
Freight revenue	$54,239,903 65	$58,102,053 78
Passenger revenue	15,510,164 08	16,948,180 21
Passenger service train revenue	20,488,492 74	20,711,416 29
Operating revenues	76,858,032 27	81,442,647 32
Operating expenses	71,179,292 80	76,213,815 16
Net operating revenues	5,678,739 47	5,228,832 16
Average per Mile of Road—		
Freight train miles	2,535	2,849
Passenger train miles	2,141	2,109
Mixed train miles	198	205
Special train miles	2	3
Transportation service train miles	4,877	5,167
Work train miles	152	274
Locomotive miles—transportation	6,952	7,549
Freight service car miles	81,913	84,765
Passenger service car miles	13,029	12,905
Freight revenue	$15,016 96	$16,087 27
Passenger service train revenue	$ 5,672 48	$ 5,734 57
Operating revenues	$21,279 05	$22,549 80
" expenses	$19,706 83	$21,102 04
Net operating revenues	$ 1,572 22	$ 1,447 76
Ton miles—revenue freight	1,122,000	1,392,330
" " —all freight	1,200,693	1,470,125
Passenger miles—revenue	141,014	146,693
Averages per Train Mile—		
Loaded freight car miles—freight trains	19.64	20.47
" " " " —mixed "	3.05	3.09
Empty " " " —freight "	11.31	7.93
" " " " —mixed "	1.38	1.34
Ton-miles—revenue freight	419.55	455.89
" —all freight	448.97	481.36
Passenger train car-miles—passenger trains	5.90	5.92
Passenger train car-miles—mixed trains	1.91	1.98
Revenue passenger miles	$64 10	$63 39
Freight revenue	$ 5 62	$ 5 27
Passenger service train revenue	$ 2 58	$ 2 48
Operating revenues	$ 4 36	$ 4 36
Operating expenses	$ 4 04	$ 4 08
Net operating revenues	$ 0 32	$ 0 28

Averages per Locomotive Mile—	Year 1921	Year 1920
Train miles—freight trains	.94	.92
Car " — " "	30.04	27.21
Train " —passenger trains	.97	.96
Car " — " "	5.71	5.67
Train " —mixed trains	.99	.99
Car " — " "	6.39	6.46
Train " —special "	.97	.91
Car " — " "	11.45	11.38
Averages per Loaded Freight Car Mile—		
Ton miles—revenue freight	22.26	23.61
" " —all freight	23.82	24.93
Freight revenue	$0.29795	$0.27278
Averages per Car Mile—Passenger—		
Passenger miles—revenue	18.13	18.77
Passenger revenue	$0.55224	$0.60049
Miscellaneous Averages—		
Miles hauled—revenue freight	186.86	191.04
" " —non-revenue freight	85.11	88.84
" " —all freight	173.28	180.08
Miles carried—revenue passengers	43.87	43.40
Revenue per ton of freight	$2.50095	$2.20732
" " ton-mile of freight	$0.01338	$0.01155
" " passenger	$1.33596	$1.38840
" " passenger-mile	$0.03045	$0.03199
Operating ratio	92.61	93.58

GRAND TRUNK RAILWAY SYSTEM

Canadian Lines

FREIGHT TRAFFIC MOVEMENT (Company's Material Excluded)

Commodity	Tons	Per cent
Products of Agriculture—		
Wheat	1,057,362	4.88
Corn	931,522	4.30
Oats	480,112	2.21
Barley	123,135	.57
Rye	73,000	.34
Flax	18,141	.08
Other grain	40,210	.19
Flour	585,782	2.70
Other mill products	297,553	1.37
Hay and straw	165,510	.76
Cotton	38,186	.18
Apples (fresh)	56,636	.26
Other fruit (fresh)	161,582	.74
Potatoes	50,564	.23
Other fresh vegetables	65,385	.30
Other agricultural products	207,011	.95
Total, 1921	4,351,691	20.06
Total, 1920	3,795,374	14.42
Products of Animals—		
Horses	19,309	.09
Cattle and calves	214,553	.99
Sheep	25,935	.12
Hogs	94,455	.44
Dressed meats (fresh)	219,090	1.01
Dressed meats (cured or salted)	31,295	.14
Other packing house products	116,138	.54
Poultry	14,889	.07
Eggs	50,217	.23
Butter and cheese	91,813	.42
Wool	12,869	.06
Hides and leather	67,337	.31
Other animal products	43,529	.20
Total, 1921	1,001,429	4.62
Total, 1920	1,130,044	4.29

Commodity	Tons	Per cent
Products of Mines—		
Anthracite coal	3,285,225	15.15
Bituminous coal	2,359,069	10.88
Lignite coal	7,484	.04
Coke	96,350	.44
Iron ore	121,722	.56
Other ores and concentrates	96,651	.45
Base bullion and matte	3,968	.02
Clay, gravel, sand, stone (crushed)	1,332,213	6.14
Slate—dimension or block stone	271,168	1.25
Crude petroleum	30,460	.14
Asphaltum	23,692	.11
Salt	95,666	.44
Other mine products	61,391	.28
Total, 1921	7,785,059	35.90
Total, 1920	10,294,805	39.11
Products of Forests—		
Logs, posts, poles, cordwood	262,743	1.21
Ties	40,816	.19
Pulpwood	1,109,606	5.12
Lumber, timber, box shooks, staves, heading	1,063,404	4.90
Other forest products	96,513	.45
Total, 1921	2,573,082	11.87
Total, 1920	3,532,346	13.42
Manufactured and Miscellaneous—		
Refined petroleum and its products	389,469	1.80
Sugar	215,489	.99
Iron—pig and bloom	118,326	.55
Rails and fastenings	54,986	.25
Bar and sheet iron structural iron and iron pipe	264,068	1.22
Castings, machinery and boilers	128,909	.59
Cement	379,069	1.75
Brick and artificial stone	198,360	.91
Lime and plaster	98,438	.45
Sewer pipe and drain tile	43,730	.20
Agricultural implements and vehicles other than autos	60,175	.28
Automobiles and auto trucks	127,825	.59
Household goods	18,288	.08
Furniture	29,861	.14
Liquor and beverages	42,861	.20
Fertilizers (all kinds)	83,451	.38
Paper, printed matter, books	525,780	2.42
Wood pulp	344,523	1.59
Fish (fresh, frozen, cured, etc.)	24,944	.11
Canned meats	3,535	.02
Canned goods (all canned food products other than meat)	42,803	.20
Other manufacturers and miscellaneous	1,418,144	6.54
Merchandise	1,363,454	6.29
Total, 1921	5,976,488	27.55
Total, 1920	7,569,854	28.76
Grand total (Canadian lines), 1921	21,687,749	100.00
1920	26,322,423	100.00

WESTERN LINES

		Tons	Per cent
Products of agriculture	1921	1,364,252	15.07
	1920	1,882,335	16.70
Products of animals	1921	359,355	3.97
	1920	590,986	5.24
Products of mines	1921	4,019,679	44.41
	1920	4,232,916	37.57
Products of forests	1921	722,635	7.99
	1920	955,431	8.48
Manufactured and miscellaneous	1921	2,584,895	28.56
	1920	3,606,208	31.01
Grand total Western lines	1921	9,050,816	100.00
	1920	11,267,876	100.00

NEW ENGLAND LINES

		Tons	Per cent
Products of agriculture	1921	767,672	41.92
	1920	746,782	30.12
Products of animals	1921	26,616	1.45
	1920	36,420	1.47
Products of mines	1921	160,544	8.77
	1920	342,595	13.82
Products of forests	1921	396,447	21.65
	1920	625,472	25.23
Manufactured and miscellaneous	1921	479,864	26.21
	1920	727,893	29.36
Grand total New England lines	1921	1,831,143	100.00
	1920	2,479,162	100.00

EXPENDITURES ON CAPITAL ACCOUNT — YEAR TO DECEMBER 31, 1921

(ALL LINES, BUT NOT INCLUDING CENTRAL VERMONT)

Investment in Road—		
Land and land damages (net)	$ 26,627 63	
Grade revisions and changes of line	57,073 34	
Increased weight of rail	766,197 93	
Sidings, yard and spur tracks	247,686 74	
Bridges, trestles and culverts	319,511 17	
Fences, crossings and signs	70,066 58	
Station and office buildings	154,320 05	
Fuel and water stations	81,113 11	
Shops, engine houses and turntables	224,891 15	
Shop machinery and tools	238,070 48	
Power plant machinery	22,339 89	
Telegraph and telephone lines	27,185 51	
Signals and interlockers	39,284 34	
Paving	501 38	
Roadway machines	6,113 80	
Roadway buildings	2,114 55	
Hotels	9,824 26	
Wharves and docks	1,415 65	
Assessments for public improvements	47,486 82	
		$ 2,228,177 70
Investment in Equipment—		
78 Locomotives from Dominion Government	$ 4,152,500 00	
2 Locomotives—Rebuilt	10,000 00	
15 Mikado locomotives from U.S.R.A. (balance)	3,676 22	
5 Switch locomotives from U.S.R.A. (balance)	3,766 98	
35 Switch locomotives (part cost)	412,409 04	
5 Transfer locomotives (part cost)	4,871 81	
25 Switch locomotives—Equipment Trust Certificates "F"	1,063,380 28	
10 Switch transfer locomotives—Equipment Trust Certificates "F"	612,628 05	
3,000 Auto box cars (40-ton)—Equipment Trust Certificates "F"	10,235,269 95	
1,000 Flat cars (50-ton)—Equipment Trust Certificates "F"	2,776,052 75	
50 Baggage express cars—Equipment Trust Certificates "F"	1,181,159 79	
10 Horse-express cars—Equipment Trust Certificates "F"	209,389 82	
5 Express refrigerator cars—Equipment Trust Certificates "F"	57,914 64	
10 Refrigerator cars from Canadian Car & Foundry Co	115,829 28	
248 Refrigerator cars from Missouri River Despatch Co.	280,259 38	
2 Mail baggage cars	34,951 38	
1 Motor Truck	1,895 00	
Improvements to locomotives and cars	1,979,903 34	
	$23,135,857 71	
Less Equipment Retired—		
8 Locomotives	$ 98,250 00	
818 Freight cars	424,513 51	
12 Passenger cars	52,100 00	
171 Work cars	46,844 77	
	621,708 28	
		22,514,149 43

	Tons	Per cent
Investment in Affiliated Companies—		
Lachine, Jacques-Cartier and Maisonneuve Railway notes	$ 12,324 46	
Montreal and Southern Counties Railway notes	10,388 62	
		22,713 08
		$24,765,040 21

STATEMENT OF OWNED EQUIPMENT

(At December 31, 1921)

	Canadian lines	Grand Trunk system
Locomotives	1,248	1,404
Passenger Service Cars—		
First-class and second-class	483	533
Combination cars	86	90
Dining cars	22	23
Parlor cars	26	28
Postal cars	33	36
Baggage and express	334	366
Other passenger cars	30	30
	1,014	1,106
Freight Service Cars—		
Box cars	26,915	30,501
Flat cars	3,485	3,505
Stock cars	1,510	1,510
Coal cars	4,846	6,829
Tank cars	100	100
Refrigerator cars	1,391	1,638
Caboose cars	628	671
	38,875	44,754
In Company's Service—		
Officers and pay cars	30	33
Gravel cars	605	605
Derrick cars	36	40
Other road cars	1,575	1,721
	2,246	2,399
Total cars	42,135	48,259
Floating Equipment—		
Car ferries	3	3

GRAND TRUNK RAILWAY COMPANY OF CANADA

Repairs and Renewals of Cars

Year to December 31, 1921, and Corresponding Figures for Previous Year

	Heavy Repairs	Medium Repairs	Painted	Wheels: Cast Iron	Wheels: Steel Tires	Axles	Roofs: Wood	Roofs: Iron	Steel Tires
First class parlor and dining, etc.	322	143	374						
" corresponding.	359	56	386						
Other passenger cars	248	217	291						
" corresponding.	384	352	611						
Roofs of passenger cars			520						
" corresponding.			864						
Box, cattle and brake vans	3,965	440	3,824				1,275	449	
" corresponding.	5,325	279	4,586				1,831	220	
Platform coal and tank	723	148	750						
" corresponding.	1,473	76	1,033						
Company's work cars	437	64	457						
" corresponding.	1,321	330	1,241						
Roofs of freight cars			4,836						
" corresponding.			6,399						
Wheels				26,809	200				
" corresponding.				28,239	258				
Axle						280			
" corresponding.						481			
Steel tires									846
" corresponding.									1,204

REPAIRS AND RENEWALS

Cost per mile	Repairs and Renewals of Locomotives: 1921	Repairs and Renewals of Locomotives: 1920	All Repairing Charges, including shop machinery, tools and Marine equipment, etc.: 1921	All Repairing Charges, including shop machinery, tools and Marine equipment, etc.: 1920
	cts.	cts.	cts.	cts.
Train	40·53	50·03	44·96	55·65
Engine	28·42	34·22	31·53	38·07
Car	2·08	2·65	2·31	2·94

	Total Cost of Repairs and Renewals	Total miles run by Cars: Passenger	Total miles run by Cars: Freight	Total miles run by Cars: Total	Cost per mile: Car	Cost per mile: Train
	$	Miles	Miles	Miles	cts.	cts.
Year ending Dec., 1921	9,900,722	47,060,369	295,090,927	342,151,296	2·894	55·44
" Dec., 1920	10,736,776	46,608,056	305,609,811	352,217,867	3·048	57·64

REPAIRS TO ENGINES

Year ended	Engines repaired							En-gines						Fire Boxes			Steel Tires		Axles		Wheels		
	Class 1 Repair	Class 2 Repair	Class 3 Repair	Class 4 Repair	Class 5 Repair	Class 6 Repair	Total	Re-tubed	Painted	Cylinders	Injectors	Crank Pins	Smoke Stacks	Extension Smoke Boxes	Complete	Inside	Boilers	Driving	Tender and Truck	Driving	Tender and Truck	Driving Complete	C.L. Tender and Truck	Steel tired steel Tender and Truck
December, 1920.	12	73	407	36	179	1,192	1,899	505	771	165	45	603	182	1	17	87	12	1,150	874	146	173	118	970	447
December 1921.	5	30	321	7	142	555	1,060	370	550	63	27	346	66	2	12	43	10	810	537	136	156	80	936	56

During the year nine (9) engines were scrapped, fifteen (15) switching type engines constructed at the company's works, Point St. Charles, forty-one (41) Mikado type engines, twenty-five (25) Pacific type passenger engines, and twelve (12) switching type engines purchased by Grand Trunk Railway from Canadian Government, as of December 31, 1921.—These latter 78 engines having previously been under lease.

The actual stock at December 31, 1921, was.. .. .. 1,248 engines
Of the above there are in service on lines in United States.. .. 228 "

Engines out of service undergoing or waiting repairs—

	Percentage on	
	Number	Actual stock
December 31, 1921..	104	10.20
December 31, 1920..	88	9.46

EMPLOYEES AND THEIR COMPENSATION

Class of Employees	Average Number	Total Time during Year		Total Compensation
		Days	Hours	
				$ cts.
General officers	96·75	35,062		698,397 62
Division officers	216·75	76,418		752,963 65
Clerks	4,039·00		9'454,112	5,756,970 55
Messengers and attendants	113·25	22,164		93,833 31
Assistant engineers and draftsmen	85·75	25,609		171,787 19
M. W. & S. foremen	97·00		236,110	181,902 93
Section foremen	770·75		1,939,255	1,217,916 44
General foremen, M.E. department	83·75	28,590		221,416 94
Gang and other foremen, M.E. department	344·00		722,697	660,595 54
Machinists	1,078·25		1,964,663	1,782,704 63
Boiler makers	315·75		639,054	582,807 42
Blacksmiths	145·75		260,071	241,461 07
Masons and bricklayers	19·00		37,188	27,103 22
Structural iron workers	7·75		16,958	13,039 58
Carpenters	1,046·00		1,982,147	1,549,310 62
Painters and upholsterers	290·25		517,915	432,731 98
Electricians	135·25		311,209	240,103 02
Air-brake men	122·00		260,609	211,760 29
Car inspectors	296·50		762,612	608,095 34
Car repairers	832·50		1,792,632	1,341,044 47
Other skilled labour	822·50		1,543,595	1,239,980 83
Mechanic's helpers and apprentices	2 216·25		4,109,118	2,585,774 42
Section men	2,695·00		6,684,203	2,904,680 20
Other unskilled labour	1,437·00		3,179,119	1,608,371 16
Foremen of construction gangs and work trains	9·50		19,448	14,293 75
Other men in construction gangs and work trains	182·00		370,317	116,647 20
Travelling agents and solicitors	94·75	29,648		221,629 27
Employees in outside agencies				
Other traffic employees				
Train dispatchers and directors	93·00		237,190	288,606 14
Telegraphers, telephoners and block operators	408·25		1,088,740	855,288 75
Telegraphers and telephoners operating interlockers	12·75		37 227	27,357 89
Levermen (non-telegraphers)	145·75		370,071	198,035 82
Telegrapher-clerks	118·25		301,940	232,784 44
Agent-telegraphers	420·75		1,133,290	917,491 05
Station agents (non-telegrpahers)	98·25	29,603		224,011 28
Station masters and assistants	19·50	6,510		33,795 83
Station service	2,373·00		5,503,675	2,873,584 75
Yardmasters	48·50	16,220		136,716 14
Yardmaster's assistants (not yard clerks)	35·00	11,235		96,968 60
Yard engineers and motormen	311·25		799,646	706,046 07
Yard firemen and helpers	346·00		819,386	567,400 40
Yard conductors	328·00		875,685	729,645 18
Yard brakemen	593·50		1,516,848	1,173,867 07
Yard switch tenders	254·50		677,368	402,844 18
Other yard employees	49·50		129,268	41,477 64
Hostlers	123·00		338,819	226,842 54
Enginehouse watchmen and labourers	1,307·50		3,313,198	1,669,100 54
Road freight engineers and motormen	527·25		1,330,257	1,446,966 13
Road freight firemen and helpers	602·00		1,342,243	1,089,191 20
Road freight conductors	327·25		1,079,374	1,013,211 96
Road freight brakemen and flagmen	699·00		2,283,146	1,695,148 82
Road passenger engineers and notormem	192·25		445,238	569,649 28
Road passenger firemen and helpers	201·00		432,600	428,031 28
Road passenger conductors	139·00		401,578	405,312 48
Road passenger baggagemen	127·25		382,040	287,889 69
Road passenger brakemen and flagmen	159·75		468,957	352,968 47
Other road trainmen	8·00		23,777	13,578 77
Crossing flagmen and gatemen	475·00		1,243,987	544,282 35
Drawbridge operators	44·00		118,922	63,910 22
Floating-equipment employees	53·75		165,400	112,256 25
Express-service employees				
Policemen and watchmen	247·50	87,577		360,291 23
All other transportation employees	42·75		78,937	36,291 38
All other employees	602·75		1,766,715	573,004 64
Total	29,127·75	379,636	65,508,554	45,865,171 10

SECURITIES OF OTHER COMPANIES OWNED BY THE GRAND TRUNK RAILWAY COMPANY OF CANADA AND ITS SUBSIDIARIES

OWNED BY THE GRAND TRUNK RAILWAY COMPANY OF CANADA

	Total Outstanding	Held by Grand Trunk
Bay City Terminal Railway Company—		
Capital stock	$ 15,000 00	$ 15,000 00
Canada Atlantic Transit Company—		
Capital stock	219,000 00	219,000 00
Canada Atlantic Transit Co. of United States—		
Capital stock	250,000 00	250,000 00
Central Vermont Railway—		
Capital stock	3,000,000 00	2,191,100 00
1st mortgage 4% bonds	503,800 00	.....
Refunding mortgage 5% gold bonds	13,099,700 00	4,162,300 00
Equipment gold notes "D"	49,000 00	.....
Demand notes, etc	9,547,405 52	8,501,905 52
Champlain & St. Lawrence R.R. Co.—		
Capital stock	50,000 00	50,000 00
Chicago, New York & Boston Refrigerator Company—		
Capital stock	1,129,400 00	1,129,400 00
Detroit, Grand Haven & Milwaukee Railway Company—		
Capital stock	1,500,000 00	1,500,000 00
Equipment mortgage bonds	2,000,000 00	2,000,000 00
General consolidated mortgage bonds	3,200,000 00	3,200,000 00
Mowatt's mortgage	146,000 00	146,000 00
South Lyons land mortgage	80,000 00	80,000 00
Indebtedness for steamers and cars	585,000 00	585,000 00
Detroit Terminal Railroad Company—		
Capital stock	2,000,000 00	1,000,000 00
Grand Rapids Terminal Railroad Company—		
Capital stock	50,000 00	50,000 00
Grand Trunk Junction Railway Company—		
Capital stock	500,000 00	500,000 00
1st mortgage bonds	3,872,000 00	2,933,040 00
Grand Trunk Pacific Railway Company—		
Capital stock	24,940,000 00	24,940,000 00
Bonds. None held by G.T.R.		
Grand Trunk Western Railway Company—		
Capital stock	6,000,000 00	6,000,000 00
1st mortgage bonds	14,999,720 00	4,035,304 00
General consolidated mortgage bonds	11,541,000 00	11,541,000 00
Equipment gold notes	2,891,000 00	.....
Indebtedness for cars	1,098,700 00	1,098,700 00
International Bridge Company—		
Capital stock	1,500,000 00	1,496,500 00
1st mortgage bonds	512,260 00	512,260 00
Michigan Air Line Railway—		
Capital stock	300,000 00	300,000 00
1st mortgage bonds	1,500,400 00	1,500,400 00
Montreal & Southern Counties Railway Company—		
Capital stock	1,000,000 00	802,500 00
Demand notes	1,592,193 58	1,592,193 58

SECURITIES OF OTHER COMPANIES OWNED BY THE GRAND TRUNK RAILWAY COMPANY OF CANADA AND ITS SUBSIDIARIES—*Continued*

OWNED BY THE GRAND TRUNK RAILWAY COMPANY OF CANADA—*Continued*

	Total Outstanding	Held by Grand Trunk
Montreal Warehousing Company—		
Capital stock	236,000 00	220,300 00
1st mortgage bonds	1,000,000 00	.....
New England Elevator Company—		
Capital stock	400,000 00	400,000 00
1st mortgage bonds	400,000 00	200,000 00
Ontario Car Ferry Company—		
Capital stock	500,000 00	250,000 00
Ottawa Terminals Railway Company—		
Capital stock	250,000 00	250,000 00
1st mortgage bonds	3,000,000 00	3,000,000 00
Pembroke Southern Railway Company—		
Capital stock	178,000 00	158,000 00
1st mortgage bonds	150,000 00	.....
Portland Elevator Company—		
Capital stock	50,000 00	50,000 00
1st mortgage bonds	200,000 00	120,000 00
St. Clair Tunnel Company—		
Capital stock	700,000 00	700,000 00
1st mortgage bonds	2,500,000 00	2,500,000 00
Terminal Warehouse Registered—		
Demand notes	750,000 00	750,000 00
The Canadian Express Company—		
Capital stock	1,768,800 00	1,768,800 00
The Erie, London & Tillsonburg Railway—		
Capital stock	125,000 00	125,000 00
The Lachine, Jacques Cartier & Maisonneuve Railway—		
Capital stock	1,200 00	1,200 00
Demand notes	2,395,882 79	2,395,882 79
The Maganetawan River Railway Company—		
Capital stock	30,000 00	30,000 00
The Oshawa Railway Company—		
Capital stock	40,000 00	40,000 00
The Rail and River Coal Company—		
Capital stock	2,000,000 00	2,000,000 00
1st mortgage bonds	1,851,500 00	.....
The Realty Assets Co., Limited—		
Capital stock	504 00	504 00
The Toronto Belt Line Railway Company—		
Capital stock	50,000 00	26,000 00
1st mortgage bonds	462,500 00	462,500 00
Thousand Islands Railway Company—		
Capital stock	60,000 00	60,000 00
1st mortgage bonds	50,000 00	50,000 00
Toledo, Saginaw and Muskegon Railway Company—		
Capital stock	1,600,000 00	1,600,000 00
1st mortgage bonds	1,662,000 00	1,662,000 00
Toronto Terminals Railway Company—		
Capital stock	500,000 00	250,000 00
Gold notes	4,000,000 00	

