II. Grand Trunk Pacific Railroad.

In the valuation of the Grand Trunk Pacific Railroad, inasmuch as the quantities had been estimated and officially approved by the Government through its consulting engineer, Sir Collingwood Schrieber, were on file, these quantities were assumed in our estimate as correct. There was no occasion for us to go over work which had already been done by another branch of the Government, and without doing so we were of course not in a position to criticize the results obtained.

With reference to unit prices, however, we used figures which we considered reliable, without any reference to those which had been paid, although the latter were available. It was found that in the construction of the Grand Trunk Pacific, the work had been let in sections, and that the unit prices for the same items, even in adjoining sections, varied substantially from each other. This of course was to be expected, and resulted, in some cases from a desire on the part of the contractor to substitute his own judgment, with reference to estimated quantities, for the preliminary estimates of the engineers. I understand that bids for each section were let on the basis of the total cost, computed on preliminary estimates of quantities. Such a preliminary estimate, for instance, might have shown 500,000 cubic yards of earth excavation, and 50,000 cubic yards of rock excavation. After examining the ground, however, the contractor might have come to the conclusion that the amount of rock excavation would much exceed the estimate, while the amount of earth excavation would be much below the estimate. He might, therefore, bid a low price for earth and a very high price for rock, and yet be the lowest bidder on the basis of the estimated quantities; and if his judgment as to the relative amounts of earth and rock should prove correct, he might make a very large profit, since he would be paid the amounts bid per cubic yard for the actual quantities excavated.

Furthermore, I was informed that in certain contracts on this line, the prices had been changed after the contracts had been let, and that these prices had been made retroactive. Apparently the conduct of the work itself was not under Government supervision, although the Department of Railways, as previously stated, estimated and approved the total quantities paid for.

The unit prices for the Grand Trunk Pacific were therefore fixed, in the present estimate, in the same manner as for the Canadian Northern, sometimes varying from the latter, however, even in the same district, on account of local conditions or historical development.

OVERHEAD CHARGES.

The elements of value which have been referred to hitherto, represent only the physical elements of the property. In addition to these, however, there are other elements, involving costs which are just as tangible as the cost of the physical elements, namely, the so-called overhead charges, which include contingencies, engineering, legal expenses, promotion, organization and administration, interest during construction, taxes and insurance during construction, commissions or cost of financing and securing the necessary capital. These are all proper and necessary expenses and must be incurred. They would, therefore, enter into the first cost and should be included in an estimate of the cost of reproduction.

(*a*) *Contingencies.*—This item covers, in general, all uncertainties in the estimates of quantities and unit prices. It is unavoidable that in making an inventory of a property some items will be left out, perhaps because they are unseen or under ground. There are also uncertainties of many kinds, as for instance, with reference to the foundations of bridges, in which case the character of the underlying soil, the method of constructing the foundation, and even the dimensions may be uncertain unless original plans are available.

Again, accidents of greater or less seriousness are practically certain to occur in connection with any work, involving costs of greater or less magnitude. Furthermore, temporary structures may be required during the construction and large quantities of material may be used in fills over soft ground which no inventory or surface examination would disclose. There are many instances of this on the lines which we have considered, where so-called muskegs have caused large expense which is not included in the valuation of tangible or visible items. Liberal allowances have been made for muskegs and other cases of hidden quantities, and these allowances together with the allowance for contingencies, in my opinion, fully cover these uncertainties.

If the valuation of a property is based upon an inventory of those things only, which can be seen or discovered from original plans, it is almost certain to be too low. Suppose, for instance, that fifty years from now a valuation should be made of the Quebec Bridge. The 10,000 tons of steel lying at the bottom of the river would not be observed and perhaps would be forgotten. Accidents for which nobody can be blamed are likely to occur, and represent a certain or uncertain cost which is always included in the total.

It is sometimes argued that no allowance for contingencies should be made in the valuation of an existing property, although such allowance is reasonable in an estimate of cost made before the property is constructed. My own opinion is that an allowance for contingencies is probably more justified in the former case than in the latter, although it is fully justified in both.