SECURITIES OF OTHER COMPANIES OWNED BY THE GRAND TRUNK RAILWAY COMPANY OF CANADA AND ITS SUBSIDIARIES—*Continued*

OWNED BY THE GRAND TRUNK RAILWAY COMPANY OF CANADA—*Concluded*

	Total Outstanding	Held by Grand Trunk
Transcontinental Townsite Company, Limited—		
Capital stock	467,800 00	467,800 00
United States and Canada Railroad Company—		
Capital stock	219,400 00	218,925 00
1st mortgage bonds	225,000 00	225,000 00
2nd mortgage bonds	208,470 00	208,470 00
Vermont and Province Line Railway—		
Capital stock	200,000 00	200,000 00
Whipple Car Company—		
Capital stock	1,400,000 00	1,400,000 00
Atlantic and St. Lawrence Railroad Company—		
Capital stock	5,484,000 00	224 33
1st mortgage bonds	1,500,000 00	1,500,000 00
2nd mortgage bonds	713,000 00	713,000 00
3rd mortgage bonds	787,000 00	787,000 00
Chicago, Detroit and Canada Grand Trunk Junction Railroad Company—		
Capital stock	1,095,000 00	522,500 00
1st mortgage bonds	1,095,000 00	1,095,000 00
2nd mortgage bonds	691,141 46	691,141 46
Cincinnati, Saginaw and Mackinaw Railroad Company—		
Capital stock	1,500,000 00	27,761 71
Pontiac, Oxford and Northern Railroad—		
1st mortgage bonds	400,000 00	400,000 00
Detroit and Toledo Shore Line—		
1st mortgage bonds	3,000,000 00	662,000 00
Chicago and Western Indiana Railroad—		
1st mortgage bonds	.....	406,000 00
Grand Trunk Pacific Branch Lines Company—		
Saskatchewan 4 per cent bonds	11,315,052 00	1,435,644 00
Saskatchewan Terminals 4½ per cent bonds	1,881,792 00	1,881,792 00
Grand Trunk Pacific Terminal Elevator Company—		
1st mortgage bonds	1,862,352 00	1,862,352 00
Goderich Elevator Company—		
Capital stock	.....	16,400 00
Aberdeen Elevator Company—		
1st mortgage bonds	.....	75,000 00
2nd mortgage bonds	.....	100,000 00

OWNED BY GRAND TRUNK WESTERN RAILWAY COMPANY

Pontiac, Oxford and Northern Railroad—		
Capital stock	1,000,000 00	999,400 00
Detroit and Huron Railway Company—		
Capital stock	148,000 00	148,000 00
Chicago and Kalamazoo Terminal Railroad Company—		
Capital stock	100,000 00	100,000 00
Detroit and Toledo Shore Line Railway Company—		
Capital stock	1,428,000 00	714,000 00
Toledo Terminal Railway Company—		
Capital stock	4,000,000 00	387,200 00
1st mortgage bonds	4,386,000 00	42,000 00

SECURITIES OF OTHER COMPANIES OWNED BY THE GRAND TRUNK RAILWAY COMPANY OF CANADA AND ITS SUBSIDIARIES—*Concluded*

OWNED BY GRAND TRUNK JUNCTION RAILWAY COMPANY

	Total Outstanding	Held by Grand Trunk
Chicago and Western Indiana Railroad—		
Capital stock	5,000,000 00	1,000,000 00
Consolidated mortgage bonds	.....	1,781,000 00
Belt Railway Company of Chicago—		
Capital stock	2,880,000 00	240,000 00

OWNED BY THE DETROIT, GRAND HAVEN AND MILWAUKEE RAILWAY COMPANY

Grand Trunk Milwaukee Car Ferry Company—		
Capital stock	200,000 00	200,000 00
Yard switch and signal tenders	439,993.65	454,755.98
Yard motormen		
Engine house expenses—Yard	527,339.51	558,942.29
General office supplies and expenses	146,158.65	132,251.01

THE CENTRAL VERMONT RAILWAY

The Central Vermont Railway is operated under separate management, but controlled by the Grand Trunk Railway Company of Canada.

The railway extends from New London, Conn., to Montreal, and the twenty-second annual report (year ended December 31, 1921) gives a total track mileage of 705·87. Of this 568·68 miles are in the United States and 137·19 in Canada. Mileage owned by the company includes 197·75 miles of main track, 5·58 miles of second track, 173·47 miles of branch line, and 118·78 miles of yard, siding and spur tracks. There are, in addition, leased lines including 121·13 miles of main line, 39·60 miles of branch lines and 49·56 miles of yard siding and spur tracks.

INCOME ACCOUNT

Operating Income—		
Railway operating revenues	$ 7,135,753 06	
Railway operating expenses	7,312,559 48	
Net revenue from railway operations		*$ 176,806 42
Railway tax accruals	$ 237,032 08	
Uncollectible railway revenue	631 29	
		237,663 37
Total operating income		*$ 414,469 79
Non-Operating Income—		
Rent from locomotives	$ 2,453 23	
Rent from passenger train cars	69,323 10	
Rent from work equipment	905 75	
Joint facility rent income	31,658 74	
Income from lease of road	2,000 04	
Miscellaneous rent income	4,958 68	
Income from unfunded securities and accounts	11,678 54	
Income from funded securities and accounts	3,000 00	
Miscellaneous income	28,566 11	
Total non-operating income		154,544 19
Gross income		*$ 259,925 60
Deductions from Gross Income—		
Hire of freight cars—Dr. balance	$ 256,061 66	
Rent for locomotives	10,600 69	
Rent for passenger train cars	62,006 42	
Joint facility rents	7,131 13	
Miscellaneous rents	27,827 77	
Rent for leased roads	216,552 50	
Interest on funded debt	675,870 28	
Interest on unfunded debt	60,040 35	
Amortization of discount on funded debt	13,321 28	
Miscellaneous income charges	18,519 30	
Total deductions from gross income		$ 1,347,931 38
Net deficit		$ 1,607,856 98

*Deficit.

PROFIT AND LOSS ACCOUNT

Net deficit at December 31, 1920	$ 419,631 17
Miscellaneous adjustment credit	15,104 28
Deficit	$ 404,526 89
Deficit in income account for the year	1,607,856 98
Depreciation on equipment retired during the year from date of purchase to June 30, 1907	24,521 08
Net deficit at December 31, 1921	$ 2,036,904 95

BALANCE SHEET—DECEMBER 31, 1921

	Assets		
Investments			
Investment in road and equipment	$17,190,102 30		
Improvements on leased railway property	367,811 96		
		$17,557,914 26	
Investments in affiliated companies—			
Stocks	$ 4,973,914 92		
Advances	3,254,894 58		
		8,228,809 50	
Other investments—			
Bonds	$ 75,000 00		
Miscellaneous	100 00		
		75,100 00	
Total investments			$25,861,823 76
Current Assets—			
Cash		$ 383,388 18	
Special deposits		50,091 50	
Traffic and car service balances receivable		236,307 90	—
Net balance receivable from agents and conductors		96,244 85	
Miscellaneous accounts receivable		743,311 31	
Material and supplies		788,369 77	
Interest and dividends receivable		7,604 17	
Other current assets		290,633 01	
Total current assets			$ 2,595,950 69
Deferred Assets—			
Working fund advances		$ 529 40	
Other deferred assets, miscellaneous		32,718 75	
Other deferred assets, U.S. Govt.		2,342,021 32	
Total deferred assets			2,375,279 47
Unadjusted Debits—			
Rents and insurance premiums paid in advance		4,248 78	
Discount on funded debt		119,328 65	
Other unadjusted debits		492,040 10	
Securities issued or assumed—Unpledged		73,000 00	
Securities issued or assumed—Pledged		369,000 00	
Total unadjusted debits			1,057,617 53
Grand total			$31,890,671 45

LIABILITIES

Stock—		
Authorized, 30,000 shares of $100 each..	$ 3,000,000 00	
Issued	$ 2,984,600 00	
Scrip	15,400 00	
		$ 3,000,000 00
Long-term Debt—		
Funded debt unmatured, refunding mortgage 5% gold bonds	$13,603,500 00	
Equipment trust notes	49,000 00	
Non-negotiable debt to affiliated companies—		
Notes	8,313,369 19	
Open accounts	95,960 23	
Total long-term debt		22,061,829 42
Current Liabilities—		
Loans and bills payable	$ 1,447,324 77	
Traffic and car service balances payable	883,356 57	
Audited accounts and wages payable	1,737,796 35	
Miscellaneous accounts payable	1,611 35	
Interest matured unpaid	46,269 00	
Unmatured interest accrued	215,357 38	
Other current liabilities	42,901 92	
Total current liabilities		4,324,617 34
Deferred Liabilities—		
Other deferred liabilities, miscellaneous	$ 225,572 87	
Other deferred liabilities, U.S. Govt.	2,973,343 29	
Total deferred liabilities		3,198,916 16
Unadjusted Credits—		
Accrued depreciation—Road	$ 102,822 16	
Accrued depreciation—Equipment	836,382 52	
Tax liabilities	128,406 15	
Other adjusted credits	274,602 65	
Total unadjusted credits		1,342,213 48
Profit and loss balance (deficit)		2,036,904 95
Contingent Liabilities—		
In respect of principal of and interest on $200,000 par value first mortgage 4% bonds of the Montreal and Province Line Railway Company.		
Grand total		$31,890,671 45

CORPORATE STATEMENT OF EARNINGS, EXPENDITURE AND RESULT OF OPERATION

	Year ending December 31, 1921
Revenue—	
Freight	$ 5,143,566 53
Passenger	1,362,007 56
Mail and express	242,860 63
Other revenue from transportation	262,734 87
Revenue from operations other than transportation	108,730 29
Dining and buffet service	15,853 18
Total revenue	$ 7,135,753 06
Expenses—	
Maintenance of way and structures	$ 1,304,427 26
Maintenance of equipment	1,604,438 61
Traffic	145,934 57
Transportation	3,959,970 20
Miscellaneous operations	19,173 95
General	280,394 91
Transportation for investment—Cr.	1,780 02
Total operating expenses	$ 7,312,559 48
Balance	*$ 176,806 42
Net—Dr. from rentals, etc.	61,126 15
Balance	*$ 237,932 57
Taxes	237,032 08
Balance	*$ 474,964 65
Hire of equipment balance	255,986 69
Balance	*$ 730,951 34
Extra receipts—	
Interest on securities held by the company, etc.	$ 24,267 70
Total	*$ 706,683 64
Fixed charges	927,011 76
Net result	*$ 1,633,695 40
Amount due from United States Government guaranty period lap over items	25,838 42
Balance—Deficit	$ 1,607,856 98

*Deficit.

COMPARATIVE STATEMENT OF FREIGHT AND PASSENGER TRAIN EARNINGS PER TON AND PER PASSENGER MILE

	Year ending December 31, 1921	Year ending December 31, 1920
Freight—		
Revenue train miles	877,168	1,030,974
Freight earnings	$ 5,143,566 53	$ 5,480,246 60
Earnings per freight train mile	$ 5 86	$ 5 32
Tons carried	3,428,344	4,870,160
Tons carried one mile	298,520,857	369,496,598
Earnings per ton mile	$ .0172	$ .0148
Passenger—		
Revenue train miles	992,892	1,096,540
Passenger earnings	$ 1,708,027 40	$ 2,012,095 39
Earnings per passenger train mile	$ 1 72	$ 1 83
Passengers carried	1,235,122	1,470,347
Passengers carried one mile	36,890,101	45,294,652
Earnings per passenger mile	$ .0369	$ .0323

Earnings from express and mails are included in passenger train earnings. Earnings per passenger mile do not include express and mail earnings.

Freight carried amounted to 3,428,344 tons, as against 4,870,160 in 1920. The comparison in percentages was as follows:—

	1921	1920
Products of agriculture	22,845	16,178
" " animals	6,003	5,424
" " mines	24,996	29,610
" " forests	12,220	14,666
Manufactured and miscellaneous	27,656	28,376
L.C.L. traffic (merchandise)	6,280	5,746
	100,000	100,000

MILEAGES

Engine mileage—	Year ending December 31, 1921	Year ending December 31, 1920
Total revenue miles	2,505,206	2,896,254
Non-revenue miles	40,355	55,430
Total	2,545,561	2,951,684
Train mileage—		
Freight	824,710	974,772
Passenger	976,883	1,084,668
Mixed	66,608	67,681
Special	308	393
Total revenue miles	1,868,509	2,127,514
Non-revenue miles	40,355	55,430
Total	1,908,864	2,182,944
Car mileage—		
Passenger	4,533,605	5,447,814
Freight	22,643,662	25,154,274
Total	27,177,267	30,602,088

EQUIPMENT ON HAND DECEMBER 31, 1921

Locomotives—	
Passenger	28
Freight	66
Switch	5
Total	99
Passenger Cars—	
Coach	49
Café-parlor	2
Parlor	2
Dining	1
Combination passenger and baggage	11
Baggage, mail and express	26
Milk	13
Total	104
Freight and Work Cars—	
Box	1,875
Refrigerator	13
Stock	7
Coal	200
Flat	423
Caboose	40
Cinder	34
Wreck	17
Snowploughs	8
Construction	70
Scraper	15
Official	1
Store	1
Total	2,704

REPORT OF THE DEPARTMENTAL ACCOUNTANT

GENERAL SUMMARY of the Expenditure and the Revenue for the Fiscal Year ending March 31, 1922, and Previous Years

I.—EXPENDITURE.	$ cts.	$ cts.
Total expenditure for the year		65,798,757 12
This expenditure is divided as follows:—		
Railways	52,467,481 89	
Canals	7,616,746 01	
General expenditure	5,714,529 22	65,798,757 12
Grand total expenditure to March 31, 1922		1,276,157,749 95
This expenditure is divided as follows:—		
Railways, including Quebec bridge	1,051,887,556 36	
Canals	194,617,719 61	
General expenditure	29,652,473 98	1,276,157,749 95
II.—REVENUE RECEIVED		
Revenue received for fiscal year		41,592,463 94
Railways	40,787,945 36	
Canals	804,518 58	41,592,463 94
Grand total revenue to March 31, 1922		451,734,854 18
Railways	432,654,337 45	
Canals	19,080,516 73	451,734,854 18

The principal expenditures during fiscal year follow:—	
Canadian Government Railways, working expenses	47,114,745 83
" " capital	4,553,638 03
Miscellaneous railway equipment	1,980,611 71
Railway Commission, maintenance	205,984 40
" " statute	53,766 66
Surveys and Inspections, railways	55,745 48
Acquisition of the Grand Trunk Railway	453,846 81
Commissioner of Highways	51,055 28
Canada Highways Act	3,399,008 20
Workmen's Compensation Act	65,869 99
To pay for damages claimed by S.S. *Harlem*	58,604 86
Can. Government Railways, military service claims	79,043 33
" " " to supplement pension allowance	36,145 78
Welland Ship Canal	4,279,815 61
Surveys and Inspections, canals	66,800 25
Canals expenditure	3,270,130 15
Miscellaneous expenditure	73,944 75
Total	$65,798,757 12

EXPENDITURE

GENERAL STATEMENT of Expenditure During the Year ending March 31, 1922

	$ cts.	$ cts.
Total expenditure		$65,798,757 12
Expenditure chargeable to railways	52,467,481 89	
" " canals	7,616,746 01	
General expenditure	5,714,529 22	
Total expenditure		65,798,757 12
Classification of expenditure in general—		
Capital account	11,016,888 39	
Income account	5,369,826 00	
Revenue account	49,412,042 73	
		65,798,757 12
Classification of expenditure by accounts—		
Railways—		
Capital expenditure—Railways		4,553,638 03
Revenue expenditure—Railways		47,114,745 83
Income expenditure—Railways general		799,098 03
Total expenditure on railways, $52,467,481 89.		
Canals—		
Capital expenditure—Canals		4,482,638 65
Income expenditure—Canals	744,990 40	
Income expenditure—Canals, general	91,820 06	836,810 46
Revenue expenditure—Canals, staff	983,042 31	
Revenue expenditure—Canals, staff, general	148,136 09	1,131,178 40
Revenue expenditure—Canals, repairs	1,105,053 90	
Revenue expenditure—Canals, repairs, general	61,064 60	1,166,118 50
Total expenditure on canals, $7,616,746 01.		
General expenditure—Capital account	1,980,611 71	
" " Income account	3,733,917 51	5,714,529 22
Total expenditure		65,798,757 12

REVENUE

General Statement of the Revenue Received During the Year ending March 31, 1922

	$ cts.	$ cts.
Total revenue received during the fiscal year		41,592,463 94
Revenue from railways	40,787,945 36	
" canals	804,518 58	
Total revenue as above		41,592,463 94
Statement of revenue received, in detail—		
Railways—		
Intercolonial Railway, including New Brunswick and Prince Edward Island Railway	24,605,887 19	
Prince Edward Island Railway	888,394 77	
National Transcontinental Railway	14,585,286 04	
Moncton and Buctouche Railway	53,165 91	
Salisbury and Albert Railway	58,488 97	
Elgin and Havelock Railway	20,729 52	
St. Martins Railway	23,288 76	
York and Carleton Railway	7,957 07	
Quebec apd Saguenay Railway	129,557 95	
Caraquet and Gulf Shore Railway	99,170 02	
Lotbiniere and Megantic Railway	14,591 41	
Cape Breton Railway	24,853 93	
Hudson Bay Railway	29,475 26	
Total	40,540,846 80	
St. John and Quebec Railway	247,098 56	
Total revenue from Railways		40,787,945 36
Canals—		
Welland Canal	72,830 95	
Welland canal, Port Colborne elevator	294,558 51	
Welland ship canal	4,342 98	
Lachine canal	189,752 95	
Beauharnois canal	16,781 69	
Soulanges canal	3,720 49	
Cornwall canal	22,948 00	
Williamsburg canal	1,722 10	
Chambly canal	917 00	
Carillon and Grenville canal	878 00	
Rideau canal	7,604 04	
Trent canal	187,846 87	
St. Peter's canal	9 00	
Sault Ste. Marie canal	116 00	
Murray canal	248 00	
St. Annes Lock	241 00	
Chats Falls canal	1 00	
Total revenue from canals		804,518 58
Total revenue received		41,592,463 94

Expenditure on Railways for Year ending March 31, 1922

Name of Railway	Capital	Income	Revenue Working Expenses	Total
	$ cts.	$ cts.	$ cts.	$ cts.
Intercolonial Railway	2,583,658 31		28,353,435 33	30,940,093 64
New Brinswick and Prince Edward Island Railway	178,227 21		I	178,227 21
Prince Edward Island Railway	30,739 22		1,514,808 99	1,545,548 21
International Railway of New Brunswick	39,759 86		I	39,759 86
National Transcontinental Railway	675,359 48		15,697,234 75	16,372,594 23
Moncton and Buctouche Railway	122,552 32		98,043 60	220,595 92
Salisbury and Albert Railway	132,123 14		117,870 87	249,994 01
St. Martin's Railway	58,721 99		66,677 23	126,804 61
" " Purchase	1,405 39	*		
Elgin and Havelock Railway	16,345 88		60,900 19	77,246 07
York and Carleton Railway	236 30		24,429 02	32,141 48
" " Purchase	7,476 16	*		
Quebec and Saguenay Railway	29,526 14		163,362 18	192,888 32
Caraquet and Gulf Shore Railway	288,371 67		262,111 41	550,483 08
Lotbiniere and Megantic Railway	9,478 34		41,240 69	50,719 03
Cape Breton Railway	4,470 65		50,092 07	55,329 84
" " Purchase	767 12	*		
Hudson Bay Railway	61,563 43		101,396 34	162,959 77
" " Port Nelson Terminals	34,769 87	*		34,769 87
St. John and Quebec Railway			563,143 16	563,143 16
Canadian Government Railways—Miscell's	105,191 23			275,085 55
Railway equipment—Rolling stock	169,894 32	*		
	4,553,638 03		47,114,745 83	51,668,383 86

I Included with Intercolonial Railway working expenses.

* Does not appear in report of Canadian Government Railways.

Above statement is for year ending March 31, 1922, while the Statement of the Canadian Government Railways is for the year ending December 31, 1921, which accounts for difference in statements.

EXPENDITURE on Railways for the Year ending March 31, 1922—*Con.*

Name of Railway	Capital	Income	Revenue Working Expenses	Total
	$ cts.	$ cts.	$ cts.	$ cts.
Railway Commission, maintenance		205,984 40		205,984 40
Railway Commission, statutory		53,766 66		53,766 66
Surveys and inspections		55,745 48		55,745 48
Railway Grade Crossing Fund		13,292 44		13,292 44
Governor General's cars, attendance, etc		16,364 91		16,364 91
Contribution to the International Association of Railways Congress		97 33		97 33
To provide for payment of expenses in connection with acquisition of the Grand Trunk and associated railway systems		453,846 81		453,846 81
Total		799,098 03		799,098 03
Grand total Railways	4,553,638 03	799,098 03	47,114,745 83	52,467,481 89
MISCELLANEOUS				
Miscellaneous railway equipment, Vote No. 113 $1,776,085 02 Exchequer Court awards 204,526 69	1,980,611 71			1,980,611 71
Commissioner of Highways		51,055 28		51,055 28
Printing and stationery		4,966 59		4,966 59
Canada Highways Act		3,399,008 20		3,399,008 20
Workmen's Compensation Act, Chapter 15, Statutes of Canada, 1918		65,869 99		65,869 99
Retirement Act, 1920, Superannuation No. 4		23,778 13		23,778 13
Unforeseen expenses, Vote No. 290		15,445 35		15,445 35
To pay damages claimed by S.S. *Harlem*		58,604 86		58,604 86
Canadian Government Railways—In settlement of claims arising out of military service of Canadian Government Railways employees		79,043 33		79,043 33
Canadian Government Railways—To supplement pension allowance		36,145 78		36,145 78
Total	1,980,611 71	3,733,917 51		5,714,529 22

EXPENDITURE on Canals for Year ended March 31, 1922

Name of Canal	Chargeable to Capital	Chargeable to Income	Chargeable to Revenue		Total
			Staff	Repairs	
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Carillon and Grenville		24,999 24	33,472 82	35,627 19	94,099 25
Chambly		24,331 04	46,140 24	71,882 15	142,353 43
Cornwall			89,457 30	81,706 21	171,163 51
Lachine		49,510 23	137,759 67	207,223 00	394,492 90
Murray			7,262 46	5,379 46	12,641 92
Rideau			76,482 08	256,637 58	333,119 66
Sault Ste. Marie			39,470 87	29,906 33	69,377 20
Soulanges		8,975 25	48,055 29	111,956 45	168,986 99
St. Anne's Lock		3,297 89	7,206 48	5,257 67	15,762 04
Lake St. Francis					
St. Ours lock		4,337 70	5,398 91	7,045 71	16,782 32
St. Peters			5,382 42	324 48	5,706 90
Trent	195,823 04	478,126 50	109,891 51	75,426 37	859,267 42
Welland	7,000 00	151,412 55	331,182 90	180,014 37	669,609 82
Welland ship	4,279,815 61				4,279,815 61
Williamsburg			45,879 36	36,666 93	82,546 29
	4,482,638 65	744,990 40	983,042 31	1,105,053 90	7,315,725 26
General on Canals					
Dredge vessels, Quebec, canals		19,424 31	33,478 15	17,628 34	70,530 80
" " Rideau canal				34,128 44	34,128 44
Sunday labour			78,971 89		78,971 89
Surveys and inspections		66,800 25			66,800 25
Quebec Canals					
Maintenance			35,683 05		35,683 05
Hungry Bay dyke				9,307 82	9,307 82
Miscellaneous					
Civil Service Amendment Act, Gratuities to dependents of deceased employees		5,595 50			5,595 50
Canals revenue			3 00		3 00
Total		91,820 06	148,136 09	61,064 60	301,020 75
Grand total	4,482,638 65	836,810 46	1,131,178 40	1,166,118 50	7,616,746 01

RECAPITULATION OF EXPENDITURE

Expenditure on railways	4,553,638 03	799,098 03	47,114,745 83	52,467,481 89
Expenditure on canals	4,482,638 65	836,810 46	2,297,296 90	7,616,746 01
Miscellaneous expenditure, general	1,980,611 71	3,733,917 51		5,714,529 22
	11,016,888 39	5,369,826 00	49,412,042 73	65,798,757 12

Expenditure on Canals to March 31, 1922

CAPITAL ACCOUNT

Canals	Previous Years	1921-1922	Total
	$ cts.	$ cts.	$ cts.
Baie Verte			
Beauharnois	1,636,690 26		1,636,690 26
Carillon and Grenville	4,191,756 51		4,191,756 51
Chambly	780,996 52		780,996 52
Cornwall	7,246,304 21		7,246,304 21
Culbute lock and dam	382,391 46		382,391 46
Lachine	14,132,684 80		14,132,684 80
Lake St. Francis	75,906 71		75,906 71
Lake St. Louis	298,176 11		298,176 11
Murray	1,248,946 71		1,248,946 71
Rideau	4,210,274 31		4,210,274 31
Sault Ste. Marie	4,935,809 42		4,935,809 42
Soulanges	7,904,044 53		7,904,044 53
St. Annes lock	1,170,215 63		1,170,215 63
St. Lawrence river and canals—			
North channel	1,995,142 87		1,995,142 87
River reaches	483,830 20		483,830 20
Galops channel	1,039,895 65		1,039,895 65
St. Ours lock	127,228 56		127,228 56
St. Peter's	648,547 14		648,547 14
Tay	489,599 23		489,599 23
Trent	18,654,195 74	195,823 04	18,850,018 78
Welland	29,399,405 93	7,000 00	29,406,405 93
Welland ship	25,340,733 82	4,279,815 61	29,620,549 43
Williamsburg	1,334,551 80		1,334,551 80
Farran's Point	877,090 57		877,090 57
Galops	6,143,468 11		6,143,468 11
Rapide Plat	2,159,880 80		2,159,880 80
Total	136,907,767 60	4,482,638 65	141,390,406 25
Canals general	34,966 69		34,966 69
Grand total	136,942,734 29	4,482,638 65	141,425,372 94

INCOME ACCOUNT

Baie Verte	44,387 53		44,387 53
Beauharnois	265,810 84		265,810 84
Carillon and Grenville	402,089 05	24,999 24	427,088 29
Chambly	790,949 49	24,331 04	815,280 53
Cornwall	637,119 09		637,119 09
Culbute lock and dam	60,923 37		60,923 37
Lachine	1,736,211 86	49,510 23	1,785,722 09
Lake St. Francis	27,028 08		27,028 08
Lake St. Louis			
Murray	101,457 76		101,457 76
Rideau	679,479 05		679,479 05
Sault Ste. Marie	280,098 04		280,098 04
Soulanges	260,714 27	8,975 25	269,689 52
St. Anne's lock	95,180 28	3,297 89	98,478 17
St. Lawrence river and canals	128,298 11		128,298 11
St. Ours' lock	174,028 88	4,337 70	178,366 58
St. Peter's	735,550 22		735,550 22
Tay	748 65		748 65
Trent	1,375,057 91	478,126 50	1,853,184 41
Welland	2,688,745 80	151,412 55	2,840,158 35
Welland ship			
Williamsburg	355,702 84		355,702 84
Total	10,839,581 12	744,990 40	11,584,571 52
Canals, general	836,262 59	91,820 06	928,082 65
Grand total	11,675,843 71	836,810 46	12,512,654 17

EXPENDITURE on Canals to March 31, 1922—*Concluded*

REVENUE ACCOUNT—STAFF

Canals	Previous Years	1921-22	Total
	$ cts.	$ cts.	$ cts.
Baie Verte			
Beauharnois	649,574 89		649,574 89
Carillon and Grenville	922,698 93	33,472 82	956,171 75
Chambly	1,141,420 49	46,140 24	1,187,560 73
Cornwall	1,987,409 26	89,457 30	2,076,866 56
Culbute lock and dam	11,507 48		11,507 48
Lachine	3,179,426 82	137,759 67	3,317,186 49
Murray	167,547 20	7,262 46	174,809 66
Rideau	2,000,636 04	76,482 08	2,077,118 12
Sault Ste. Marie	542,481 87	39,470 87	581,952 74
Soulanges	696,753 94	48,055 29	744,809 23
St. Anne's lock	134,787 27	7,206 48	141,993 75
St. Ours' lock	137,649 26	5,398 91	143,048 17
St. Peter's	137,865 80	5,382 42	143,248 22
Trent	918,826 03	109,891 51	1,028,717 54
Welland	5,711,629 90	331,182 90	6,042,812 80
Williamsburg	812,632 52	45,879 36	858,511 88
Total	19,152,847 70	983,042 31	20,135,890 01
Canals, general	2,468,753 60	148,136 09	2,616,889 69
Grand total	21,621,601 30	1,131,178 40	22,752,779 70

REVENUE ACCOUNT—REPAIRS

Baie Verte			
Beauharnois	525,691 23		525,691 23
Carillon and Grenville	648,710 58	35,627 19	684,337 77
Chambly	1,128,046 55	71,882 15	1,199,928 70
Cornwall	1,200,696 06	81,706 21	1,282,402 27
Culbute lock and dam	7,036 15		7,036 15
Lachine	2,728,353 23	207,223 00	2,935,576 23
Murray	116,479 46	5,379 46	121,858 92
Rideau	2,131,387 48	256,637 58	2,388,025 06
Sault Ste. Marie	477,637 19	29,906 33	507,543 52
Soulanges	802,819 69	111,956 45	914,776 14
St. Anne's lock	162,491 51	5,257 67	167,749 18
St. Ours' lock	126,586 42	7,045 71	133,632 13
St. Peter's	37,217 56	324 48	37,542 04
Trent	990,380 09	75,426 37	1,065,806 46
Welland	4,288,512 63	180,014 37	4,468,527 00
Williamsburg	705,141 29	36,666 93	741,808 22
Total	16,077,187 12	1,105,053 90	17,182,241 02
Canals, general	683,607 18	61,064 60	744,671 78
Grand total	16,760,794 30	1,166,118 50	17,926,912 80

Total Expenditure by Canals to March 31, 1922

Canals	Capital	Income	Revenue		Totals
			Staff	Repairs	
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Baie Verte		44,387 53			44,387 53
Beauharnois	1,636,690 26	265,810 84	649,574 89	525,691 23	3,077,767 22
Carillon and Grenville	4,194,756 51	427,088 29	956,171 73	684,337 77	6,259,354 32
Chambly	780,996 52	815,280 53	1,187,560 73	1,199,928 70	3,983,766 48
Cornwall	7,246,304 21	637,119 09	2,076,866 56	1,282,402 27	11,242,692 13
Culbute lock and dam	382,291 46	60,923 37	11,507 48	7,036 15	461,758 46
Lachine	14,132,684 80	1,785,722 09	3,317,186 49	2,935,576 23	22,171,169 61
Lake St. Francis	75,906 71	27,028 08			102,934 79
Lake St. Louis	298,176 11				298,176 11
Murray	1,248,946 71	101,457 76	174,809 66	121,858 92	1,647,073 05
Rideau	4,210,274 31	679,479 05	2,077,118 12	2,388,025 06	9,354,896 54
Sault Ste. Marie	4,935,809 42	280,098 04	581,952 74	507,543 52	6,305,403 72
Soulanges	7,904,044 53	269,689 52	744,809 23	914,776 14	9,833,319 42
St. Anne's lock	1,170,215 63	98,478 17	141,993 75	167,749 18	1,578,436 73
St. Lawrence River canals—					
North channel	1,995,142 87				
River Reaches	483,830 20	128,298 11			3,647,166 83
Galops channel	1,039,895 65				
St. Ours' lock	127,228 56	178,366 58	143,048 17	133,632 13	582,275 44
St. Peter's	648,547 14	735,550 22	143,248 22	37,542 04	1,564,887 62
Tay	489,599 23	748 65			490,347 88
Trent	18,850,018 78	1,853,184 41	1,028,717 54	1,065,806 46	22,797,727 19
Welland	29,406,405 93	2,840,158 35	6,042,812 80	4,468,527 00	42,757,904 08
Welland ship	29,620,549 43				29,620,549 43
Williamsburg	1,334,551 80				
Farran's Point	877,090 57				
Galops	6,143,468 11	355,702 84	858,511 88	741,808 22	12,471,014 22
Rapide Plat	2,159,880 80				
Total	141,390,406 25	11,584,571 52	20,135,890 01	17,182,241 02	190,293,108 80
Canals, general	34,966 69	928,082 65	2,616,889 69	744,671 78	4,324,610 81
Grand total	141,425,372 94	12,512,654 17	22,752,779 70	17,926,912 80	194,617,719 61

YEARLY EXPENDITURE on Canals and Revenue Received to March 31, 1922

——	Year ending	Capital	Income	Revenue		Revenue received
				Staff	Repairs	
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Government expenditure prior to Confederation, including Imperial Government expenditure	.....	20,593,866 13	98,378 46	.....	.....	.....
Government expenditure (1868 to 1879 included)	.....	17,004,842 55	515,196 21	1,830,398 92	1,832,998 61	5,079,068 36
Govt. expenditure since	1880	2,123,366 34	.....	195,039 33	147,167 52	341,598 14
" "	1881	2,075,891 65	7,246 69	197,573 62	154,653 63	361,558 17
" "	1882	1,593,174 09	55,025,03	224,572 61	187,399 02	325,231 54
" "	1883	1,763,001 97	62,503 14	269,415 01	178,617 86	361,604 01
" "	1884	1,577,295 42	60,993 99	280,657 29	192,219 38	372,561 69
" "	1885	1,504,621 47	58,298 29	280,226 20	201,708 47	321,289 47
" "	1886	1,333,324 80	31,984 02	282,323 63	198,251 97	328,977 43
" "	1887	1,783,698 16	65,983 06	285,172 62	198,888 84	321,784 88
" "	1888	1,033,118 34	120,561 59	292,458 76	201,928 93	317,902 04
" "	1889	972,918 43	162,015 49	301,040 23	240,261 36	333,188 90
" "	1890	1,026,364 24	146,853 54	290,516 63	176,089 00	354,816 92
" "	1891	1,318,092 15	165,843 87	294,562 12	204,768 45	349,431 90
" "	1892	1,437,149 30	194,129 61	293,115 58	231,089 54	324,475 24
" "	1893	2,069,573 30	196,185 84	291,048 97	204,759 39	357,089 87
" "	1894	3,027,164 19	110,512 07	294,446 34	179,630 13	387,788 97
" "	1895	2,452,273 65	216,057 58	281,477 04	164,033 71	339,890 49
" "	1896	2,258,778 97	85,820 49	292,121 05	209,321 60	339,538 72
" "	1897	2,348,636 91	101,205 74	287,970 36	178,385 47	384,780 54
" "	1898	3,207,249 79	82,400 55	280,872 44	203,478 86	407,652 82
" "	1899	3,899,877 31	82,205 60	280,628 57	202,312 36	369,044 33
" "	1900	2,639,564 93	120,653 93	292,609 24	227,626 97	322,642 81
" "	1901	2,360,569 89	135,500 57	314,095 04	262,876 07	315,425 68
" "	1902	2,114,689 88	213,044 91	317,838 61	263,768 27	300,413 66
" "	1903	1,823,273 61	275,103 58	390,281 82	294,113 92	230,213 19
" "	1904	1,880,787 20	298,678 23	381,016 82	350,278 54	†79,536 58
" "	1905	2,071,593 72	352,855 43	431,499 60	401,742 79	78,009 25
" "	1906	1,552,121 21	310,716 70	447,962 92	375,889 60	108,067 71
" "	1907	887,838 61	254,423 18	329,629 63	287,231 03	105,003 11
" "	1908	1,708,156 37	483,250 11	473,638 95	411,660 53	144,882 16
" "	1909	1,868,834 45	699,304 73	475,515 04	433,958 10	199,501 25
" "	1910	1,650,706 64	459,835 62	515,585 16	491,793 02	193,384 23
" "	1911	2,349,474 49	385,534 55	511,305 94	471,530 32	221,138 46
" "	1912	2,554,938 91	384,860 73	585,899 54	555,709 95	264,114 48
" "	1913	2,255,448 21	292,960 26	605,248 57	535,135 66	307,567 69
" "	1914	2,824,536 79	351,397 24	642,844 68	574,038 68	380,188 08
" "	1915	5,490,796 03	405,806 32	675,170 67	562,599 27	427,763 16
" "	1916	6,142,148 96	348,174 41	697,532 44	529,565 23	446,722 26
" "	1917	4,304,589 09	372,102 96	700,022 11	486,167 67	461,423 14
" "	1918	1,781,957 07	90,255 66	743,857 09	540,331 49	414,868 21
" "	1919	2,211,935 48	137,604 37	733,090 71	698,878 14	387,654 90
" "	1920	4,579,565 22	743,877 26	745,986 58	713,334 83	442,193 02
" "	1921	5,449,961 68	1,104,239 51	815,979 22	920,992 94	366,010 69
" "	1922	4,482,638 65	744,990 40	983,042 31	1,105,053 90	804,518 58
Total*	.....	141,390,406 25	11,584,571 52	20,135,890 01	17,182,241 02	19,080,516 73

* This does not include expenditure which has been charged to Miscellaneous Canals Expenditure, but only the amount expended on specific canals.

† Canal tolls abolished this year.

STATEMENT of Canals Revenue for Year ending March 31, 1922

Divisions	Dues	Rents	Total
	$ cts.	$ cts.	$ cts.
Welland Canal—			
Port Colborne	63 82	13,009 10	13,072 92
Port Colborne elevator	294,558 51		294,558 51
Port Dalhousie	456 67	59,301 36	59,758 03
Total	295,079 00	72,310 46	367,389 46
Welland Ship Canal		4,342 98	4,342 98
St. Lawrence Canals—			
Coteau Landing, Beauharnois canal	289 54	16,492 15	16,781 69
" " Soulanges canal	128 00	3,592 49	3,720 49
Cornwall	511 50	22,436 50	22,948 00
Cardinal, Williamsburg canal	30 00	1,692 10	1,722 10
Lachine canal, Montreal	15,939 38	171,575 12	187,514 50
" " Lachine	2,142 45	96 00	2,238 45
Total	19,040 87	215,884 36	234,925 23
Chambly Canal—			
Chambly		659 00	659 00
St. Johns	72 00	126 00	198 00
St. Ours		60 00	60 00
Total	72 00	845 00	917 00
Ottawa River Canals—			
Carillon and Grenville—			
Grenville canal	8 00	37 00	45 00
Carillon canal		833 00	833 00
St. Anne's lock	82 00	159 00	241 00
Chats Falls canal		1 00	1 00
Total	90 00	1,030 00	1,120 00
Rideau Canal—			
Ottawa	231 00	6,578 82	6,809 82
Kingston Mills		551 40	551 40
Smiths Falls	45 00	197 82	242 82
Total	276 00	7,328 04	7,604 04
St. Peter's Canal		9 00	9 00
Murray Canal		248 00	248 00
Trent Canal	28 00	187,818 87	187,846 87
Sault Ste. Marie Canal		116 00	116 00
Grand total	314,585 87	489,932 71	804,518 58
Net amount deposited to credit of Receiver General			804,518 58

Statement of Hydraulic and Other Rents, Showing Rent Accrued, Paid, and Balances Due March 31, 1922

Balance due April 1, 1921	Hydraulic and other rents accrued	Lock House Rents	Totals	Canals	Abatement for overcharges	Deposited to the credit of the Receiver General		Balance due March 31, 1922	Totals
						Lock House Rents	Hydraulic Rents, etc.		
$ cts.	$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
65,905 76	76,401 76	2,217 00	144,524 52	Welland	12,061 38	2,283 00	70,027 46	60,152 68	144,524 52
416 00	495 00	4,181 98	5,092 98	Welland ship		3,818 98	524 00	750 00	5,092 98
3,102 00	2,463 10	216 00	5,781 10	Williamsburg	850 00	216 00	1,476 10	3,239 00	5,781 10
	22,571 50		22,571 50	Cornwall			22,436 50	135 00	22,571 50
6,758 84	14,826 15		21,584 99	Beauharnois	3,157 00		16,492 15	1,935 84	21,584 99
13,011 09	172,796 58	204 00	186,011 67	Lachine	6,062 61	204 00	171,467 12	8,277 94	186,011 67
920 00	124 00	669 00	1,713 00	Chambly	813 00	063 00	182 00	55 00	1,713 00
9,471 15	8,125 22	2,010 00	19,606 37	Rideau	2,800 73	2,130 00	5,198 04	9,477 60	19,606 37
222,211 66	81,087 80	1,717 34	305,016 80	Trent	35 50	1,857 84	185,961 03	117,162 43	305,016 80
	116 00		116 00	Sault Ste, Marie			116 00		116 00
21,670 25	652 00	192 00	22,514 25	Carillon and Grenville	21,629 25	192 00	678 00	15 00	22,514 25
48 00	3,316 49	276 00	3,640 49	Soulanges		276 00	3,316 49	48 00	3,640 49
16 00	33 00	120 00	169 00	St. Annes lock		125 00	34 00	10 00	169 00
	1 00		1 00	Chats falls			1 00		1 00
2 00	7 00		9 00	St. Peters			9 00		9 00
5 00	13 00	240 00	258 00	Murray		235 00	13 00	10 00	258 00
343,537 75	383,029 60	12,043 32	738,610 67		47,409 47	12,000 82	477,931 89	201,268 49	738,610 67

WELLAND SHIP CANAL.—Amounts Expended on Construction.

——		Year ending	Capital
			$ cts.
Government expenditure		1914	994,257 60
" "		1915	4,074,200 69
" "		1916	4,892,105 15
" "		1917	3,513,769 82
" "		1918	1,235,046 59
" "		1919	1,823,875 96
" "		1920	3,499,963 35
" "		1921	5,070,297 57
" "	$5,429,566 86		
Less sale of materials	1,149,751 25	1922	4,279,815 61
Total			29,383,332 34

Expenditure as above		$29,383,332 34
To which add the preliminary expenditure for surveys, borings, etc., charged to Welland canal capital, as follows—		
1905–06	$13,231 97	
1906–07	10,825 27	
1907–08	8,300 34	
1908–09	19,993 37	
1909–10	9,979 91	
1910–11	21,229 35	
1911–12	23,188 60	
1912–13	112,890 92	
1915–16	17,627 36	
		237,217 09
Total cost of Welland Ship Canal to March 31, 1922		$29,620,549 43

HUDSON BAY RAILWAY AND PORT NELSON TERMINALS.—Expenditure to March 31, 1922

——	Year ending	Hudson Bay Railway	Port Nelson Terminals	Total
		$ cts.	$ cts.	$ cts.
Government expenditure	1909	92,427 83		92,427 83
" "	1910	53,042 63		53,042 63
" "	1911	184,149 81		184,149 81
" "	1912	159,632 00		159,632 00
" "	1913	1,009,024 52	90,038 63	1,099,063 15
" "	1914	3,071,631 22	1,427,086 03	4,498,717 25
" "	1915	3,256,074 39	1,517,669 60	4,773,743 99
" "	1916	2,983,425 47	1,905,706 30	4,889,131 77
" "	1917	1,792,190 39	812,089 55	2,604,279 94
" "	1918	1,288,789 61	590,909 39	1,879,699 00
" "	1919	641,318 69	*78,760 89*	562,557 80
" "	1920	*347,153 67*	11,545 19	*335,608 48*
" "	1921		*121,063 71*	*121,063 71*
" "	1922	61,563 43	34,769 87	96,333 30
		14,346,116 32	6,189,989 96	20,536,106 28

IMPERIAL GOVERNMENT ACCOUNT.—Statement of Expenditure to March 31, 1922, in connection with the lifting of rails for the use of the Imperial Government; all costs, damages and expenses to be borne by His Majesty's Government in England; per Order in Council dated Ottawa, December 19, 1916.

Expenditure fiscal year 1916–17		$ 393,053 86
" " 1917–18		3,603,279 05
" " 1918–19		178,680 85
" " 1919–20		348,103 36
" " 1920–21		777,814 83
" " 1921–22		134,679 65
	$	5,435,611 60
Less payment by Imperial Munitions Board for rails		1,356,615 62
Total	$	4,078,995 98

ACQUISITION of Grand Trunk and Associated Railway Systems.

Expenditure fiscal year 1919–20	$	14,930 55
" " 1920–21		799,941 02
" " 1921–22		453,846 81
Total	$	1,268,718 38

CANADA HIGHWAYS ACT.—Aid Granted to the Various Provinces Toward the Improvement of Highways.

Expenditure fiscal year 1920–21——	$	535,000 97
" " 1921–22		3,399,008 20
	$	3,934,009 17

QUEBEC BRIDGE.—Amounts Expended on Construction.

——	Year ending	Capital	Income
		$ cts.	$ cts.
Government expenditure	1909		422,867 12
" "	1910		111,788 02
" "	1911	227,563 40	
" "	1912	603,293 07	
" "	1913	1,512,825 96	
" "	1914	2,604,105 61	
" "	1915	2,816,305 10	
" "	1916	2,746,813 70	
" "	1917	2,733,677 00	
" "	1918	931,278 01	
" "	1919	656,761 79	
" "	1920	*880 65*	
" "	1921		24,555 50
		14,831,742 99	559,210 64
Less amount received from Phoenix Bridge Co			100,000 00
		14,831,742 99	459,210 64

Capital expenditure as above			$14,831,742 99
In this expenditure a total of $91,188.10 has been credited, being received for sale of scrap and used material from the collapsed bridge.			
Add amounts paid by the Finance Department not included above—			
Amount guaranteed by Act of 1903, Chap. 54	6,424,781 00		
Amount paid to the province of Quebec	250,000 00		
Amount paid to the city of Quebec	300,000 00		
Amount paid to Emile Tanguay, as per Supreme Court Award	485 20	6,975,266 20	
		21,807,009 19	
Less amount received from the Phoenix Bridge Co		100,000 00	
Agrees with Public Accounts Balance Sheet, 1919		21,707,009 19	
To which add the expenditure under Income ,1909, 1920 and 1921	559,210 64		
Add also amount paid for subsidies in 1901, 1902 and 1903	374,353 33		
		933,563 97	
Total expenditure to date of March 31, 1922		22,640,573 16	

EXPENDITURE made from Capital Appropriations Relative to Railways During Year ending March 31, 1922

	Previous years	Year ending March 31, 1922	Total
	$ cts.	$ cts.	$ cts.
Canadian Government Railways—			
Intercolonial Railway System:—			
Canada Eastern Railway	819,000 00		819,000 00
Cape Breton Railway	3,964,432 56	5,237 77	3,969,670 33
Drummond County Railway	1,464,000 00		1,464,000 00
Eastern Extension Railway	1,324,042 81		1,324,042 81
Montreal and European Railway	333,942 72		333,942 72
Oxford and New Glasgow Railway	1,949,063 21		1,949,063 21
Intercolonial Railway	132,922,112 35	2,586,658 31	135,508,770 66
Total	142,776,593 65	2,591,896 08	145,368,489 73
New Brunswick and Prince Edward Island Railway	618,314 86	178,227 21	796,542 07
Prince Edward Island Railway	12,806,036 27	30,739 22	12,836,775 49
International Railway of New Brunswick	2,896,354 43	39,759 86	2,936,114 29
National Transcontinental Railway	167,812,567 55	675,359 48	168,487,927 03
Moncton and Buctouche Railway	149,615 75	122,552 32	272,168 07
Salisbury and Albert Railway	299,779 51	132,123 14	431,902 65
St. Martin's Railway	239,783 17	60,127 38	299,910 55
Elgin and Havelock Railway	118,204 15	16,345 88	134,550 03
York and Carleton Railway	22,047 85	7,712 46	29,760 31
Quebec and Saguenay Railway	7,708,325 24	29,526 14	7,737,851 38
Caraquet and Gulf Shore Railway	229,600 00	288,371 67	517,971 67
Lotbiniere and Megantic Railway	346,715 00	9,478 34	356,193 34
Hudson Bay Railway	20,439,772 98	96,333 30	20,536,106 28
Canadian Government Railways, rolling stock	39,589,062 25	275,085 55	39,864,147 80
*b*Quebec Bridge	14,831,742 99		14,831,742 99
Total	410,884,515 65	4,553,638 03	415,438,153 68
Other Railways and Miscellaneous:—			
Canadian Northern Railway	9,999,999 90		9,999,999 90
Annapolis and Digby Railway	660,683 09		660,683 09
*a*European and North American Railway	88,363 18		88,363 18
*a*Nova Scotia Railway	208,509 72		208,509 72
*c*Carleton Branch Railway	48,410 48		48,410 48
Canadian Pacific Railway	62,789,776 09		62,789,776 09
Yukon Territory Works, Stikine Teslin Railway	283,323 55		283,323 55
Governor General's Cars	71,538 82		71,538 82
Miscellaneous expenditure	18,345 00		18,345 00
Total	485,053,465 48	4,553,638 03	489,607,103 51

*a*Amount paid between 1868 and 1873, inclusive was transferred to Consolidated Fund.
*b*See Special Statement.
*c*This Railway, which cost $88,410.48, was sold in 1893 to the City of St. John, N.B., for $40,000.00 (Vict. Cap. 6).

Expenditure from Income Appropriations Relative to Railways

	Previous years	1921–22	Total
	$ cts.	$ cts.	$ cts.
Intercolonial Railway	280,000 00		280,000 00
Quebec Bridge	459,210 64		459,210 64
Total	739,210 64		739,210 64
Annapolis and Digby Railway	8,381 82		8,381 82
Total	747,592 46		747,592 46

Expenditure from Revenue Appropriations (Working Expenses) Relative to Railways

	Previous years	1921–22	Total
	$ cts.	$ cts.	$ cts.
Canadian Government Railways—			
*Intercolonial Railway	340,467,332 76	28,353,435 33	368,820,768 09
†Intercolonial Railway—Improvements and Betterments	2,586,230 21		2,586,230 21
Prince Edward Island Railway	18,582,405 19	1,514,808 99	20,097,214 18
International Railway of New Brunswick	2,005,026 56		2,005,026 56
Moncton and Buctouche Railway	261,465 68	98,043 60	359,509 28
Salisbury and Albert Railway	376,304 99	117,870 87	494,175 86
St. Martin's Railway	181,128 72	66,677 23	247,805 95
York and Carleton Railway	74,811 10	24,429 02	99,240 12
Elgin and Havelock Railway	166,297 93	60,900 19	227,198 12
St. John and Quebec Railway	1,379,139 63	563,143 16	1,942,282 79
National Transcontinental Railway	65,451,431 15	15,697,234 75	81,148,665 90
Quebec and Saguenay Railway	44,598 93	163,362 18	207,961 11
Caraquet and Gulf Shore Railway	106,121 41	262,111 41	368,232 82
Lotbiniere and Megantic Railway	43,171 86	41,240 69	84,412 55
Cape Breton Railway	24,432 31	50,092 07	74,524 38
Hudson Bay Railway	149,237 32	101,396 34	250,633 66
Eastern Extension Railway	538,094 06		538,094 06
Total	432,437,229 81	47,114,745 83	479,551,975 64
Other Railways and Miscellaneous—			
Canadian Pacific Railway	318,216 30		318,216 30
Miscellaneous	136,789 97		136,789 97
Total	432,892,236 08	47,114,745 83	480,006,981 91

*Including expenditure on the Baie des Chaleurs Railway in 1897, amounting to $18,679.97.

†This charge to Working Expenses was credited to Rolling Stock account for the purchase of Rolling Stock out of the earnings of the railway.

Revenue Received by Railways to December 31, 1921

Railways	Previous years	1921	Total
	$ cts.	$ cts.	$ cts.
Canadian Government Railways—			
Intercolonial Railway	325,143,673 45	24,605,887 19	349,749,560 64
New Brunswick and Prince Edward Island Railway	114,170 90	*	114,170 90
Prince Edward Island Railway	12,248,633 24	888,394 77	13,137,028 01
International Railway	806,942 71	*	806,942 71
Moncton and Buctouche Railway	130,202 69	53,165 91	183,368 60
Salisbury and Albert Railway	163,208 62	58,488 97	221,697 59
St. Martin's Railway	56,461 07	23,288 76	79,749 83
York and Carleton Railway	21,752 88	7,957 07	29,709 95
Elgin and Havelock Railway	50,612 41	20,729 52	71,341 93
St. John and Quebec Railway	632,260 41	247,098 56	879,358 97
National Transcontinental Railway	51,406,608 92	14,585,286 04	65,991,894 96
Lotbinière and Megantic Railway	22,001 27	14,591 41	36,592 68
Caraquet and Gulf Shore Railway	72,725 29	99,170 02	171,895 31
Cape Breton Railway	9,655 66	24,853 93	34,509 59
Quebec and Saguenay Railway	30,890 99	129,557 95	160,448 94
Hudson Bay Railway	97,652 15	29,475 26	127,127 41
Eastern Extension Railway	462,465 68		462,465 68
Total	391,469,918 34	40,787,945 36	432,257,863 70
Other Railways—			
Canadian Pacific Railway	396,473 75		396,473 75
Total	391,866,392 09	40,787,945 36	432,654,337 45

*Revenue included with the Intercolonial Railway.

Miscellaneous Expenditure Common to Both Railways and Canals to March 31, 1922

	Previous years	1921-22	Total
	$ cts.	$ cts.	$ cts.
Capital expenditure	17,396,581 13	1,980,611 71	19,377,192 84
Income expenditure	6,471,652 58	3,733,917 51	10,205,570 09
Revenue expenditure	69,711 05		69,711 05
Total	23,937,944 76	5,714,529 22	29,652,473 98

GOVERNMENT RAILWAYS

Recapitulation of Expenditure and Revenue to March 31, 1922

	Year	Capital	Revenue		Revenue received
			Improvement and Betterment	Working expenses	
		$ cts.	$ cts.	$ cts.	$ cts.
Expenditure prior to Confederation		13,881,460 65			
Since Confederation—					
1868 to 1877 inclusive		33,476,607 70		10,059,936 93	7,270,643 05
" "	1878	2,643,741 73		2,032,873 05	1,514,846 38
" "	1879	2,507,053 71		2,233,496 34	1,419,955 60
" "	1880	6,109,077 14		1,851,489 26	1,739,137 25
" "	1881	5,577,236 73		2,220,421 39	2,200,486 25
" "	1882	5,175,046 61		2,310,638 54	2,237,583 39
" "	1883	11,707,619 02		2,636,551 70	2,541,205 41
" "	1884	14,013,074 89		2,613,508 87	2,551,937 97
" "	1885	11,224,244 54		2,749,710 53	2,624,243 07
" "	1886	4,443,220 17		2,819,973 50	2,629,336 35
" "	1887	1,846,887 18		3,152,650 40	2,840,747 88
" "	1888	1,765,582 11		3,621,076 62	3,166,253 22
" "	1889	2,709,857 37		3,513,063 67	3,167,542 67
" "	1890	2,392,767 99		3,846,044 42	3,203,874 11
" "	1891	1,184,317 34		3,949,263 73	3,181,888 56
" "	1892	417,425 73		3,748,597 77	3,136,393 51
" "	1893	712,917 44		3,288,629 62	3,262,505 62
" "	1894	585,749 01		3,226,208 13	3,179,019 57
" "	1895	376,814 83		3,197,846 17	3,129,450 37
" "	1896	324,774 72		3,254,442 64	3,140,678 47
" "	1897	204,624 31		3,195,959 58	3,060,074 38
" "	1898	270,990 85		3,507,248 88	3,313,847 10
" "	1899	1,112,348 47		3,696,612 31	3,940,570 11
" "	1900	3,309,130 42		4,665,228 06	4,774,161 87
" "	1901	3,922,989 37		5,739,051 54	5,213,381 24
" "	1902	5,386,611 24		5,861,099 54	5,918,990 43
" "	1903	3,083,680 86		6,474,134 20	6,584,598 77
" "	1904	2,619,059 86		7,599,958 57	6,627,255 51
" "	1905	6,125,481 79		8,906,154 35	7,050,892 11
" "	1906	6,102,565 74		7,893,653 49	7,950,552 97
" "	1907	7,174,370 17		6,328,745 65	6,509,186 49
" "	1908	23,684,005 25		9,595,295 43	9,534,569 04
" "	1909	29,414,227 34		9,764,586 51	8,894,420 42
" "	1910	21,505,975 91		9,095,903 96	9,647,963 71
" "	1911	24,532,466 18		10,037,878 77	10,249,394 38
" "	1912	23,108,805 52		11,074,852 80	11,034,165 83
" "	1913	17,375,968 10		12,499,925 65	12,442,203 46
" "	1914	21,628,095 15		13,559,225 45	13,394,317 37
" "	1915	21,865,663 92		12,474,453 85	12,149,357 32
" "	1916	21,155,255 19	1,515,895 57	17,891,484 65	18,427,908 65
" "	1917	12,003,649 70	1,070,334 64	24,725,571 90	23,539,758 61
" "	1918	34,699,416 96		33,400,460 45	27,240,956 87
" "	1919	40,193,180 64		43,889,626 07	38,013,725 69
" "	1920	11,593,148 00		48,194,709 86	41,402,061 36
" "	1921	5,096,534 94		43,770,971 10	36,814,349 70
" "	1922	4,553,638 03		47,114,745 83	40,787,945 36
Total		474,797,360 52	2,586,230 21	477,283,961 73	432,654,337 45

Total amount of capital expenditure	$ 474,797,360 52
Less amount received from the city of St. John, N.B., as purchase price of the Carleton Branch Railway	40,000 00
*Net amount of capital expenditure	$ 474,757,360 52

*Cost of Quebec Bridge, not included nor $16,000 miscellaneous expenditure in 1914.

TOTAL EXPENDITURE AND REVENUE of the Department of Railways and Canals Prior to and Since Confederation to March 31, 1922

	$ cts.	$ cts.
GRAND TOTAL EXPENDITURE		1,276,157,749 95
Expenditure on railways	960,205,131 64	
" Quebec Bridge	15,290,953 63	
" railway subsidies	76,391,471 09	
" miscellaneous	29,652,473 98	
" Canals	194,617,719 61	
Total expenditure		1,276,157,749 95
CLASSIFICATION OF EXPENDITURE IN GENERAL—		
Capital account	649,337,816 05	
Revenue account	520,756,385 46	
Income account	29,672,077 35	
Consolidated Fund—Railway subsidies	76,391,471 09	
Total expenditure		1,276,157,749 95
CLASSIFICATION OF EXPENDITURE IN DETAIL—		
Railways—		
Capital	473,703,507 28	
Income	6,494,642 45	
Revenue	480,006,981 91	960,205,131 64
Quebec Bridge—		
Capital	14,831,742 99	
Income	459,210 64	
		15,290,953 63
Railway subsidies		76,391,471 09
Total expenditure on railways	$1,051,887,556 36	
Canals—		
Capital	141,425,372 94	
Income	12,512,654 17	
Revenue, staff	22,752,779 70	
Revenue, repairs	17,926,912 80	
		194,617,719 61
Miscellaneous expenditure—		
Capital	19,377,192 84	
Income	10,205,570 09	
Revenue	69,711 05	29,652,473 98
Grand total expenditure		1,276,157,749 95
REVENUE RECEIVED		
GRAND TOTAL OF REVENUE RECEIVED from July 1, 1867, to March 31, 1922		
Railways	432,654,337 45	
Canals	19,080,516 73	
Grand total		451,734,854 18

II.—Statement Showing Subsidies Paid to March 31, 1922

Subsidies Voted		Number	Railways	July 1, 1883, to March 31, 1917	1917 18	1918 19	1919 20	Total to March 31, 1922
Authority	Amount							
	$ cts.			$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
47 Vic., chap. 8	51,200 00	1	Albert Southern Railway, N.B.	50,460 00				50,460 00
52 " 3								
3-4 Geo.V, chap. 46	—	2	Alberta Central Railway, Alta.	404,480 00				404,480 00
62-3 Vic., chap. 7								
63-4 " 8	—	3	Algoma Central and Hudson Bay Ry., Ont.	2,048,704 00				2,048,704 00
1 Ed. VII, chap. 7								
9-10 " 51	—	4	Algoma Eastern Ry. Co., formerly Manitoulin and North Shore Ry. Co., Ontario	547,648 00				547,648 00
" 7	—	5	Atlantic and Lake Superior, Quebec	a163,418 19				a163,418 19
Vic., chap. 14	186,500 annually for 20 years	6	Atlantic and Northwestern Railway	3,732,000 00				3,732,000 00
Ed. VII, chap. 43	—	7	Atlantic, Quebec and Western Ry. Co., Quebec	902,800 00				902,800 00
9-10 " 51								
46 Vic., chap. 25								
47 " 8	320,000 00	8	Baie des Chaleurs Railway, Quebec	620,000 00				620,000 00
52 " 3	300,000 00							
—	—	9	Bay of Quinte Railway, Ontario, now Canadian Northern Ry.	141,722 45				141,722 45
50-1 Vic., chap. 27	62,400 00	10	Beauharnois Junction Railway, Quebec	62,400 00				62,400 00
56 " 4								
48-9 " 54	22,400 00	11	Belleville and North Hastings Railway, Ontario	21,888 00				21,888 00
49 " 19								
50-1 " 24	57,600 00	12	Brantford, Waterloo and Lake Erie Ry., Ontario	57,600 00				57,600 00
51-8 " 4								
48-9 " 59	128,000 00							
53 " 2		13	Brockville, Westport and Sault Ste. Marie Railway, Ontario, now Canadian Northern Ry.	140,800 00				140,800 00
54-5 " 8	64,000 00							
57-8 " 4								
—	—	15	Bruce Mines and Algoma Railway, Ontario	53,920 00				53,920 00
49 Vic., chap. 10	96,000 00							
50-1 " 24	6,400 00	14	Buctouche and Moncton Railway, New Brunswick	101,600 00				101,600 00
48-9 " 59	96,000 00							
49 " 10	38,400 00	16	Canada Atlantic Railway, Ontario	282,355 20				282,355 20
50-1 " 24	180,000 00							
47 " 8	128,000 00							
48-9 " 59	19,200 00							
49 " 10	32,000 00							

App., Act. 2, 1918	175,000 00	16½	Canada Central Ry., Alberta			175,000 00		175,000 00
48-9 " 59	24,439 84	17	Canada Eastern Ry., formerly Northern and Western Ry., New Brunswick, including also Chatham Branch Ry	374,839 84				374,839 84
51 " 3	140,800 00							
57-8 " 4	35,200 00							
62-3 " 7	—	18	Canada and Gulf Terminal Ry. Co.	210,053 59				210,053 59
47 Vic., chap. 8	32,000 00							
49 " 10	57,600 00							
52 " 3	22,400 00							
53 " 2	48,000 00	19	Canadian Northern Quebec Ry. Co., formerly Great Northern Ry., Quebec	1,265,357 14				1,265,357 14
56 " 2	47,000 00							
57-8 " 4	70,400 00							
7-8 Ed. VII, c. 63	—							
2 Geo. V, chap. 7	—	20	Canadian Northern Alberta Ry. Co., Alberta	3,094,104 00		25,896 00		3,120,000 00
3-4 " 10								
6-7 Ed. VII, c. 40	—	21	Canadian Northern Ontario Ry. Co.	14,386,762 51	80,963 37	17,909 32		14,485,635 20
7-8 " 63								
"	—	22	Canadian Northern Ry. Co., Ontario, Manitoba and North West Territories	1,909,132 00				1,909,132 00
2 Geo. V, chap. 9	—	23	Canadian Northern Pacific Ry. Co., British Columbia	5,648,626 37	338,893 63			5,987,520 00
—	—	24	Canadian Northern Quebec Ry., formerly Chateauguay and Northern Ry., Quebec	391,819 75				391,819 75
60-61 Vic., chap. 5	3,630,000 00	25	Canadian Pacific Ry. Co., British Columbia (Crow's Nest Pass)	3,404,720 00				3,404,720 00
—	—	26	Canadian Pacific Ry. Co. (Dyment Branch)	22,336 00				22,336 00
2 Geo. V, chap. 48	—	27	Canadian Pacific Ry., Bridge at Edmonton, Alberta	126,000 00				126,000 00
3-4 " 46	—	28	Canadian Pacific Ry., Gimli to Icelandic River Bridge	80,032 00				80,032 00
—	—	29	Can. Pac. Ry. Co. (Kootenay and Arrowhead Branch)	153,866 00				153,866 00
7-8 Ed. VII, c. 63	—	30	Can. Pac. Ry. Co., Moose Jaw northwesterly	485,474 27				485,474 27
2 Geo. V, chap. 48	—	31	Can. Pac. Ry. Co., Bridge at Outlook	115,000 00				115,000 00
—	—	32	Can. Pac. Ry. Co. (Pheasant Hills Branch)	435,200 00				435,200 00
—	—	33	Can. Pac. Ry. Co. (Pipestone Branch)	160,000 00				160,000 00
55-6 Vic., chap. 5	80,000 00	34	Can. Pac. Ry. Co. (Revelstoke to Arrow Lake)	80,000 00				80,000 00
"	—	35	Can. Pac. Ry. Co. (Selkirk Branch)	83,200 00				83,200 00
4 Ed. VII, chap. 34	—	36	Can. Pac. Ry. Co. (Staynerville Branch)	13,024 00				13,024 00
6 " 43	—	37	Can. Pac. Ry. Co. (Teulon to Icelandic River)	112,000 00				112,000 00
—	—	38	Can. Pac. Ry. Co. (Waskada Branch)	64,000 00				64,000 00
7-8 Ed. VII, c. 63	—	39	Can. Pac. Ry., Winnipeg to Gimli, Man.	34,522 43				34,522 43
48-9 Vic., chap. 58	1,500,000 00	40	Canadian Pacific Extension	1,500,000 00				1,500,000 00
57-8 " 4	9,000 00	41	Cap de la Magdeleine Railway, Quebec	7,424 00				7,424 00
—	—	42	Cape Breton Extension Railway, Nova Scotia	196,800 00				196,800 00
46 Vic., chap. 25	115,200 00							
47 " 8	76,800 00	43	Caraquet Railway, New Brunswick	224,000 00				224,000 00
50-1 " 24	32,000 00							
47 " 8								
51 " 3								
52 " 3	83,612 00							
53 " 2	142,400 00	44	Central Railway, New Brunswick	226,012 54				226,012 54
57-8 " 4	48,000 00							
61 " 1								
62-3 " 1								
2 Ed. VII, chap. 48	—							

II.—Statement Showing Subsidies Paid to March 31, 1922—*Continued*

Subsidies Voted		Number	Railways	July, 1 1883, to March 31, 1917	1917–18	1918–19	1919–20	Total to March 31, 1922
Authority	Amount			$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
46 Vic., chap. 2	1,525,250 00	45	Central Railway of Canada, Quebec	30,145 02				30,145 02
7 " 8		46	Central Canada Railway	1,525,250 00				1,525,250 00
6-7 Ed. VII, c. 40	—	47	Central Ontario Railway Co., Ontario, now Canadian Northern Ry.	205,862 79				205,862 79
—		48	Coast Line of Nova Scotia (Halifax and Yarmouth Ry.), now Canadian Northern Ry.	160,000 00				160,000 00
6 Ed. VII, chap. 43	—	49	Colchester Coal and Railway Co., Nova Scotia	12,800 00				12,800 00
53 Vic., chap. 2	112,000 00	50	Columbia and Kootenay Ry. Co., British Columbia	88,800 00				88,800 00
50-1 " 24	44,800 00	51	Cornwallis Valley Railway Co., Nova Scotia	44,800 00				44,800 00
52 " 3								
50-1 " 24	44,800 00	52	Cumberland Railway and Coal Co., Nova Scotia	39,850 00				39,850 00
5-6 " 5	89,600 00	53	Dominion Coal Company, Nova Scotia	87,808 00				87,808 00
50-1 " 24	22,400 00	54	Dominion Lime Company, Quebec	15,360 00				15,360 00
50-1 " 24	96,000 00							
52 " 3	14,400 00	55	Drummond County Railway, Quebec	423,936 00				423,936 00
53 " 2	76,800 00							
57-8 " 4	96,000 00							
"	—	56	East Richelieu Valley Railway Co., Quebec (Quebec Montreal and Southern Ry.)	69,952 00				69,952 00
3-4 Geo. V, chap. 46	—	57	Edmonton, Dunvegan and British Columbia Railway, Alberta	125,202 84			213,179 64	338,382 48
6-7 Ed. VII, c. 40	—	58	Edmonton, Yukon and Pacific Railway Co., Alberta, now Canadian Northern Ry.	91,200 00				91,200 00
46 Vic., chap. 25	38,400 00	59	Elgin, Petitcodiac and Havelock Railway, N.B.	82,652 82				82,652 82
51 " 3	44,252 82							
47 " 8	96,000 00	60	Erie and Huron Railway, Ontario	96,000 00				96,000 00
47 " 6	750,000 00	61	Esquimalt and Nanaimo Railway, British Columbia	1,520,560 00				1,520,560 00
2 Geo. V, chap. 48	—	62	Fredericton and Grand Lake Railway Co., New Brunswick	216,576 00				216,576 00
52 Vic., chap. 3	30,000 00	63	Fredericton and St. Mary's Ry. Bridge Co., New Brunswick	30,000 00				30,000 00
60-61 " 4	500,000 00	64	Grand Trunk Ry. Co., Victoria Jubilee Bridge, Quebec	500,000 00				500,000 00
63 " 3								
56 " 2	48,000 00	65	Grand Trunk, Georgian Bay and Lake Erie Ry., Ontario	39,744 00				39,744 00
7-8 Ed. VII, c. 63	—	66	Grand Trunk Pacific Ry. Co.	1,220,480 00				1,220,480 00

49 Vic., chap.	10	32,000 00									
51-1 "	24	96,000 00	67	Great Eastern Railway, Quebec	40,345 00						40,345 00
56 "	2	64,000 00									
53 "	2	37,500 00									
50-1 "	24	51,200 00	68	Guelph Junction Railway, Ontario	46,000 00						46,000 00
57-8 "	4	—	69	Gulf Shore Railway Company, New Brunswick	53,699 20						53,699 20
9-10 Ed. VII, c.	51	—	69½	Ha-Ha-Bay Railway Co., Quebec	231,462 00						231,462 00
—		—	70	Halifax and Southwestern Railway Co., Nova Scotia, now Canadian Northern Ry.	1,238,150 93						1,238,150 93
51-1 Vic., chap.	24	9,600 00	71	Harvey Branch Railway Co., New Brunswick	5,553 57						5,553 57
49 "	10	108,800 00	72	Hereford Railway, Quebec	155,200 00						155,200 00
52 "	3	48,000 00									
46 "	25	156,800 00	73	International Railway Quebec	156,800 00						156,800 00
53 "	3										
7-8 Ed. VII, c.	63	—	74	International Ry. of New Brunswick, formerly Restigouche and Western Ry. Co.	726,080 00						726,080 00
—		—	75	Inverness Railway and Coal Co.	368,545 97						368,545 97
47 Vic., chap.	8	160,000 00	76	Irondale, Bancroft and Ottawa Railway, Ontario, now Canadian Northern Ry.	144,000 00						144,000 00
52 "	3										
49 "	10	38,400 00	77	Joggins Railway, Nova Scotia	37,500 00						37,500 00
50-1 "	24	4,000 00									
6 Ed. VII, chap.	43		78	Kettle Valley Ry., British Columbia	2,174,190 72						2,174,190 72
46 Vic., chap.	24	89,600 00									
49 "	10	70,000 00									
50-1 "	24	12,800 00	79	Kingston, Napanee and Western Ry., formerly Napanee, Tamworth and Quebec Ry., Ontario, now Canadian Northern Ry.	208,732 80						208,732 80
52 "	3	32,000 00									
55-6 "	5	64,000 00									
47 Vic., chap.	8	48,000 00	80	Kingston and Pembroke Ry., Ontario	48,000 00						48,000 00
6 Ed. VII, chap.	43	—	81	Klondike Mines Railway	197,184 00						197,184 00
2 "	48	—	82	Kootenay Central Ry. Co., British Columbia	1,065,856 00						1,065,856 00
50-1 Vic., chap.	23	118,400 00									
55-6 "	4	224,000 00	83	Lake Erie and Detroit River Railway, Ontario	475,851 00						475,851 00
62-3 "	5	—									
2 Geo. V, chap.	48	—	84	Lake Erie and Northern Ry. Co., Ontario	320,192 00						320,192 00
50-1 Vic., chap.	24	65,022 00	85	Lake Temiscamingue Colonization Ry., Quebec	310,335 95						310,335 95
57-8 "	4	247,940 00									
49 "	10	11,200 00	86	L'Assomption Railway, Quebec	11,200 00						11,200 00
50-1 "	24	217,600 00	87	Laurentian Railway, now Canadian Northern Ry.	217,600 00						217,600 00
48-9 "	50	44,800 00	88	Leamington and St. Clair Ry., Ontario	51,200 00						51,200 00
50-1 "	24	6,400 00									
6-7 Ed. VII, c.	40	—	89	Liverpool and Milton Ry., now Canadian Northern Ry.	32,000 00						32,000 00
45 Vic., chap.	14	—	90	Lindsay, Bobcaygeon, Pontypool Ry. Co., Ontario	185,173 06						185,173 06
—		—									
55-6 Vic., chap.	5	48,000 00	91	Lotbiniere and Megantic Railway Quebec	96,000 00						96,000
57-8 "	4	48,000 00									
—		—	92	Maganetawan River Railway Co., Ontario	3,552 00						3,552 00

II.—Statement Showing Subsidies Paid to March 31, 1922—*Continued*

Subsidies Voted.		Number	Railways.	July 1, 1883, to March 31, 1917.	1917–18.	1918–19.	1919–20.	Total to March 31, 1922.
Authority.	Amount.							
	$ cts.			$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
7-8 Ed. VII, c. 63	—	93	Maritime Coal and Railway Co.	3,200 00				3,200 00
—	—	94	Massawippi Valley Railway Co., Quebec	5,376 00				5,376 00
—	—	95	Midland Railway Co., Nova Scotia	399,060 40				399,060 40
—	—	96	Middleton and Victoria Beach Railway Co., Nova Scotia, now Canadian Northern Ry	125,760 00				125,760 00
3 Ed. VII, chap. 57	—	97	Minudie Coal Co., Nova Scotia	18,544 00				18,544 00
56 Vic., chap. 2	67,200 00	98	Montford Colonization Railway, Quebec, now Canadian Northern Ry	167,440 00				167,440 00
57-8 " 4	38,400 00							
60-1 " 4	66,000 00							
48-9 " 59	30,000 00							
50-1 " 24	64,000 00	99	Montreal and Champlain Junction Railway, Quebec	103,600 00				103,600 00
51 " 3	9,600 00							
49 " 10	32,000 00	100	Montreal and Lake Maskinonge Railway, Quebec	41,280 00				41,280 00
53 " 2	10,200 00							
50-1 " 24	192,000 00	101	Montreal and Ottawa Railway, Ontario	192,000 00				192,000 00
53 " 2								
54-5 " 8								
57-8 " 4								
1 Ed. VII, chap. 7	—	102	Montreal and Province Line Railway, Quebec	58,560 00				58,560 00
48-9 " 59	72,000 00	103	Montreal and Sorel Railway, Quebec (Quebec, Montreal and Southern Ry.)	93,757 57				93,757 57
53 " 2	40,000 00							
53 Vic., chap. 2	361,270 00	104	Montreal and Western Railway, Quebec	361,270 00				361,270 00
57-8 " 4	121,600 00	105	Nakusp and Slocan Railway, British Columbia	117,760 00				117,760 00
6 Ed. VII, chap. 43	—	106	Napierville Junction Railway Co., Quebec	173,440 00				173,440 00
—	—	107	New Brunswick Coal and Railway Co., New Brunswick	48,000 00				48,000 00
48-9 Vic., chap. 59	118,400 00	108	New Brunswick and Prince Edward Island Railway	113,440 00				113,440 00
55-6 " 5	40,000 00	109	New Glasgow Iron, Coal and Railway Co., Nova Scotia	39,840 00				39,840 00
Ed. VII, chap. 57	—	110	Nicola, Kamloops and Similkameen Coal Railway Co.	300,800 00				300,800 00
7-8 " 63	—	111	North Shore Railway Co., formerly Beersville Coal and Railway Co.	27,616 00				27,616 00
—	—	112	Northern Colonization Railway Co., Quebec	355,200 00				355,200 00
2 Geo. V, chap. 47	—	113	Northern New Brunswick and Seaboard Railway Co., New Brunswick	108,160 00				108,160 00
3-4 " 46								
46 " 26	660,000 00	114	Northern and Pacific Junction Railway, Ontario	1,320,000 00				1,320,000 00
53 " 2	660,000 00							
55-6 " 5	240,000 00	115	Nova Scotia Central Railway Co., Nova Scotia, now Canadian Northern Ry	235,200 00				235,200 00
61 "								

56	"	2	32,000 00	116	Ontario, Belmont and Northern Ry. Co., Ontario (Marmora Ry. & Mining Co.) now Canadian Northern Ry	30,720 00						30,720 00
53 Geo. V, chap.		2	99,200 00	117	Orford Mountain Railway Company, Quebec	202,926 50						202,926 50
3 Ed. VII, chap.		2	—									
56	"	2	22,400 00	118	Oshawa Railway and Navigation Co., Ontario	22,400 00						22,400 00
55-6	"	5	—	119	Ottawa, Arnprior and Parry Sound Ry., Ontario	779,712 00						779,712 00
—			—	120	Ottawa and New York Railway Company, Ontario	262,384 00						262,384 00
52 Vic., chap.		3	320,000 00	121	Ottawa, Northern and Western Railway, Quebec, formerly Ottawa and Gatineau Valley Railway	414,931 20						414,931 20
57-8	"	6	64,000 00									
60-1	"	4	—									
52	"	3	128,000 00	122	Parry Sound and Colonization Railway, Ontario	152,800 00						152,800 00
57-8	"	4	64,000 00									
—			—	123	Pembroke Southern Railway, Ontario	64,000 00						64,000 00
55-6 Vic., chap.		5	—	124	Phillipsburg Junction Ry. Quarry Co., Quebec	23,712 00						23,712 00
47	"	8	272,000 00									
51	"	3	41,000 00	125	Pontiac Pacific Junction Railway, Quebec	193,578 00						193,578 00
53	"	2	24,000 00									
60-1	"	4	212,500 00	126	Pontiac Pacific and Ottawa & Gatineau Ry. Co. (Interprovincial Bridge over Ottawa River)	212,500 00						212,500 00
63-4	"	2										
52	"	3	19,200 00	127	Pontiac and Renfrew Railway, Ontario	13,600 00						13,600 00
51	"	3	287,200 00	128	Port Arthur, Duluth and Western Ry., Ontario, now Canadian Northern Ry	271,200 00						271,200 00
53	"	2										
62-3	"	7	1,000,000 00	129	Quebec Bridge Co., Quebec	374,353 33						374,353 33
63-4	"	8										
47	"	8	60,342 00									
51	"	3		130	Quebec Central Ry., Quebec	585,038 90						585,038 90
53	"	2	288,000 00									
7-8 Ed. VII, c.		63	—									
45 Vic., chap.		14	384,000 00									
46	"	25	80,000 00									
48-49	"	59	96,000 00									
49	"	10	186,295 00									
50-1	"	24	28,800 00	131	Quebec and Lake St. John Railway, Quebec, now Canadian Northern Ry	1,261,463 50						1,261,463 50
51	"	3	96,000 00									
52	"	3	64,000 00									
53	"	2	40,000 00									
54-5	"	8	5,250 00									
57-8	"	4	44,800 00									
52 Vic., chap.		3	96,000 00	132	Quebec, Montmorency and Charlevoix Railway Co., Quebec	96,000 00						96,000 00
56	"	3										
—			—	132½	Quebec, Montreal and Southern Railway Co.—*See* South Shore Ry., Quebec							
7-8 Ed. VII, c.		51	—	133	Quebec and Saguenay Railway Co., Quebec	248,801 28						248,801 28
—			—	134	Schomberg and Aurora Railway Co., Ontario	46,144 00						46,144 00
52 Vic., chap.		3	163,200 00	135	Shuswap and Okanagan Railway, British Columbia	163,200 00						163,200 00
2 Geo. V, chap.		48		136	Southampton Railway Co., New Brunswick	81,280 00						81,280 00
50-1 Vic., chap.		24	54,400 00	137	South Norfolk Railway, Ontario	54,400 00						54,400 00

II.—Statement Showing Subsidies Paid to March 31, 1922—*Continued*

Subsidies Voted		Number	Railways	July 1, 1883, to March 31, 1917	1917-18	1918-19	1919-20	Total to March 31, 1922
Authority	Amount							
	$ cts.			$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
7-8 Ed. VII, c. 63	—	138	South Shore Railway (Quebec, Montreal and Southern), Quebec	514,811 06	14,630 94			529,442 00
50-1 Vic., chap. 24	138,300 00							
55-6 " 5	108,000 00	139	St. Catharines and Niagara Central Railway, Ontario	38,400 00				38,400 00
57-8 " 4	108,800 00							
52 " 3	375,000 00	140	St. Clair Frontier Tunnel Co., Ontario	375,000 00				375,000 00
2 Geo. V, chap. 48	—	141	St. John and Quebec Railway Co., New Brunswick	598,319 70	285,916 81		121,665 91	1,005,902 42
53 Vic., chap. 2	57,600 00							
55-6 " 5	25,024 00	142	St. Lawrence and Adirondack Railway, Quebec	149,481 60				149,481 60
60-61 " 4								
47 " 8	22,400 00	143	St. Louis and Richibucto Railway, New Brunswick	22,400 00				22,400 00
—	—	144	St. Mary River Railway Co., Northwest Territories	148,094 00				148,094 00
7-8 Ed. VII, c. 63	—	145	St. Mary's and Western Ontario Railway Co., Ontario	67,709 00				67,709 00
7-8 " 63	—	146	St. Maurice Valley Railway Co., Three Rivers to Grand'Mere, Quebec	173,120 00				173,120 00
56 Vic., chap. 2	—	146½	St. Stephen and Milltown Railway, New Brunswick	14,848 00				14,848 00
3-4 Geo. V, chap. 53	—	147	Temiskaming and Northern Ontario Railway Co., Ontario	2,134,080 00				2,134,080 00
45 Vic., chap. 14	240,000 00							
48-9 " 58	258,000 00	148	Temiscouata Railway, New Brunswick and Quebec	645,950 00				645,950 00
51 " 3	100,000 00							
53 " 2	51,200 00							
7-8 Ed. VII, c. 63	—	149	Thessalon and Northern Railway Co., Ontario	6,112 00				6,112 00
52 Vic., chap. 3	54,400 00	150	Thousand Islands Railway, Ontario	29,840 00				29,840 00
63-4 " 8								
55-6 " 5	—							
57-8 " 4	—	151	Tillsonburg, Lake Erie and Pacific Railway, Ontario	150,071 48				150,071 48
60-61 " 4	—							
62-63 " 7	—							
54-5 " 8	89,600 00							
53 " 2	35,200 00	152	Tobique Valley Railway, New Brunswick	134,016 00				134,016 00
55-6 " 5	9,600 00							
59 " 10	16,000 00	153	Toronto, Grey and Bruce Railway, Ontario	14,656 00				14,656 00
56 " 2	102,400 00	154	United Counties Railway Co., Quebec (Quebec, Montreal and Southern)	188,816 00				188,816 00
57-8 " 4	102,400 00							
7-8 Ed. VII, c. 34	—	155	Vancouver and Lulu Island Railway Co., British Columbia	61,760 00				61,760 00
53 Vic., chap. 2	35,200 00	156	Waterloo Junction Railway, Ontario	32,800 00				32,800 00

49 Vic., chap. 10 53 " 2 62-3 " 7	}	256,000 00	157	West Ontario Pacific Railway and Ontario and Quebec Railway	256,000 00				256,000 00
			158	York and Carleton Railway, New Brunswick	32,896 00				32,896 00
				Total	†75,117,415 47	720,404 75	218,805 32	334,845 55	†76,391,471 09

†This amount does not include the subsidy of $25,000,000 to the Canadian Pacific Railway, nor the amount of $660,683.08 expended on the Annapolis and Digby Railway, both of which are included in Capital Account, nor the annual payment of $219,700 to the Provincial Government of Quebec, being interest at the rate of 5 per cent on the sum of $2,394,000 up to 1905, granted by Vic. 47, cap. 8 (1884) and the annual payment of $107,730, being interest at the rate of 4½ per cent since and including 1905 on the said sum of $2,394,000 for the line between Ottawa and Quebec, which sum was transferred to the Public Debt as a liability and is dealt with by the Finance Department. *See* Public Accounts, 1889-1920, and page 79, 1898.

REPORT OF W. A. BOWDEN, CHIEF ENGINEER OF THE DEPARTMENT OF RAILWAYS AND CANALS

The through water route between Montreal, at the head of ocean navigation, and Fort William and Port Arthur, on the west shore of Lake Superior, comprises 74 miles of canal, with forty-eight locks and 1,155 miles of river and lake waters, or a total of 1,229 miles. The minimum depth of water on this route is 14 feet. From Montreal to Duluth, on the southwest end of Lake Superior, the total distance is 1,354 miles, and to Chicago 1,286 miles. Connection is made with the Canadian Pacific Railway from points west and south at Fort William and Port Arthur (6 miles apart). From Fort William connection with the main transcontinental line of the Canadian National Railways is made by the branch line originally constructed by the Grand Trunk Pacific Railway, but now operated by the Canadian National Railways.

On this through route the approaches to the canals and the channels of the intermediate river reaches are well defined, and are lighted with gas buoys under the control of the Department of Marine and Fisheries, admitting of safe navigation in the hands of competent pilots, both by day and night. The Lachine, Soulanges, Cornwall, Welland, and Sault Ste. Marie canals are lighted throughout by electricity and electrically operated. The Farran's Point canal is lighted by acetylene gas.

Of the minor systems, the Murray, Trent, Rideau, and Ottawa River canals may be considered geographically as branches of the through east-and-west route In operation, however, these canals serve a distinct traffic of more local nature Isolated from the systems just mentioned, the navigation of the Richelieu River from its junction with the St. Lawrence at Sorel to Lake Champlain, is effected by means of the St. Ours lock and the Chamly canal; while in the extreme east the St. Peter's canal provides communication between the Bras d'Or lakes of Cape Breton island and the Atlantic Ocean.

A full statement of the various canals and canalized waters now in operation, with their mileage, limiting dimensions, etc., is the subject of a separate departmental publications. A summary of this data is appended to this report.

In the following detailed report the various canal systems are taken up successively in geographical order from east to west, as follows:—

The present St. Lawrence and Great Lakes route between Montreal and Lake Superior.

The route from Montreal to Kingston via the Ottawa and Rideau rivers.

The navigation of the Richelieu River from its junction with the St. Lawrence to Lake Champlain.

The route from Lake Ontario to Georgian Bay via the Trent River, etc.

The St. Peter's canal across the isthmus at the southerly end of Cape Breton island.

ST. LAWRENCE AND GREAT LAKES ROUTE

Lachine Canal

This canal was in operation through the entire season without interruption to traffic. In addition to the usual maintenance repairs such as the repairing of lock sills and gates, weirs, wharves, machinery, etc., the following special work may be

noted: The floor of regulating Weir No. 3 was renewed in concrete, the old floor having been of wood. Protection racks were placed at Weir No. 4. Thirty-one cast-iron mooring posts were set in concrete at various locks. Between Weir No. 4 and Bridge No. 6 on the south side of the canal, 200 feet of iron fence was erected along the top of the wall. Three additional booms were added at Lock 4 and Basin No. 2. At Lachine, the old composite swing bridge at the south lock and the steel swing bridge at the north lock were replaced by more modern structures. The St. Pierre River was thoroughly cleaned out between Rockfield and Turcot and all refuse was removed from the sumps of culverts at St. Henry and Atwater Avenue.

Soulanges Canal

General repairs and maintenance were attended to as usual, in addition to which the following more extensive improvements were carried out: The slopes between Locks 2 and 3 were concreted. Twenty-seven farm bridges were rebuilt in concrete or concrete with wood flooring. Construction was commenced on a large shed for the storage of lock gates, the foundation being concrete surmounted by a steel frame. A small concrete and brick garage has also been erected. Navigation proceeded without interruption during the entire season.

Cornwall Canal

This canal was opened for traffic on 18th April and was in operation for a period of eight months, the last steamer passing through it on the up trip on 15th December.

During the entire season there was but one serious interruption to traffic. On 14th June the steamer *Jed*, of the J. Sowards Co. of Kingston, collided with and carried away the upper gates of Lock 15. The damage was quickly repaired and navigation of the canal resumed within a period of thirteen hours.

In addition to a general overhauling and repairing of machinery during the period in which the canal was unwatered, repairs to banks, cleaning out, etc., the following more extensive repairs and improvements were made during the fiscal year: At the southeast masonry approach wall below Lock 15 four courses, which had been damaged by the steamer *Turret Court*, were removed for a length of 60 feet and reset; a section of road westward from the Cornwall bridge was rebuilt in water-bound macadam for a distance of 800 feet; the swing bridge at Mille Roches was refloored; at various points along the canal about 5,700 lineal feet of stone protection to banks was relaid; and the separate telephone line, which connects the overseer's house and head office with the various locks and bridges along the canal, was rebuilt throughout its entire length.

Farran's Point Canal

During the past winter the acetylene gas plant was thoroughly gone over and repaired, leaks in the tank being stopped up and the pipe mains renewed wherever found necessary. Other repairs, such as the resetting of stone protection along canal banks, were attended to as usual. The canal was operated without interruption to traffic.

Rapide Plat Canal

At Morrisburg electric lighting was installed in the offices, repair shops and storehouse; the old Government boathouse was moved from Stata's Bay to the repair yard and stored with ice for summer use; and at Lock 24 a portion of the south wall, which had been damaged by steamers, was relaid.

Galops Canal

Early in the season the swing bridge at Cardinal, which is a combined railway and highway bridge, was refloored, the electric wiring being at the same time placed in galvanized iron pipes. Some months later the street leading from the south end of this bridge, which was in bad repair, was regraded and surfaced in concrete for a length of nearly 400 feet. Other minor improvements, such as the construction of drains, sidewalks, fencing, etc., were carried out.

Welland Canal

The volume of traffic on this canal was considerably in excess of the records of any of the preceding seven years. There were 1,859 up-bound and 1,848 down-bound vessels which passed entirely through the canal. In addition to this through traffic, a large number of tugs, pleasure boats and other vessels made use of different portions of the canal. The total freight tonnage carried was 3,076,966, an increase of about 35 per cent over the tonnage of the previous season.

Several accidents which resulted in delays to traffic occurred during the year. Early in the season the steamer *Arabian* collided with and carried away the two upper gates of Lock 8. The resultant damages caused an interruption to traffic for a period of 15½ hours. At beginning of July the tug *Joseph L. Russell* struck and carried out two gates at Lock 12 causing a delay of 13 hours before traffic could be resumed. On October 4 the suction from the wheel of the steamer *Glenafton*, in leaving Lock 25, displaced one of the gates. It was found necessary to replace this gate, and a delay to traffic occurred of 14 hours. The vessel was not held responsible for the damages. In the same month the upper gates of Lock 3 were struck and carried out by the steamer *Robert H. Rhodes*. The heavy current which was set up above Lock 3 washed out the water pipe of the town of Port Dalhousie, which crosses the canal at this point, cutting off for a time the municipal water supply. No other serious damage resulted, however, and spare gates were placed and navigation of the canal resumed within a period of 11½ hours.

New Canal.—Of the various repairs and improvements carried out on the new canal during the year, the following may be noted: Work on the new 14-foot highway along the easterly side of the canal, which had been in progress for the past two seasons, was entirely completed. At Locks 1 and 3, two 100-foot steel swing highway bridges were erected. The approach to the Niagara Street bridge, on the southwesterly side, at St. Catharines, was improved by the laying of a new asphalt street pavement and sidewalk, and at Welland Junction, the westerly approach to the highway bridge was macadamized. Preparations have been made for the installation at Lock 6 of the Gowan Safety Device. Between Ramey's Bend and Port Colborne, the canal transmission line was rebuilt throughout. Repairs were completed on that portion of the east entrance pier at Port Dalhousie which had been undermined, and the crib-work at Lake Street bridge was capped with concrete. Many other lesser repairs also received attention.

Old Canal.—At Merritton and St. Catharines, the hydraulic raceways were unwatered and concrete aprons constructed below Black's spillway and at the Maple Leaf Milling Company, and other lesser repairs were attended to at various parts of the canal.

Canal Feeder.—The former temporary wooden span over the lock at Dunnville was replaced by a concrete structure, and at Feeder Junction lock a concrete highway bridge was erected replacing the old wooden swing bridge. The roadway at the northerly approach to the Dunnville dam was relaid in concrete with tarvia surface; the

Forks road within canal limits was macadamized, and a start was made on a concrete roadway along the northerly side of the canal between Dunnville and Stromness. No trouble was experienced during the year from unusual water conditions in the Grand river.

Port Colborne Elevator.—The Government Elevator at Port Colborne in 1921 received 48,368,303 bushels of grain, an increase over the receipts for the year 1914 of slightly more than 25 per cent. The net earnings for the year were $106,072.41.

Welland Ship Canal

For a detailed description of the various works which it is proposed to undertake in the carrying out of this work, it will be necessary to refer back to the report of the engineer in charge contained in the annual report of this Department for the fiscal year 1913-14, page 359. In the present report, as in that of last year, a brief resumé of the general scheme involved may, therefore, not be out of place.

The proposed ship canal leaves Lake Ontario at the mouth of Ten-mile creek, about three miles east of Port Dalhousie, follows an entirely different route from the present canal as far west as Allanburg, about half way across the peninsula, and from here proceeds along the course of the present canal to Port Colborne on Lake Erie. The total distance traversed from lake to lake will be 25 miles. The difference of level between the two lakes, 325½ feet, will be overcome by seven lift locks, each having a lift of 46½ feet. The locks are to be 800 feet long and 80 feet wide in the clear and will provide a depth of 30 feet of water over the mitre sills. The width of the canal prism is to be 200 feet. A new breakwater, now under construction, will be built at Port Colborne, extending 2,000 feet farther into the lake than the present breakwater. Extensive harbour works are contemplated for the Lake Ontario entrance at Port Weller. For purposes of construction, the canal is divided into nine sections or contracts numbered from the Lake Ontario end. During the past fiscal year, work has been carried on on sections 1, 2, 3, 4 and 5.

On account of strikes and various other labour troubles, construction work on this canal has been very considerably retarded ever since work was resumed after the war period. Conditions however have materially improved since the cessation of work on the Niagara Development at the end of 1921 and the consequent increase in the supply of labour.

Following is a brief summary of the work performed and in progress on the various sections of the canal during the fiscal year:—

Section No. 1.—This section extends from Port Weller on Lake Ontario in a southerly direction, a distance of nearly 3 miles inland, and comprises the entire harbour construction, prism excavation and one lock with weirs, etc., together with the construction of two bridges over the canal.

No further dredging was done during the year in Port Weller Harbour, nor was any work performed on the harbour cribs and docking. A large quantity of excavated material from Section 3 was placed along the outer slopes of the east and west harbour embankments. Excavated material from Sections 1 and 2 was also placed along both inner and outer slopes of the east embankment. Along the west embankment of the harbour, a pole transmission line, 7,200 feet in length, has been erected to supply electric power for a marine signal installation at the extreme north end of the west embankment, the signals consisting of a lighting fixture of five 100 watt lamps and an electrically operated bell for foggy weather. Work on Lock 1 has proceeded satisfactorily during the year, both walls being well advanced towards completion as well as a considerable portion of the lock floor. Upwards of 89 per cent of the concrete work on this lock has now been placed. At the regulating weir the

concrete work is about half finished. The fixed reinforced concrete portion of Bridge No. 1 which carries the N.S. & T. Railway and the highway over the Canal, has now been completed. On the canal prism south of Lock 1 about 103,000 cubic yards of material was excavated. To summarize the progress of the various classes of work performed on this section, it may be stated that up to date there has been completed 88 per cent of the rock excavation, 77 per cent of the earth excavation, 35½ per cent of work on watertight embankments, and of concrete of all classes, 68 per cent.

Section No. 2.—The extent of this section is approximately 4½ miles. The work involved comprises the taking out of canal prism and construction of embankments, the building of Locks 2 and 3 with entrance walls, etc., and the substructures of several highway bridges.

The following work was performed on this section during the fiscal year: The construction of Lock 2, for which the excavation had been completed last year, was carried on throughout the entire season. Exclusive of entrance walls, about 72 per cent of the concrete work has now been completed. At Weir 2, excavation, piling and other preliminary work are well advanced. Considerable excavation was performed at the site of Bridge No. 4 but no work has yet been done on the substructure. The watertight embankment of Pond 3 has been practically completed. At the site of Lock 3 excavation for the pit was considerably advanced and seams in the rock foundation thoroughly grouted. Summarizing, the progress on various classes of work on this section stands as follows—Rock excavation 54 per cent, earth excavation 71 per cent, watertight embankment 72 per cent, and all classes of concrete 38 per cent.

Section No. 3.—This section extends southerly from Section 2 for a distance of about 2 miles. The work involved comprises the excavation of canal prism and lock sites, the construction of three twin locks in flight and one single lock together with masonry approach walls, a core wall for a dam, control weirs and other minor structures and the building of a large earth dam at the head of the flight locks.

During the past year excavation work has been carried on continuously and a satisfactory advance has been made. Work has progressed well at twin locks No. 6 and concrete to the extent of about 6½ per cent of the total has been placed which included a considerable portion of the lock floors as well as portions of the east, centre, and west walls. Excavation of the canal prism between Locks 6 and 7 is now well advanced towards completion and the wall along the west side has been finished. At the site of Lock 7 the excavation work is practically completed and a small amount of concrete work has already been done. The west wall at the upper entrance to Lock 7 is now well advanced, and the canal prism excavated. The centre guide pier of Bridge No. 9 has been completed, and from this point southerly, rock excavation along the canal prism proceeded without interruption since the beginning of the fiscal year. The concrete wall on the east side has been completed for a considerable distance. The rock crushing plant has been in continuous operation and all other facilities for furthering the work have been put in good order. Of the various classes of work on this section, the following percentages have now been completed: Rock excavation 68 per cent of 2,948,000 cubic yards, earth excavation, 60 per cent of 4,863,000 cubic yards, and concrete work 12·5 per cent.

Section No. 4.—The extent of this section is about 2 miles southerly from the end of Section No. 3. The work involved comprises the excavation of canal prism, the construction of a new waterworks reservoir for the town of Thorold, the relocation of a branch of the Grand Trunk Railway, and various other lesser undertakings.

Preliminary operations and a small amount of earth excavation have been carried out on the canal prism. Over half of the excavation work necessary for the new

Thorold reservoir has been completed, and stone lining is being placed as the work progresses. The work of rebuilding a section of the Grand Trunk Railway in a new location north of the centre line of the canal has progressed satisfactorily, the embankment being now well advanced.

Section No. 5.—This section is about 3¼ miles in length. The work involved comprises rock and earth excavation and dredging, the construction of the substructure of bridges at Allanburg and Port Robinson and small quantities of concrete and stone protection along canal banks.

During the year, over half the estimated rock excavation has been performed and about 90 per cent of the earth excavation. Dredging operations were carried on during a large part of the season. Some preliminary work was also performed at the site of Bridge No. 12 at Allanburg.

Sections 6 and 7.—The extent of these two sections is about 8¼ miles, a considerable portion of the projected route being along the line of Chippewa Creek and the present Welland Canal.

No construction work has as yet been undertaken on either of these sections.

Construction Railway.—Considerable maintenance work was carried on during the year which included the replacement of 2,000 track ties and the placing of 6,000 cubic yards of ballast, the construction of two new sidings in Merritton yard, and the renewal of the entire floor of the double-track bridge across the present canal.

Traffic over the railway has been considerably heavier than in the year before, the average number of trains per day being 129, while the total number of cars handled was 38,282. With the exception of one derailment, there were no accidents during the entire year.

Laboratory.—To provide for the proper distribution and testing of cement, an office and laboratory has been erected at Merritton, in charge of a Tester of Building Materials. Complete tests are here made of all cement, stone and sand supplied as well as thorough investigations into correct proportioning for concrete of various strengths, and other similar work.

Sault Ste. Marie Canal

This canal was in operation for the usual period of eight months. A decrease, as compared with the previous year, was noted both in freight and passenger traffic. It may be observed, however, that for Canadian vessels only the traffic through the Canadian and American canals taken together showed an increase of 12 per cent in the total registered tonnage of vessels, and in actual freight tonnage, an increase of 21½ per cent. The foregoing may be readily accounted for by the fact that many Canadian vessels find it necessary to take advantage of the deeper draught afforded by the American locks.

No serious accidents occurred in the canal to obstruct traffic during the entire season of navigation, a few minor delays only being experienced.

The work of renewing the top of the lower south pier was completed during the summer, and at the close of navigation a start was made on a similar improvement to the upper south pier, the top being removed for a distance of 300 feet preparatory to its renewal in concrete. Painting and various minor repairs and improvements were attended to as usual.

OTTAWA AND RIDEAU RIVERS

St. Anne's Lock

A new furnace was installed in the overseer's house and other lesser improvements received attention. The concreting of the river face of the upper wing dam, which had been begun in the previous year, was continued for a further length of 125 feet. Navigation closed at the end of November.

Carillon and Grenville Canals

New gates were installed at Lock 1 and all locks, gates. buildings and bridges were painted. A new blacksmith shop was constructed and the wharf at Greece's Point repaired. Breaks which had occurred in the Carillon dam were repaired with stone-filled cribwork and numerous other minor repairs and improvements attended to.

Rideau Canal

During the past fiscal year a slight increase in traffic over the year previous was observed in the number of lockages, the improvement amounting to about 6 per cent. Very good water conditions prevailed during the entire navigation season and no difficulties were experienced at the outset from unusual freshets.

A considerable number of repairs and improvements were carried out along the route of the canal, among the more important of which may be mentioned the following: At the Ottawa lock station one of the old mitre sills was taken out and replaced by a new sill of iron-faced concrete. For a distance of over three-quarters of a mile, or between Patterson's Creek and the end of the Deep Cut, the old woden retaining wall along the west side of the canal was removed and replaced by a concrete wall finished with a pipe railing. The Bronson Avenue bridge was refloored. At Hartwell's lock station the concrete wall, which had been begun in the previous year, was completed, and two cribwork piers were built at the mouth of the creek between which a boom can now be stretched for the storage of timber. A concrete wall 3,500 feet in length was constructed along the canal bank at Hogsback, replacing the former dry stone wall. The roadway behind this wall is to be graded and completed during the coming season. The swing bridge over the lock at Long Island station was rebuilt. At Nicholson's lock station the old store house was replaced by a new one on concrete foundation. The kitchen of the lockman's house at Smith's Falls, which had been destroyed by fire, was rebuilt. At this point also a concrete wall 800 feet in length was constructed along the south side of the canal basin. At the detached lock, the lay-by piers were taken down and rebuilt. A few small repairs to wharves and bridge floors were made on the Perth branch. At the Narrows lock station both the upper wing walls, recesses and gate piers were taken down and rebuilt with concrete blocks made last year at the Brook's Bay yard. At the same point the lay-by piers were rebuilt as also a new rest pier for the swing bridge. The lower mitre sill at Newboro lock station was rebuilt. At this lock also the lower east wing wall was taken down and reconstructed with concrete blocks, and the frame beacon at the entrance to Elbow channel, which had been destroyed last summer, was rebuilt. At Brook's Bay, on Lake Opinicon, a concrete yard was established, this point being particularly suitable on account of its proximity to a bed of fine gravel. A wharf and other conveniences for the manufacture and shipping of the concrete blocks have also been constructed. At Jones' Falls the wooden steps on the lock slopes have been rebuilt in concrete. A new swing bridge has been installed at Lower Brewer's Mills, and at Kingston Mills a new Collector's office on concrete foundation has been built

During the navigation season the dredge *Tay* was engaged in the cleaning out of the cut below Hartwell's locks, the excavated material being used for the dams at Hogsback and Black Rapids, as well as in the excavation of a channel for a waste weir below the Black Rapids dam. The tugs *Agnes* and *Loretta* were constantly employed in towing and other work.

RICHELIEU RIVER NAVIGATION

St. Ours Lock

The St. Ours end of the dam was reinforced with stone filling and a new set of booms was moored, and the above-water portion of the two mooring piers above the dam was renewed in concrete. The usual lesser repairs received the customary attention.

Chambly Canal

The stone slopes between Lock 3 and Bridge No. 7 and in the vicinity of Locks 2, 5 and 6 were improved, as also the tow path between Lock 6 and Bridge No. 3. The canal face of the crib wharf on the north side above Lock 7 was rebuilt in concrete along a length of upwards of 250 feet, and at the upper wing dam at St. Johns the river face of the crib for a length of 1,440 feet was rebuilt in concrete. The harbour at St. Johns was dredged above Lock 1 and various lesser repairs attended to.

LAKE ONTARIO TO GEORGIAN BAY

Murray Canal

This canal, which is an open waterway 80 feet in width, with 12 feet depth at low water, across the isthmus of the Prince Edward County peninsula, connecting the bay of Quinté with lake Ontario, is without locks.

Small repairs only were required on this canal among which may be noted the lay of new flooring on the Trenton, Smithfield and Brighton Road bridges, repairing of timber walings on bridge piers and abutments, repairing of the roadway along the north side of the canal and the resetting of about 1½ miles of stone protection along the canal slopes.

Trent Canal

The route of the Trent canal, as now in operation or under construction, lies between Trenton, on the Bay of Quinté, where direct connection is made with Lake Ontario, and Honey Harbour, on Georgian Bay, from which the waters of the Great Lakes are at once accessible. The canal is made up of a series of lakes and rivers connected by relatively short lengths of artificial cuttings. Connection between the water levels of the various reaches is effected by locks. The route may be briefly described as follows: Between Trenton and Rice Lake the canal follows the line of the Trent River. Passing through Rice Lake it enters the Otonabee River, the route of which is followed to its source in Katchiwano Lake. From this lake the line of the canal passes in succession through Clear Lake, Stoney Lake, Lovesick Lake, Buckhorn Lake, Pigeon Lake, Sturgeon Lake and Cameron Lake to the west side of Balsam Lake. From here a connection is made by an artificial cutting with a small lake about two miles westward, and from the latter lake another cutting makes connection with Cranberry Lake. From the south end of Cranberry Lake connection is made with

Lake Simcoe by another artificial cutting. Passing through Lake Simcoe the route of the canal continues to the Severn River, the line of which is followed to the Georgian Bay outlets at Honey Harbour and Port Severn. From Trenton the canal rises to a summit at Balsam Lake, the level of which is about 597 feet above that of Lake Ontario. From Balsam Lake to Georgian Bay there is a fall of 262 feet. Between Trenton and Washago the canal has been practically completed and open to traffic since June, 1918, or for a distance of 203·6 miles. On the westerly portion of the route of the canal, or between Lake Couchiching and Georgian Bay, various works are under construction, a description of which will be found under a subheading farther on in this report. When completed, the total length of the canal from lake to lake will be about 236 miles.

Canal in Operation

As already stated in previous reports, that portion of the Trent canal which lies between Trenton and Rice Lake was formally opened for traffic on June 3, 1918. The extent of the canal now in operation may therefore be stated as 203·6 miles, or between Trenton and Washago at the head of Lake Couchiching. In addition to this is maintained the Lindsay branch, 30 miles in length, and various other channels aggregating in all about 60 miles. The total extent of canal and canalized waterways maintained in operation is therefore slightly over 300 miles.

Of the various repairs and improvements effected during the year the following are among the more important. The dredging of Dangerfield Bar in the Otonabee River was resumed and the dredge *Fenelon* was in continuous operation at this point for nearly six months during which time 22,440 cubic yards of material was taken out. The dredge *Auburn* was also in operation for a similar period, work being carried on at "Stewart's" in Rice Lake, and at the mouth of the Otonabee River. These dredging operations have resulted in a very material improvement in navigation depths in the Otonabee River. Houses for the accommodation of lockmasters were erected at Locks 5, 15 and 17. At Fenelon Falls the wooden superstructure of the detached upper entrance piers was renewed in concrete, eleven piers in all being rebuilt. The old timber wharf at Lindsay was rebuilt, a concrete wall being erected all round the former structure and the enclosed area back filled with stone. The new structure is stepped for the convenience of small boats and constitutes a material improvement. The metal work of the Peterboro lift lock was sandblasted and repainted, as also the lift lock at Kirkfield. A commodious store house was erected at Peterboro, the interior being fully equipped with all necessary conveniences. Work on the Mississaugua dam, which had been discontinued at the middle of April, was resumed in August, coffer dams were constructed above and below the site, and concrete work was continued throughout the winter. A small amount of work still remains to be done. At the outlet of Oblong Lake the work of replacing the old cribwork dam by a modern concrete structure was commenced at the beginning of August last and completed by the end of February, after which buildings were taken down and moved to and re-erected at the site of the proposed Eagle Lake dam where work will be carried on next season. The work of replacing the "run around" dam at the south end of Kashagawi Lake by a rip-rapped earth embankment was completed in March. The timber slide at Scott's Mills was reconstructed and the slide at Bottle Lake was sufficiently repaired to carry it over another season. A number of new lock gates were constructed and various other lesser repairs and improvements received the usual attention.

Storage and water flow conditions for the past fiscal year were at all times adequate. Freshet levels of the present spring were unusually high, though the levels of the year 1913 were hardly attained.

Canal Under Construction

That portion of the Trent canal which is now under construction lies as already noted between Washago, at the head of Lake Couchiching and Honey Harbour and Port Severn on Georgian Bay, and is known as the Severn Division. This division is for convenience divided into four sections, namely, the Port Severn section, from Port Severn on Matchedash Bay to Gloucester Pool; Section No. 1 from Honey Harbour to the Big Chute and the Severn River; Section No. 2 extending from the last-named point up the Severn River to MacDonald's Chute; and Section No. 3 from MacDonald's Chute to the head of Lake Couchiching. The only work done on this division during the last fiscal year was the partial completion of the piers and abutments of the new Hamlet bridge on Section No. 3, which work was performed by the Randolph Macdonald Company under contract. At the end of the season the piers and abutments were practically complete, but some work remained to be done on the river guide pier. It is expected that the steel superstructure will be erected early in the coming season and the whole bridge then completed.

On that portion of the Trent canal which has been in regular operation, or between Trenton and Washago, certain works have also been performed by the construction forces including the building of new dams at Lakefield and Nassau on the Peterboro-Lakefield division. The former was completed during the past fiscal year and the southerly portion of the Nassau dam, including the affiliated work of the substructure of the new Canadian General Electric Company's power house was also completed. It is expected that the northerly half of this dam will be finished during the fiscal year 1922-23, thus completing the whole structure.

At Bobcaygeon on the Lakefield-Balsam Lake division the great bulk of the work on the new canal lock, dam and dry dock, under contract with the Randolph Macdonald Company, has been completed. Some dredging in the upper and lower entrances, backfilling of structures and construction of lower entrance piers remain to be done. The new highway swing bridge under contract with McGregor and McIntyre, Limited, Toronto, at this point was erected and completed with the exception of the field painting which will be carried out early next season.

On the Ontario-Rice Lake Division certain cleaning and dredging which was being done under contract by Fred. A. Robertson & Company at various points was completed. A contract has just been awarded to the Wm. Hamilton Company of Peterboro, for the supply and erection of gates and operating machinery for the three submerged sluices at Dam No. 10, Campbellford.

During the past winter survey work was continued on Piegon Lake.

St. Peter's Canal

This canal, which was constructed between the years 1912 and 1917, connects the Bras d'Or Lakes with St. Peter's Bay on the southeast coast of Cape Breton Island. It consists of a tidal lock 300 feet in length and 48 feet in width and provides for a minimum depth of water on the lock sills of 18 feet.

During the past season this canal was in operation from 19th April till 7th January of the present year, a period of nearly nine months. The total number of vessels making use of the canal during this time was 1,766, this volume of traffic being practically the same as that of the preceding year.

Repairs of a minor nature only, such as painting and whitewashing and the scraping and cleaning of the lock gates, were found necessary during the year.

Hungry Bay and St. Barbe Dykes

The protection walls along Lake St. Francis were strengthened particularly a portion 1,000 feet in length in the Parish of St. Stanislaus and 1,700 feet in the

Parish of St. Barbe. The bad spots in the roadway along the Hungry Bay dyke were filled in and culverts repaired. The steel superstructure of "Pont Masson" between the mainland and the Grande Ile de Salaberry was sandblasted and repainted.

Enlargement of the St. Lawrence Canals

For many years the question of the ultimate enlargement of the St. Lawrence Canal system between Lake Ontario and Montreal has been studied by the engineers of this department, and much data relating thereto has been obtained.

During recent years, the work of completing definite plans for such an enterprise became necessary in order to enable the department to deal intelligently with proposals, by private corporations, for the development of isolated water-powers which might seriously conflict with any reasonable development of the navigation and power potentialities of the river as a whole. Under this impetus, plans were evolved for a comprehensive development of the upper section of the river.

During the past season, one boring party has continued the investigation of subsurface conditions on the sites proposed for structures, and also at some other points where the rock elevation was considered desirable for a proper study of various schemes. One survey party has been employed in making additional surveys to supplement those already compiled, chiefly on the south shore of lake St. Francis and in the international section of the river. This party has also collected data relative to ice formation in the river, and recorded its action throughout the winter.

An office staff has been employed throughout the year in the preparation of plans and estimates, a large part of which were incorporated in the joint report of Colonel W. P. Wooten, of the United States Corps of Engineers, and myself, which was filed with the International Joint Commission on June 24, 1921. Since the joint report on the St. Lawrence improvement was filed, further data on the hydraulics and ice action of the river has been obtained, and an economic analysis of the whole project is now being prepared.

CANALS OF CANADA

Name	Location	Length in Miles	No. of	Locks		
				Minimum dimensions		
				Length	Width	Depth
				Ft.	Ft.	Ft.
St. Lawrence and Great Lakes						
Lachine	Montreal to Lachine	8·50	5	270	45	14
Soulanges	Cascades Point to Coteau Landing	14·00	5	280	45	15
Cornwall	Cornwall to Dickinson's Landing	11·25	6	270	45	14
Farran's Point	Farran's Point Rapid	1·25	1	800	50	14
Rapide Plat	Rapide Plat, Morrisburg	3·65	2	270	45	14
Galops	Iroquois to Cardinal	7·30	3	800	50	14
Welland	Port Dalhousie, Lake Ontario to Port Colborne, Lake Erie	26·75	26	270	44	14
Sault Ste. Marie	St. Mary's Rapids, 47 miles west of Lake Huron	1·30	1	900	60	19·5
Ottawa and Rideau Rivers						
St. Anne's Lock	Junction of St. Lawrence and Ottawa rivers	0·12	1	200	45	9
Carillon	Carillon rapids, Ottawa river	0·75	2	200	45	9
Grenville	Long Sault rapids, Ottawa river	5·75	5	200	45	9
Rideau	Ottawa to Kingston	126·25	47	134	33	5
	Rideau Lake to Perth (Tay Branch)	7·00	2	134	33	5
Richelieu River						
St. Ours Lock	St. Ours, Que	0·12	1	200	45	7
Chambly	Chambly to St. Johns, Que	12·00	9	118	22·5	7
Lake Ontario to Georgian Bay						
Murray	Isthmus of Murray Bay of Quinte	5·17	None	.....	.....	12
Trent	Trenton to Peterboro Lock, Peterboro	89·0	18	175	33	8·3
	Peterboro Lock to Sparrow Lake	121·0	24	134	33	6
	Sturgeon Lake to Port Perry (Scugog Branch)	30·0	1	142	33	6
Miscellaneous						
St. Peters	St. Peters Bay to Bras d'Or Lakes Cape Breton, N.S.	0·49	1	300	48	18

TABLE SHOWING THE DATES OF THE OPENING AND CLOSING OF THE CANALS FOR THE SEASONS 1918, 1919, 1920 and 1921

Canals	1918		1919		1920		1921	
	Opened	Closed	Opened	Closed	Opened	Closed	Opened	Closed
Lachine	April 30	Dec. 17	April 16	Dec. 12	May 1	Dec. 11	April 18	Dec. 14
Soulanges	May 1	" 17	" 18	" 12	" 1	" 11	" 18	" 14
Cornwall	April 24	" 17	" 17	" 13	April 30	" 12	" 18	" 15
Williamsburg—Farran's Point	" 26	" 16	" 17	" 17	" 29	" 13	" 18	" 16
Williamsburg—Rapide Plat	" 24	" 16	" 17	" 13	" 29	" 13	" 18	" 16
Williamsburg—Galops	" 24	" 16	" 17	" 13	" 29	" 13	" 18	" 16
Welland	" 23	" 20	" 19	" 13	" 19	" 15	" 15	" 19
Sault Ste. Marie	" 23	" 17	" 19	" 13	" 23	" 22	" 9	" 16
St. Anne's	" 26	Nov. 30	" 17	Nov. 30	" 19	Nov. 27	" 15	Nov. 30
Carillon	May 1	" 30	May 1	" 25	May 1	" 30	" 15	" 30
Grenville	" 1	" 30	" 1	" 25	" 1	" 30	" 15	" 30
Rideau—								
At Ottawa	" 1	" 30	April 11	Dec. 15	" 1	" 30	May 1	" 30
At Kingston	" 1	" 30	May 1	Nov. 28	" 1	" 29	" 1	" 15
Trent—								
Ont. Rice Lake Div., Lower Section	June 3	" 27	" 2	" 6	" 12	" 8	" 13	" 5
Trenton Bridge							April 14	Dec. 1
Ont. Rice Lake Div., Upper Section	May 6	" 16	" 1	" 23	" 3	Oct. 30	May 3	Nov. 10
Hastings to Rice Lake	" 6	" 16	" 15	" 14	" 12	Nov. 8	" 12	" 10
Rice Lake to Peterboro	April 20	Dec. 4	" 3	" 24	" 3	Oct. 30	April 23	" 26
Peterboro to Lakefield	May 17	Nov. 27	" 10	" 25	" 8	Nov. 20	" 29	" 8
Peterboro Lift Lock	" 17	" 6	" 15	" 7	" 1	" 20	May 12	" 7
Lakefield to Bobcaygeon	" 9	" 21	April 29	" 15	" 17	" 16	April 6	" 25
Bobcaygeon to Rosedale	" 6	" 28	" 21	" 18	" 18	" 6	" 19	" 21
Kirkfield Lift Lock	" 24	Oct. 25	May 21	Oct. 23	" 1	" 20	May 8	Oct. 6
Kirkfield to Lake Simcoe	" 25	Nov. 1	" 7	" 23	April 24	" 13	" 8	" 11
Lake Simcoe to Orillia	" 25	" 5	" 1	Nov. 20	May 8	Oct. 20	" 30	" 11
Scugog River to Lindsay Lock	April 26	" 22	April 12	" 23	" 14	" 19	" 20	Nov. 6
Murray	April 21	Dec. 7	April 14	Dec. 4	April 12	Dec. 4	April 11	Dec. 5
St. Ours	" 29	Nov. 20	" 23	Nov. 30	" 22	Nov. 25	" 15	Nov. 30
Chambly	May 1	" 30	May 1	" 30	May 1	Dec. 1	" 18	" 30
St. Peters	May 3	Jan. 13 1919	April 10	Jan. 3 1920	April 19	Jan. 10 1921	" 19	Jan. 7 1922

REPORT OF A. W. CAMPBELL, M.E.I.C., CHIEF COMMISSIONER OF HIGHWAYS

Major Graham Bell, C.M.G.,
Deputy Minister,
Department of Railways and Canals,
Ottawa.

Sir,—During 1919 and 1920 the mileage of highway construction and improvement placed under contract by the different provinces was definitely restricted by the consideration of cost. Until the fall of 1920 unprecedented rates for labour and materials mounted. Consequently, the amount of work completed with Federal aid prior to 1921 is largely accounted for by the fact that it was possible for the Provincial Departments of Highways to carry out extensive preliminary construction operations, economically with their own equipment under provincial engineers directing labour forces.

The year 1921 was exceptionally favourable for the carrying out of an accumulated programme of work. Although one or two of the provinces still regarded prices as too abnormal to justify the awarding of contracts on anything but the most urgent work, the marked decline in rates led to the submission to the Department of numerous project statements from different provinces for approval of proposed immediate or early construction on projects, some of which had been held in abeyance for years. Surveys had been made, plans and estimates prepared, and all was in readiness for the call of tenders. Another factor facilitating work was a greater availability and hence greater efficiency in the labour offering. The weather contributed also in making it possible for the different Provincial Departments of Highways to extend weekly their mileages of widened, drained and generally improved highways. The amount of construction and improvement work undertaken and completed by each province in connection with the Canada Highways Act during the year 1921 was very creditable. For reasons indicated, this was the first year, when all the provinces with the exception of Alberta were fully operating with Federal assistance.

The number of contractors interested in highway construction projects has increased very considerably since 1919. While the greater abundance of labour units and better prices of materials tended to stability of construction conditions, and to the creation of confidence, in contractors, other reasons explain their increase in numbers. More costly operations, requiring special equipment designed to build a specified type of pavement, and the placing of longer mileages of work for such operations as grading, under construction, have led to much tendering for such work by ex-railway contractors, whose constructural and administrative experiences have been found to be invaluable aids in attempting to solve Canada's highway transportation problem. Moreover, the clause in the Federal highway legislation of 1919 requiring all expenditures in connection therewith to be made by the contract method of construction, except for good reasons and by consent, has had a noticeable effect in this connection, and not alone in regard to projects being improved with Federal aid.

The method of construction of highway projects is one of the debatable problems constantly before administrators of highway legislation. Theoretically the advantages of having all construction operations performed by the contract method are plain. It tends towards definiteness of work, because plans based upon careful surveys to determine the amount of work involved are necessary, unit estimates as a guide to proper cost are customary, and definite specifications are the rule. Again perform-

ance records of labourers are generally higher under the contract method. The fact that contractors have no regard to the personal affiliations or connections of the labour offering, and being employed is a consideration of weight with many administrators. The elimination of any form or degree of favouritism not alone in fact to labourers, but also to contractors, is generally recognized as being in the public interest. An alert public interest in the efficiency of all forces publicly employed, and in the value given for the comparatively high costs necessarily incurred for the improvement of primary public highways has widened as responsibility for their condition has increased from being of practically purely local concern, to a matter of national moment.

There are, however, certain considerations in favour of the day-labour method of procedure of meeting modern demands for public highway transport service. For example, some equipment required for the proper maintenance of improved roads, work the Provincial Departments of Highways themselves must do, is of equal value for construction purposes. In fact the possibility of prompt maintenance work is one of the reasons leading to the installation of late by a number of Canadian cities of their own paving plant. It is in accord with business principles that a province operate for instance a bituminous pressure distributor during the summer months in making constant applications as required of dust palliatives and light bituminous road binders, and then at suitable, if limited, occasions use it for construction work. Teams required for grading or dragging can be economically used in drawing surfacing materials, etc. Again some of the modern road-building equipment is so costly that few contractors can afford to secure it. For such reasons, the applications of some departments for approval of their proposal to construct some portion or all of a project by days labour, and with their own equipment, have been allowed as being quite valid and reasonable. When method other than tender and contract is proposed in applications for Federal aid, full and adequate explanations have been required. Insistence upon the full information supplied by surveys, even when the work may be done by days labour, overcomes a defect formerly associated with this method.

A letter to the different Provincial Deputy Ministers of Highways asking for expressions of opinion regarding the desirability of awarding highway contract when labour is most slack, with a view to relieving unemployment, securing better prices for operations, and enabling contractors to get their equipment and portable materials on the ground when rates of transportation are lower brought generally favourable responses. While the general practice appears to have been to let contracts in the late spring months, the advantage of having plenty of time between the calling and the award of contracts, after all the preliminary information has been secured, so as to enable all contractors interested to become familiar with the proposed work, which in the rush of the spring months is not always possible, was also referred to by some provincial deputy ministers.

Longer seasons for highway construction operations have been occasioned by the fact that the development of road traffic has so greatly exceeded the normal rates and degrees of construction and improvement. In order to meet partially the needs of modern traffic, road-work should be carried on actively during every month of the year. At present in Canada, frost conditions and financial limitations alone preclude this from being done. As such work as bituminous penetration and bituminous concrete can be done only in warm weather, the working season for such types of construction is limited to four or five months of the year. Where provincial finances will permit, the work of grading, collection and preparation of materials and surfacing with metal is being carried on from seven to ten months of the year.

The usage of and wear on primary and secondary roads has of late become much greater than formerly both by reason of the modern road vehicle and of changes in industrial conditions. The roads suffer not alone from the numbers, weight, capacity and speed of motor vehicles, but also because industries are drawing their supplies

from larger zones. Decreases in many districts in the numbers of local grist-mills, saw-mills, creameries, and increases in the capacity of the central mill or market have necessitated longer hauling distances for local producers, and where road surfaces and equipment permit, heavier loads. The adequacy of any road is relative to traffic conditions, but experience with improved roads shows that being relatively few in number, they soon draw a traffic out of proportion to that using them when unimproved. A certain margin of extra support for the unknown traffic that may be expected to use main trunk routes is therefore found to be a judicious provision in building them.

On a number of the main trunk highways recently improved, there have been established public carrier motor bus lines, particularly between urban centres, summer resorts and other places not being served by steam or electric railways. In this connection, where the approaches to cities and towns have been improved with modern pavements, extension of suburban limits are familiar in different provinces, followed by motor-bus auxiliaries to established transportation lines. The volume of traffic from a large city to another may be represented by two elongated letter V's, joined at the base. Hence a policy of building massive foundations and structures and durable surfaces for short distances at the approaches of large centres of population and then tapering the character of finishing, more or less according to the present volume of traffic is a reasonable and conservative plan of development of highway transport facilities.

As highway traffic and rate of travel increase, the question of accident prevention assumes increased importance. Road surveys are therefore taking on a wider meaning to include proper provision for the public safety. In the actual construction of roads, such measures include the widening of travelled surfaces, the enlargement of curves at turns, the improvement of lines of sight by straightening locations, cutting down brush and shrubbery at crossings, etc., the elimination of dangerous level highway-railway crossings, and the placing of standard signs of direction and danger on all improved roads.

Within the last year, several highway-railway crossings on Federal aid projects have been avoided by changes of location of the highway. Where a railway has cut across an old road at numerous points, relocation of the highway is the most effective method of eliminating level crossings.

Some months ago the Board of Railway Commissioners of Canada, asked for a conference with representatives of the different provinces and this department to discuss public safety measures, particularly at approaches to railway crossings. The conference adopted a resolution to the effect that it was of opinion that the percentage of Federal aid, namely, 25 per cent of the cost of grade separations, authorized by subsection 2, section 262 of the Railway Act, 9-10 George V, is insufficient; and that the maximum amount of the Federal contribution to such separations does not sufficiently relieve local municipalities, where 25 per cent of the cost would exceed $15,000, the maximum total authorized. The number of accidents at railway crossings, in Canada, together with the number of crossings still unprotected constitute reasons for believing many municipalities hesitate to avail themselves of Federal aid to grade separations, owing to the amount of expense that would be entailed upon them under existing legislation, passed at a time when such costs were much lower than they would be to-day.

Another resolution of this conference favoured some amendment to the Criminal Code, or the Railway Act, providing for penalties for non-compliance with warning signals. That such a law would in time prove to be a salutary deterrent to heedless motor driving is manifest. Unfortunately as yet there has not been general agreement as to standard uniform designs of signals to warn and direct highway traffic on the roads of the different provinces. When uniformity of form colour and lighting of danger and direction highway signals shall have been established, non-compliance on the part of traffic might more properly be made a summary offence.

CONDITIONS IMPOSING COSTS OF HIGHWAY CONSTRUCTION ON MAIN ROUTES CALLING FOR FEDERAL AID

Until a few years ago, almost all public highways, and particularly rural roads had a single track line travel only. There was little necessity for constructing double or triple track roads, because the traffic was light, slow-moving, and might easily pause and turn out of the beaten track to allow traffic bound in an opposite direction to pass. Provision for such traffic must now be supplemented by more costly work for the new traffic.

Comparatively recent increases in the numbers and speed of some traffic, amounting in each case, on the main highways, to approximately 400 per cent, necessitate the construction of improved roadways, permitting two processions of vehicles travelling in one direction, at different rates of travel, and also room for at least one procession going in the opposite direction. The roadways of the country should be generally widened; but on main trunk routes, the importance of widening is urgent.

The work of widening the old main routes includes filling in the old ditches, building new drainage outlets, wide culverts and grading to a new crowning radius, generally less acute. Such work is necessary, whether anything is put on the surface of the road or not, whether located in Ontario, or Alberta. In the provinces where road-metal is difficult to obtain, the widened and graded road is an improvement received with satisfaction, and is all that can presently be provided.

In the older provinces, however, in which may be included Manitoba, it is to be expected that gravel deposits should be used in varying degrees of width and thickness, wherever possible. Some of the advantages and limitations of such construction are referred to hereafter.

Where good gravel is not obtainable in such provinces, and rock is abundant, the broken stone road is a type which in the past has been regarded as second to none. Before the general adoption of motor vehicles, there had been constructed in the provinces of Ontario and Quebec, many miles of single track water bound macadam roads, which with slow-moving traffic, have given splendid service. But as the action of pneumatic tires on this type of construction is to rend the bond made between the water and the stone fragments, and to cause all the finer material to become ravelled, and eventually blown away, such construction has now become inadequate to present day needs. Where such traffic is heavy, water-bound macadam construction soon becomes filled with holes and very rough, and the dust formed by the shear and impact of the tires leads to the inevitable mud holes and clouds of dust.

The next step in the improvement of all roads that will be required to sustain fast long distance traffic has been the addition by mixture or super-imposition of some more effective binding agent than water, between the metal fragments, such as Portland or bituminous cement. The construction of leading roads has become more costly initially because in addition to wider grades, on better locations, the use of mineral aggregate, of the best quality, in combination with a prepared binder, is an economic necessity.

Increasing costs of maintenance of the plain untreated gravel and broken stone highways have lead, as far as practicable, to a general adoption of a policy of constructing the entire road so that repair and maintenance shall be reduced to the minimum. These types include Portland cement concrete, asphaltic cement concrete, tarry cement concrete, and bituminous macadam by the penetration method. It may be that the future will provide a cement for road-building purposes that will be yet more efficacious, and satisfactory.

STATEMENT OF TYPES OF CONSTRUCTION PROPOSED ON FEDERAL AID PROJECTS PLACED UNDER AGREEMENTS DURING FISCAL YEAR 1921-22

Province	Earth	Gravel	Water-Bound Macadam	Slag Macadam	Bit. Macadam	Asphaltic Concrete	Cement Concrete	Total
British Columbia	.....	201·061	.....	.....	.....	8·88	7·039	216·980
Manitoba	.....	764·7000	.....	.....	.....	.....	.....	764·700
New Brunswick	.....	1,223·700	.....	.....	13·50	.....	.....	1,237·200
Nova Scotia	.....	133·54	14·43	8·20	6·29	.....	.....	162·460
Ontario	.....	27·77	27·45	.....	.....	3·54	12·19	70·95
Prince Edward Island	118·25	.....	.....	.....	.....	.....	.....	118·25
Quebec	.....	.....	68·889	.....	14·107	.....	.....	82·996
Saskatchewan	1,125·50	.....	.....	.....	.....	.....	.....	1,125·50
Total	1,243·75	2,350·771	110·769	8·20	33·897	12·42	19·229	3,779·036
Per cent	32·92%	62·20%	2·93%	0·22%	0·89%	0·33%	0·51%	100%

GRAVEL CONSTRUCTION

It will be observed that sixty out of every one hundred miles of all projects placed under agreement during the year for Federal aid were for gravel construction, which varied in width of grade, metalling and in thickness. On some eastern main trunk highways, the gravel covered the full width of the roadway, 20 feet to 24 feet, with a thickness at centre up to 14 inches, while on some western trunk highways, a single track of gravel surfacing, 4 inches in thickness, followed for two successive years by similar applications, is all that can be provided.

The relatively low percentage of water-bound macadam construction proposed for construction with Federal aid, during the year 1921-22, suggests a brief inquiry into the relative merits and disadvantages of these two types, namely gravel, and broken stone bonded with the aid of water, having regard to new traffic conditions.

For definitive purposes, it may be observed that scientifically there is no line of demarcation between gravel and sand, or between sand and silt. For construction purposes, however, a line is arbitrarily drawn on the basis of the size of the particles. Gravel is then regarded as the particles retained on a 10-mesh sieve; sand, those passing a 10-mesh sieve, and retained on a 200-mesh sieve; and, silt or dust, those passing a 200-mesh sieve, and retained on a 500-mesh sieve. Stone can be broken and ground into any desired sizes.

Again there are two general classes of gravel deposits, viz—bank gravel and beach gravel. Bank gravel is found in natural deposits usually to a greater or lesser extent intermixed with sand or clay. Beach gravel is usually found on the shores of streams, lakes or the sea. It is particularly noticeable of bank gravel that no two deposits are apt to have the same characteristics. This fact has been definitely determined by numerous tests by the Department of Mines, and other laboratories for conducting tests on road materials. Hence modern highway specifications are calling for the use of gravel with definite qualities of hardness, toughness, cementation values, etc.

For ordinary road work, bank gravel, and sometimes rather unfortunately, "the run of the pit," is usual, as this type has at least sufficient, that is 15 to 20 per cent of binding material, in the form of clay or sand, to cause the road to become consolidated, under the action of traffic.

For the types of surfacing required to sustain heavy modern traffic, the use of local materials, none of which is more generally prevalent than gravel, in combination with proper cements, is becoming an economic necessity. As such gravel must be absolutely clean in order that the cement may adhere, beach gravel is now in demand for use in Portland and bituminous cement mixtures for paving purposes. The results are quite satisfactory, with experienced proportioning, and application.

But for ordinary traffic, in order to keep the wheels out of mud of varying depths, for many years past, the use of some kind of gravel has, in all the provinces favoured with natural deposits, been general. Gravel from natural deposits close to road locations has helped to sustain most of the marketing traffic from production centres of the central provinces, for a quarter of a century. Though usually of single track width, only, the gravel roads of the older provinces have given excellent service and wear, especially when regularly dragged and taken care of.

The next development was the use of broken stone, on the more heavily travelled roads of the provinces, with which by the aid of rollers and sprinkling wagons, a pavement with a set formed by an interlocking and keying together of the fragments was built. But as indicated above there would appear to be reasons why this type of pavement, except for ultimate surfacing with some more satisfactory wearing course, is not being favoured of late. One explanation is the difference in origin, and therefore in their values for road-building purposes, of the original rock of most bank gravel and beach gravel deposits in Ontario.

Most bank gravel deposits of southern Ontario have evidently come from igneous formations of the north, and show a large percentage of hard tough fragments, of superior qualities for road-building purposes. But most beach gravel found for example on the shores of lake Ontario has apparently been recently formed from the limestone rocks which form the escarpment of the lake. Limestone formations constitute the principal sources of broken stone supplies for road-building purposes in Ontario—*material which easily fractures and wears.* The best stratified rock is much inferior to average igneous work for highway work. Hence any comparison between gravel roads, on the one hand, or between gravel and broken stone roads on the other, must properly have regard to the origin and characteristics of the fragments, as well as variations in their application to the road.

From its very nature, gravel of igneous origin, after screening to remove excess quantities of clay or sand, should be most suitable for road-building purposes. It has been formed by the forces of nature some-times as with rude mortar and pestle, so as to wear away the rough corners and leave only those particles which, when applied to the uses of man, will, without further breaking up, take a great amount of abrasive action. Broken stone, on the other hand, unless made from naturally hard, tough rock, is apt to break, more especially when made by "jaw" crushers into shapes lending themselves to further disintegration, under the action of traffic or rollers.

Incidently, it may be observed a difference between the practice of the first builder of broken stone consolidated roads, Macadam, and recent practice attempting to build "macadam" roads is noticeable. Macadam broke under the hammer, hard rock into cubical fragments, of the size of his fist, and then took pains to see that the fragments keyed together. Roads are now being formed of light jaw-crusher formed fragments of lime schist, sand and other poor road-building rocks, which, when applied to the road, are rolled until crushed into strata of dust, which hinder the interlocking process, particularly necessary under the suction action of pneumatic tires.

The popular advantage of gravel is that it is cheap, when easily available. Some surveys have been undertaken by the provinces of Ontario, New Brunswick, and Nova Scotia, with a view to the locating of good gravel deposits, close to some main trunk routes being improved with Federal aid. In this connection, reference may be made to the fact that arrangements with the Topographical Surveys Branch of the Interior Department were made at the beginning of last season's work, to the end that Federal Government land surveyors take note of all gravel deposits in the western provinces. The number and extent of their discoveries to date is rather surprising, in provinces where gravel was generally supposed not to exist. These deposits are often unfortunately quite remote from transportation facilities.

The gravel road is difficult to consolidate, but when this has been completed, the road is comfortable for riding, at once resilient, and of easy traction.

Wearing under traffic less than a water-bound macadam road, the gravel road is usually less dusty, without treatment. Once built however, the gravel road is more difficult to treat or to reconstruct with a bituminous penetration surface than the broken stone road. The dust and dirt adhering to the rounded fragments of the gravel will prevent a proper coating of the bitumen.

The gravel road requires more maintenance attention than a water-bound macadam road, but this work is more easily done on the former. When the maintenance work on a gravel road becomes costly, it is found to be good practice to lay a heavy coat of broken stone, or washed gravel, and treat it with a good bituminous binder. When it is anticipated, however, that traffic will be very heavy, capping the reformed gravel base with a light cement concrete course, with or without a superficial bituminous wearing surface, is a justifiable development. Some cementitious material must be added to a gravel or W.B. macadam road, to prevent disintegration and dust when the traffic is in excess of 100 motor vehicles daily. On the lesser travelled roads, dust clouds are being prevented by the use of light asphaltic oils and tars and calcium chloride. Advocacy of the use of calcium chloride as a temporary binder and dust preventive on gravel roads is increasing.

Gravel roads are constructed according to the feather-edge, trench, or combination methods.

The feather-edge method is that usually followed in the past, when the work has been under the direction of experienced road builders, that is to say, when definite method is employed. In this case the thickness of the grravel varies from 14 inches at the centre to 6 inches at points on either side, 8 feet from the centre, to nothing at the edges. This method is customary when the thickness of gravel is from 4 inches to 6 inches. When greater thicknesses are to be applied, it is good practice to build the road according to either the trench or combination method, that is so that the base course will be in a trench, and the wearing course feather-edged. Such construction permits of more thorough bonding of the gravel.

The cost of excavating a trench, or building shoulders on the flat or graded roadway, as the case may be, is somewhat offset by the amount of gravel saved when the feather-edge method is employed. For about two-thirds of the desired width of the finished metalling, the bottom part of the road is trenched in accordance with the method familiar to builders of water-bound macadam construction. Therein are placed the larger gravel stones; and, after the large voids have been filled with finer material, the bottom course is gone over with a heavy drag or roller. Then the wearing course is applied, and shaped in accordance with the feather-edge method. Thus in the combination method the material is graded and confined to the places where it will give the greatest service.

The crown on a gravel road should not be excessive, as this results in keeping traffic in the middle of the road, and rut formations. As traffic is distributed, the life of any road is prolonged.

For a double track highway, the pavement should be 18 feet in width, with shoulders 3 feet wide; and, for a single track road, the metalled portion should be at least 12 feet in width, with shoulders generally not less than 4 feet.

HIGHWAY RESEARCH

In connection with various problems related to highway construction, finance, and maintenance, to indicate some of the directions in which definite information is lacking, is to present the evident necessity in the public interest, of there being undertaken a rather wide field of investigation and research. After the inevitable waste from experimental work, some of these problems have been solved by individual investigators. Unfortunately, however, the results of various experimental processes and methods in highway work have not been so recorded as to be of general informa-

tion. Hence in accordance with the suggestion of different Provincial Departments, this branch has undertaken to act as a clearing house for information on highway location, design, construction, maintenance, finance, etc., and to encourage directly and indirectly work of investigation and research, and to some extent, standardization of road-building materials.

Some of the subjects in which highway engineers are not agreed, and in which research is necessary are: the causes of waving of gravel and of bituminous mixtures, of "cracking," in Portland and bituminous concrete pavements, and of the formation of "cup" holes and pockets, in wearing surfaces; desirable ingredients and proportions of materials, such as "filler", in the less common designs and practices of construction; proper number and thicknesses of applications, etc. Collection of information regarding costs of the different operations, and distribution of accounts, is also in demand.

In regard to the relation of the vehicle to the road, it may be noted that statements for example in applications for Federal aid as to the amount of traffic now using the road give the numbers only of motor, and horse drawn vehicles. Numbers do not give much definite information regarding the weight of traffic to be sustained, owing to the variety in weight and capacity of the modern road vehicle. To be of value, traffic censuses should be conducted with more precision and accuracy than is generally the case, and to this end, some other measure than number should be agreed upon as the unit of traffic.

Other points which should be developed in connection with the vehicle and the road, are the determination of suitable ruling grades, and minimum resistances on different types of construction, for stated classes of traffic; the distribution of traffic on the road; desirable limitations on loads per axle and inch of tread, having regard to a standard of each type of modern construction, reasonable seasonable limitations, safety measures, etc.

Some progress is being made by this branch in the collection of full information as to provincial highway and vehicular legislation, regulations, organization, machinery and methods in relation to highway transport.

Particular attention is being given to provincial and municipal systems of maintenance of public highways. It is recognized that, as the amount of money being raised and expended for new construction, reconstruction and the improvement of old roads increases, the importance of protection of such investments, by proper organizations for maintenance, becomes greater. A bulletin on "Highway Maintenance Methods and Costs", is in course of preparation, dealing with systems of maintenance in vogue in the different provinces and elsewhere.

The field for standardization, experimentation and research in highway transport subjects in the Dominion is so wide that co-ordination alone involves considerable study.

SUMMARY OF PROJECTS, PLACED UNDER AGREEMENT BETWEEN THE DOMINION GOVERNMENT AND THE VARIOUS PROVINCES

(From April 1, 1921, to March 31, 1922)

Province	Number of Projects	Mileage	Total estimated cost	·40 p.c. of estimated cost	Average cost per mile
			$ cts.	$ cts.	$ cts.
Prince Edward Island	12	118·25	211,495 00	84,598 00	1,781 00
Nova Scotia	20	162·16	1,788,252 18	715,300 87	11,007 34
New Brunswick	19	1,237·20	2,950,600 00	1,180,240 00	2,383 36
Quebec	5	82·996	859,367 96	343,747 18	10,354 33
Ontario	8	70·95	1,790,218 65	716,087 46	22,113 00
Manitoba	9	764·70	3,478,902 15	1,391,560 86	4,549 37
Saskatchewan	21	1,125·50	1,356,888 88	542,755 55	1,205 59
Alberta					
British Columbia	5	216·98	1,877,732 10	751,092 84	8,654 00
	99	3,779·036	14,313,456 92	5,725,382 76	3,777 60

LIST OF PROJECTS UNDER AGREEMENT BETWEEN THE DOMINION GOVERNMENT AND THE PROVINCE OF PRINCE EDWARD ISLAND

(March 31, 1922)

Project No.	——	Mileage	Total estimated cost	Type of construction	Widths
			$ cts.		
12	Commercial Road (Murray River to Montague).	10·00	15,875 00	Earth.....	18G-14P
13	Cardigan-St. Peters (Cardigan to St. Peters)	13·00	17,600 00	"	18G-14P
14	St. Peters (St. Peters to Lot No. 40, Kings Co.).	8·50	12,000 00	"	18G-14P
15	St. Peters (Union Road to Scotchfort, Kings Co.).	11·50	19,000 00	"	18G-14P
16	Malpeque Road (Waterworks Hill to Hunter River).	11·50	20,600 00	"	18G-14P
17	Tryon Road (Newhaven to Tryon, Prince Co.).	15·50	24,345 00	"	18G-14P
18	Eel Creek Road (Irishtown to French River)	6·50	10,300 00	"	18G-14P
19	Bedeque Road (Summerside to Borden).....	15·50	20,100 00	"	18G-14P
20	Western Road (Mount Pleasant to Miscouche).	14·50	35,550 00	"	18G-14P
21	Western Road (O'Leary to Bloomfield).....	6·00	17,700 00	"	18G-14P
22	Malpeque Road (Charlottetown to Waterworks Road).	3·00	11,300 00	"	18G-14P
23	St. Peters Road (Charlottetown to Union Road).	2·75	7,125 00	"	18G-14P
		118·25	211,495 00	118·25	

SESSIONAL PAPER No. 32

LIST OF PROJECTS UNDER AGREEMENT BETWEEN THE DOMINION GOVERNMENT AND THE PROVINCE OF NOVA SCOTIA

(From April 1, 1921, to March 31, 1922)

Project No.	Location of Project	Mileage	Total estimated cost	Type of construction	Widths
			$ cts.		
1	Bedford Road (Halifax City Line and Sackville River Bridge).	6·29	251,000 00	Macadam-Tarvia.	30G–16P–3S
4	Port Joli-Sable River Road	6·30	91,227 76	Gravel	20G–14P
7	Liverpool-Caledonia Road	5·30	67,321 00	"	20G–12P
8	Reserve Road (Sydney to Glace Bay)	8·20	91,795 30	Slag Macadam	20G–12P
9	Windsor-Hantsport Road	6·48	63,032 00	Gravel	18G–14P
10	Weymouth-Meteghan Road	10·00	58,097 26	"	20G–16P
13	Waverley-Elmsdale Road	16·20	84,060 25	"	20G–14P
14	Milford Road (Elmsdale to Shubenacadie)	3·48	27,865 51	"	20G–14P
15	Shubenacadie-Stewiacke Road	2·46	18,153 54	"	24G–14P
16	Truro-Glenholme Road	12·12	97,720 05	"	18G–14P
17	Amherst-N.B. Boundary Road	1·00	42,947 85	"	22G–12P
18	New Glasgow-Truro Road	7·85	72,024 09	"	20G–14P
19	New Glasgow-Telford Road Sec. "A" (New Glasgow Town Line towards Antigonish)	10·05	128,130 64	"	22G–14P
20	Antigonish-Mulgrave Road—				
	Sec. "A" (Antigonish to Lower South River Bridge).	3·71	31,093 30	"	24G–14P
	Sec. "B" (Lower So. River Bridge to Ponquet Road).	5·46	64,247 62	"	24G–14P
	Sec. "F" (From Guysboro Co. Line 5 miles).	5·00	71,936 00	W. B. Macadam	16G–15P
	Sec. "G" (From a point 5 miles from Guysboro Co. line to Mulgrave Town line).	5·53 5·21	90,070 20 56,721 00	" Gravel	16G–15P 18G–14P
22	Woods Harbour-Shag Harbour Road	3·90	47,149 80	W. B. Macadam	20G–14P
23	Hants County Line-Mt. Uniacke Road.				
24	Port Hawkesbury-Kempt Road (Hawkesbury Town Line towards Kempt Road).	10·00	122,702 50	Gravel	24G–14P
25	St. Peters-Sydney Road—				
	Sec. "F" (Big Pond 8·92 miles towards East Bay).	8·92	44,747 64	"	22G–12P
	Sec. "H" (Sydney to a point 6 miles towards East Bay).	6·00	37,091 85	"	20G–12P
26	Sydney-Baddeck Road, Sec. "D" (Little Bras D'Or to Big Bras D'Or).	8·00	86,484 45	"	22G–10P
30	Parrsboro-Amherst Road, Sec. "G" (From a point 5 miles from Amherst Town Line to Amherst Town Line).	5·00	42,632 57	"	20G–12P
		162·46	1,788,252 18		
		Orig. est. cost*	Revised		
6	Sec. "A"	45,603.50	92,904.00		

*Note—Placed under agreement last year.

LIST OF PROJECTS UNDER AGREEMENT BETWEEN THE DOMINION GOVERNMENT AND THE PROVINCE OF NEW BRUNSWICK

(March 31, 1922)

Project No.	Location of Project	Mileage	Total estimated cost	Type of construction	Widths
			$ cts.		
1	Metapedia–Bathurst Road	74·10	148,200 00	Gravel	24G–18P
2	Bathurst–Newcastle Road	125·60	125,800 00	Bit. Macadam-Pen. and Grav.	24G–16P
3	Newcastle–Moncton Road	91·50	301,950 00	Gravel	24G–18P
4	Shediac–Port Elgin Road	29·40	73,500 00	"	"
5	Cape Tormentine–Aulac Road	30·40	50,000 00	"	"
6	Moncton–Aulac Road	36·00	100,000 00	"	"
7	Moncton–St. John Road	89·60	304,640 00	Bit. Macadam-Pen. and Grav.	24G–16P
8	St. John–St. Stephens Road	82·00	400,000 00	"	"
9	Penobsquis–Moncton Road	74·30	52,000 00	Gravel	24G–18P
10	St. John–Fredericton Road	58·00	207,000 00	"	"
11	Fredericton–Woodstock Road	61·00	326,000 00	"	"
12	Woodstock–Perth Road	47·40	67,900 00	"	"
13	Perth–Grand Falls Road	22·70	101,100 00	"	"
14	Grand Falls–St. Georges Road	47·50	95,000 00	"	"
16	Westfield–Ormocto Road	65·80	88,460 00	"	"
18	St. Stephen–Burden Road	63·20	105,950 00	"	"
19	Fredericton–Newcastle Road	96·10	198,400 00	"	"
20	Newcastle–Bathurst Road (Inland)	42·10	53,200 00	"	"
21	Fredericton–Sussex	100·50	151,500 00	"	"
		1,237·20	2,950,600 00		

LIST OF PROJECTS UNDER AGREEMENT BETWEEN THE DOMINION GOVERNMENT AND THE PROVINCE OF QUEBEC

(March 31, 1922)

Project No.	Location of Project	Mileage	Total Estimated Cost	Type of Construction	Widths
			$ cts.		
1	Montreal-Longueuil-Sherbrooke Highway—				
	Section Q, Subsection 2 (Parish Ste. Marie-de-Monnoir Co., Rouville).	1·788	45,567 03	Mac. Tarvia treated	24G–16P
	Section Q, Subsection 3 (Parish Ste. Marie-de-Monnoir, Co. Rouville).	1·765	36,414 64	" "	"
	Section S (Parish of Notre-Dame de Bonsecour).	1·743	34,883 27	" "	"
	Section G (South Stukely Twp., Shefford Co.).	4·511	75,890 95	" "	"
5	Beauce Jct.–Sherbrooke Highway—				
	Section C, Subsection 2 (Parish of Sacré Coeur de Jésus).	2·530	6,139 00	Gravel	20G–20P
	Section K (Parish of St. Joseph de Coleraine).	5·770	40,215 75	"	24G–20P
7	Beauceville-Sherbrooke Highway—				
	Section L (Bury Twp. Co., Compton).	7·600	89,271 19	Gravel	24G–24P
	Section N, Subsections 1 and 2 (Eaton Twp., Co. Compton).	10·550	70,141 72	"	"
	Section O (East of Town Lmit, Lennoxville).	3·100	46,510 20	"	"
10	Lévis-Sherbrooke Highway—				
	Section O (Parish of Ste. Victoire, Arthabaska Co.).	4·858	37,020 51	"	24G–22P
	Section R (Parish of St. Christophe).	2·384	11,791 77	"	"
	Section T, Subsection 1 (Warwick Twp.).	3·748	24,158 16	"	"
	Section T, Subsection 2 (Warwick Twp.).	4·180	19,675 20	"	"
12	St. Hyacinthe-Chambly Highway—				
	Section A (Parish Notre-Dame de St. Hyacinthe).	4·392	83,420 09	"	24G–24P
	Section B (Parish St. Damase)	6·520	67,169 42	"	" "
	Section C (Parish St. Michel de Rougemont).	2·707	12,637 55	"	" "
16	Richmond-St. François-du-Lac Highway—				
	Section C (Durham Twp., Drummond Co.).	4·750	36,035 13	"	24G–22P
	Section D (Parish of L'Avenir, Drummond Co.).	5·800	67,298 74	"	"
17	Hull-Aylmer Road—				
	Section B (Hull Co.)	4·300	55,127 64	Mac.-Tar. treated	24G–18P
		82·996	859,367 96		

LIST OF PROJECTS UNDER AGREEMENT BETWEEN THE DOMINION GOVERNMENT AND THE PROVINCE OF ONTARIO

(March 31, 1922)

Project No.	Location of Project	Mileage	Total Estimated Cost	Type of Construction	Widths
			$ cts.		
1	Kingston Road— Section A, Subsection 1 (Lot line 13 and 14 Westerly to lot line 26 and 27, Pickering Twp.).	3·54	159,080 00	Asphaltic Concrete.....	30G–20P
13	Talbot Highway— Section S (Alborough Twp., Elgin Co.).	10·77	156,420 00	Gravel.....	30G–20P
14	London-St. Thomas— Section A and Subsection 1 of Section B)	5·29	228,500 00	Cement Concrete.....	30G–18P
15	Lambeth-Maidstone— Section K, Subsection 1, Chatham City, Easterly to Lot 7).	2·00	80,493 00	Cement Concrete.....	30G–18P
16	St. Thomas-Niagara Falls Highway Section U1 and V.....	16·05	469,077 50	W. B. Macadam.....	30G–20P
18	Hamilton-Chatsworth Highway— Section L, Subsection 1 (1 Mile south Guelph City).	1·00	46,356 75	Cement Concrete.....	30G–20P
	Section N, Subsection 1 (Puslinch Twp.).	1·50	53,117 00	" "	
20	Sarnia-Elginfield Highway— Section B (Easterly from City of Sarnia).	2·40	102,444 40	Cement Concrete.....	30G–20P
28	Bradford-Severn Highway— Sections B, E, F, G1, G2, I1, I2...	28·40	425,730 00	11·4 W. 13 Mac. 17 Gravel.	30G–20P
		70·95	1,721,218 65		

SESSIONAL PAPER No. 32

LIST OF PROJECTS UNDER AGREEMENT BETWEEN THE DOMINION GOVERNMENT AND THE PROVINCE OF MANITOBA

(March 31, 1922)

Project No.	Location of Project	Mileage	Total Estimated Cost	Type of Construction	Widths
			$ cts.		
1	Portage Highway–Brandon Road—				
	Section A (Assiniboia, St. François, Xavier Portage, Laprairie Municipalities).	56·50	264,385 00	Gravel	18G–12P
	Section C (Elton and Cornwallis Municipalities).	17·00	89,100 00	"	"
	Section E (Sifton, Woodsworth and Wallace Municipalities).	63·00	85,000 00	"	"
2	Portage La Prairie-Dauphin Highway—				
	Section B (Westbourne Municipality).	26·00	133,300 00	"	"
	Section E (St. Rose, Ochre River, Dauphin, Gilbert Plain and Grandview Municipalities).	114·00	407,400 00	"	"
	Section G (Shell River Municipality to Saskatchewan Boundary).	12·00	66,000 00	"	"
3	Swan River Valley Road—				
	Section A (Dauphin Municipality).	23·00	92,200 00	"	"
	Section D (Minitonas and Swan River Municipalities).	53·00	302,100 00	"	"
5	Bowsman Road—				
	Section A (Minitonas-Swan River.	27·20	171,500 00	"	"
7	Winnipeg–Portage Highway—				
	Section A (Charleswood and Cartier Municipalities).	10·50	54,000 00	"	"
	Section C (Portage la Prairie to Poplar Point).	19·00	93,000 00	"	"
8	Winnipeg Boundary Highway—				
	Section A (MacDonald and Grey Municipalities).	48·00	275,000 00	"	"
	Section D (Oakland, Glenwood, Sifton and Pipestone Municipalities).	86·00	300,000 00	"	"
9	Winnipeg Boundary Highway (South Route)—				
	Section A (Macdonald Municipality).	33·50	294,052 15		
	Section B (Dauphin to Northerly Limit of Roland).	17·00	88,900 00	"	"
	Section J (Albert Municipality)....	26·00	77,550 00	"	"
10	The Lord Selkirk Highway—				
	Section A (Fort Garry Ritchot, Morris and Malcolm Municipalities).	56·00	430,000 00	"	"
11	Winnipeg-Riverton Road—				
	Section A (West Kildonan to West St. Paul).	6·50	8,550 00	"	"
	Section B (St. Andrews Municipality).	35·60	149,000 00	"	"
	Section C (North of Section B to Gimli Municipality).	21·80	45,000 00	"	"
	Section D (Birchcroft Municipality).	13 10	52,865 00	"	"
		764·70	3,478,902 15		

LIST OF PROJECTS UNDER AGREEMENT BETWEEN THE DOMINION GOVERNMENT AND THE PROVINCE OF SASKATCHEWAN

(March 31, 1922)

Project No.	Location of Project	Mileage	Total Estimated Cost	Type of Construction	Widths
			$ cts		
1	Cadillac-Battleford Highway—				
	Section B (Swift Current-Sask. Landing).	31·00	49,570 00	Earth	20G-14P
	Section D (Elrose-Rosetown)	24·50	36,969 45	"	"
	Section H (North Battleford-Midnight Lake).	49·50	51,280 00	"	"
2	Assiniboia-Prince Albert Highway—				
	Section F (Simpson to NE. 33-34-27-2).	48·00	56,100 00	"	"
	Section H (Dana to St. Louis)	56·00	66,850 00	"	"
4	Fleming-Walsh Highway—				
	Section A (NE. 1-13-30-1 to Wapella).	31·50	24,730 00	"	"
	Section B (Wapella to Broadview)	34·00	25,350 00	"	"
	Section E (McLean to Regina)	26·00	31,564 25	"	"
	Section F (NE. 36-16-20-2 to Moosejaw).	39·50	27,414 99	"	"
	Section I (Parkbeg to Morse)	40·00	68,778 19	"	"
	Section J (Morse to Swift Current)	37·00	36,050 00	"	"
5	Togo-Lloydminster Highway—				
	Section D (Margo to Wadena)	27·00	45,500 00	"	"
	Section F (NE. 8-37-18-2 to Humboldt).	26·00	39,000 00	"	"
	Section N (Maidstone to Waseca)	10·00	11,265 00	"	"
6	Forward-Melfort Highway—				
	Section D (NE. 31-20-19-2 to Southey).	18·00	18,310 00	"	"
7	Saskatoon-Alsack Highway—				
	Section C (Harris to NE. 23-30-15-3).	27·50	28,200 00	"	"
	Section F (Kindersley to NE. 34-28-29-3).	37·00	30,500 00	"	"
8	Moosomin-Benito Highway—				
	Section E (Kamsack to Pelly)	21·00	22,990 00	"	"
9	Northgate-Preeceville Highway—				
	Section G (Yorkton to Canora)	28·00	26,820 00	"	"
10	Regina-Yorkton Highway—				
	Section D (Melville to NE. 32-25-6-2).	17·50	18,300 00	"	"
11	Regina-Saskatoon Highway—				
	Section C (Davidson to Bladsworth).	13·00	15,100 00	"	"
12	Saskatoon-Prince Albert Highway—				
	Section A (NE. 32-36-5-3 to NE. 32-38-5-3).	13·00	57,080 00	"	"
	Section B (NE. 8-39-4-3 to Rosthern).	30·00	30,000 00	"	"
13	Redvers-Altawan Highway—				
	Section A (Antler to Redvers)	12·00	10,300 00	"	"
	Section B (Redvers to Carlyle)	34·00	34,000 00	"	"
	Section C (Horizon to Verwood)	26·00	31,986 00	"	"
14	Marchwell-Macklin Highway—				
	Section C (Saltcoats to Yorkton)	24·00	24,280 00	"	"
	Section L (Grandora to Asquith)	12·00	12,120 00	"	"
15	Bangor-Watrous Highway—				
	Section C (Goodeve to Jasmin)	30·00	24,930 00	"	"
	Section E (Punnichy to Raymore)	15·00	23,060 00	"	"
16	Maryfield-Regina Highway—				
	Section A (NE. 12-10-30-1 to Fairlight).	15·00	12,700 00	Earth	"
17	Empress-Onion Lake Highway—				
	Section F (N. Boundary twp. 48 to N. Boundary twp. 50).	12·00	15,700 00	"	"
18	Gainsborough-Trossachs Highway—				
	Section G (NE. 24-2-13-2 to NE. 24-2-16-2).	18·00	51,648 50	"	"
	Section H (NE. 24-2-16-2 to North Boundary 31-3-17-2).	21·00	64,875 00	"	"

PROVINCE OF SASKATCHEWAN—*Concluded*

(March 31, 1922)

Project No.	Location of Project	Mileage	Total Estimated Cost	Type of Construction	Widths
			$ cts.		
19	Kincaid–Hawarden Highway—				
	Section F (Elbow to Hawarden)..	20·00	17,710 00	"	20G–14P
20	Regina-Humboldt Highway—				
	Section D (NE. 15–27–22–2 to Nokomis).	13·00	13,837 50	"	"
21	Robsart–Leader Highway—				
	Section B (Maple Creek to NE. 35–15–26–3).	28·00	31,520 00	"	"
22	Welby–Bulyeay Highway—				
	Section B (NE. 29–19–31–1 to NE. 34–19–4–2).	37·50	37,105 00	"	"
	Section D (NE. 12–20–7–2 to NE. 11–21–11–2).	37·00	34,150 00	"	"
	Section E (Balcarres to Dysart)...	33·00	32,380 00	"	"
23	Manitoba Boundary-Tonkin-siding Highway—				
	Section A (NE. 36–25–30–1 to Wroxton).	14·00	16,450 00	"	"
	Section B (Wroxton to Tonkin-Siding).	17·00	20,115 00	"	"
26	Glenrose Highway—				
	Section A (NE. 1–46–17–3 to NE. 36–47–19–3).	23·00	30,300 00	"	"
		1,125·50	1,356,888 88		

		Orig. Est. Cost	Revised Cost
*2	Section B	$28,294.00	$88,339.87
2	Section D	16,996.15	34,564.00
2	Section G	25,430.00	86,447.50

*NOTE.—Placed under agreement last year.

LIST OF PROJECTS UNDER AGREEMENT BETWEEN THE DOMINION GOVERNMENT AND THE PROVINCE OF BRITISH COLUMBIA

(March 31, 1922)

Project No.	Location of Project	Mileage	Total Estimated Cost	Type of Construction	Widths
			$ cts.		
1	Alberni-Victoria Highway—				
	Section B (Station 2·65 Metchosin Rd. to Station 74·00).	1·35	43,585 90	Cement concrete	16'P
	Station C (Nanaimo City Limits to Stat. 128·00 South Wellington Rd.).	2·42	84,088 50	Asphaltic concrete	16'P
4	Vancouver–Ladner Highway—				
	Section C (Station 0·00 to Station 106·90).	2·03	77,352 00	Cement concrete	16P
5	Ladner–New Westminster Highway–				
	Section A (Station 3·00 to Station 160·00 Elec. Dist. Delta and Ladner).	2·97	192,473 00	6·46 Bitulithic	24G–16P
	Section C (Station 267·00 to Station 346·00 Elec. Dist. Delta and Ladner).	3·00		"	"
	Section B (Station 160·00 to Station 267·00 Elec. Dist. Delta and Ladner).	2·03	9,300 00	Cement concrete	17½G–14P
	Section D (Station 346·00 to Station 376·76 Elec. Dist. Delta and Ladner).	0·49	9,506 00	Bitulithic	24G–16P
9	Vancouver-Hope Highway—				
	Section C (Station 448·00 to Station 522·00).	1·401	79,478 00	Gravel	30G–24P
	Section D (Station 522·00 to Station 608·00).	1·629	60,534 00	Cement concrete	30G–18P
13	Spences Br.–Princeton—				
	Section A (From Aspen Grove 25 miles South).	25·000	85,951 45	Gravel	16P
15	Kamloops-Osoyoos Highway—				
	Section A (N. West Corner Lot 120 to South B'dy. Section 2, Twp. 23).	4·000	35,611 05	"	"
	Section B (Demonstration Farm to McIntyre Creek).	8·820	35,459 25	"	"
16	Cariboo Road—				
	Section A (Fort George to Hixon Creek).	42·000	163,000 00	"	24G–16P
	Section B (Hixon Creek to Quesnel).	34·000	85,020 00	"	"
	Section C (Fort George to Summit Lake).	32·000	108,900 00	"	"
	Section D (Between Miles 214 and 219 North of Ashcroft).	5·000	26,845 00	"	16G–12P
22	Vernon–Revelstoke Highway—				
	Section D (Three Valley P.O. to Taft).	10·070	125,307 95	"	20G–14P
	Osoyoos–Crow's Nest Pass Highway—				
	Section F (From Cascade, Easterly 15 miles).	15·000	201,485 00	Earth, gravel and stone.	
	Section G (From Easterly end Section F Easterly 13·25 miles).	13·250	198,555 00	" "	
	Section H (Cranbrook District)	6·620	106,915 00	Gravel	16G–14P
	Section I (Between Cranbrook and Moyle).	1·090	16,136 00	"	"
	Section J (Between Creston and Goatfell).	2·810	28,529 00	"	"
		216·980	1,877,732 10		

STATEMENT OF MILEAGES BY PROVINCES OF FEDERAL AID HIGHWAY CONSTRUCTION COMPLETED

Province	Under Agreement	Completed	Uncompleted
British Columbia	355·126	216·49	138·63
Manitoba	764·70	5· *	759·70
New Brunswick	1,237·20**	242·5**	994·4
Nova Scotia	207·46	134·23	73·23
Ontario	606·80	136·99	469·80
Prince Edward Island	181·25	45·5	135·75
Quebec	237·688	146·2	91·488
Saskatchewan	1,229·75	333·5	896·25
	4,819·984	1·260·41	3,559·574

* In addition to work having received the final application of gravel, 117·7 miles received a first application, and 52·5 miles a second application.

** This figure includes 389 miles between sections under construction, which require maintenance only.

The mileages given under the head "Uncompleted" include projects placed under agreement during the winter, and upon which work had not been commenced at the close of the fiscal year, 1921-22. For example in the province of Ontario, the mileage of Federal aid work actually under improvement at the close of the working season amounted to 338·40 miles only.

In general it may be observed that the procedure is to put in the permanent culverts, provide proper and sufficient drainage, follow with grading, and then put on a light coat of gravel or broken stone in order to permit the passage of traffic. When the whole has settled firmly, and the base brought to the required thickness, the finished surfacing is applied.

Consequently the general practice is not to begin work at fixed points, and carry the project continuously to completion, but to work simultaneously at different points on long stretches of a through route, and develop it as required, providing temporarily for traffic during the interval.

STATEMENT OF PROGRESS BY PROVINCES UNDER CANADA HIGHWAYS ACT, 1919 TO CLOSE OF 1921-22

Province	Projects under Agreement					Federal Aid	Federal Aid Payments
	Number of Projects	Number of Agreements	Mileage	Estimated Subsidizable Cost	Estimated Dominion Aid 40%	Provincial Allocation under the Act	Total Payments
				$ cts.	$ cts.	$ cts	$ cts.
Prince Edward Island	20	20	181·25	324,565 00	129.826 00	603,455 00	143,758 72
Nova Scotia	24	24	207·46	2,251,259 53	900,503 82	1,468,720 00	486,412 69
New Brunswick	19	19	1,237·20	2,950,600 00	1,180,240 00	1,163,845 00	438,303 74
Quebec	14	35	237·6878	2,638,641 75	1,055,456 71	4,748,420 00	540,217 99
Ontario	24	24	606·80	11,292,798 70	4,517,119 48	5,877,275 00	1,326,329 01
Manitoba	9	9	764·70	3,478,902 15	1,391,560 86	1,602,265 00	351,740 74
Saskatchewan	24	27	1,229·75	1,667,090 01	666,836 01	1,806,255 00	193,773 29
Alberta						1,477,810 00	
British Columbia	13	20	355·126	2,938,598 75	1,175,439 50	1,251,955 00	453,472 99
	147	178	4,819·9738	27,542,455 89	11,016,982 38	20,000,000 00	3,934.009 17