The amount of this allowance should vary with the complexity of the property, its character, the possible uncertainties in the valuation, and other elements. In the present valuation I have allowed for contingencies, 5 per cent on the Canadian Northern lines for the Prairie Division, 6 per cent on the lines east of Port Arthur, where there are more uncertainties, and 2 per cent in British Columbia where the actual pay quantities were known and were assumed in this valuation.

On the Grand Trunk Pacific, inasmuch as the actual pay quantities were assumed, the allowance for contingencies was 2 per cent in the Mountain section and 3 per cent in the Prairie section.

(*b*) *Engineering.*—This includes the making of all preliminary investigations and plans, as well as the final plans, and the engineering supervision of all construction and other work.

The probable allowance for this item is, of course, like the others, very variable, depending upon the difficulty, character and extent of the work. For a railroad in a mountainous region, the actual cost of engineering would be much greater than for a railroad in a Prairie region, but on account of the greater cost of the former line per mile, it might be a smaller percentage of the total cost. On large undertakings the percentage for engineering will generally vary between 5 and 10 per cent.

In the present valuation it has been taken at 5 per cent for the Canadian Northern on the Prairie Division; 6 per cent on the main lines east of Port Arthur; 5 per cent on branches; and 5 per cent in British Columbia, the percentage here being less than on lines east of Port Arthur, on account of the much larger cost per mile of the line in British Columbia. In other words, on the Prairie lines we have allowed for engineering about $1,000 per mile and on the Rocky Mountain section about $3,500 per mile.

On the Grand Trunk Pacific it has been assumed at 5 per cent throughout.

(*c*) *Legal Expenses.*—This item includes the salaries and expenses of law officials, costs of litigation, and any other legal expenses which may be incurred. It may be a very small item or a very large one, depending upon the character of the property and the circumstances attending its construction. This item does not include the cost of acquiring land, which is included in the valuation of right of way and real estate. In this estimate legal expenses have been assumed at one per cent.

(*d*) *Promotion, Organization and Administration.*—The cost of promotion is certainly a proper charge against an undertaking. It is necessary for some one to take the initiative, and procure the necessary information, interest financiers and others, and so initiate the work. Next comes the cost of organization, which includes the incorporation and organization of the company, the securing of franchises and similar steps, all of which cost money. After the organization of the project is its administration throughout the period of construction, including salaries for general officers, agents, accountants, clerks, and all other employees not included in the engineering and legal departments, and all administration expenses for materials, stationery, printing, travelling, etc.

In the present valuation this item has been assumed at one per cent, except in both lines in British Columbia, where it has been taken as three-fourths of one per cent.

(*e*) *Taxes and insurance during construction.*—Certain expenditures are necessary under these heads. In the present valuation, in the absence of more definite information, they have been assumed as one per cent, and one-half per cent in British Columbia and on branches in the East.

(*f*) *Interest during construction.*—An important overhead charge is the interest on money borrowed or invested in the property during the period of construction. It is unquestionably a proper charge. Its amount involves an assumption as to the rate of interest and the period of construction. The rate of interest must be that which would be charged in the case of a new company, and not the rate which the same company could command after its success and credit has been established.

In the present valuation the interest rate has been assumed at 6 per cent and the period has been varied, as shown in the tabulation of overhead charges which follows.

(*g*) *Commissions.*—The cost of financing and securing the necessary capital with which to carry out the enterprise is a necessary cost. This does not include discount on securities, which I do not regard in general as a proper overhead charge, but simply as an adjustment of interest, which should be amortized after the completion of the work.

If a company sells its 5 per cent long term bonds at 80, it could probably sell its 6·5 per cent bonds at par. If it adopts the former course, the fact that it receives only $8 in cash for every $10 par value of securities, has nothing to do with the valuation of the property. In the case of any given company at a given time, the total annual charge involved in a bond issue, for interest and amortization will be very nearly the same, no matter what the interest rate carried, the term and the price at which the bonds are sold. If fifty year 5 per cent bonds are sold at 80, the investor, assuming that he holds the bonds to maturity, may be said to receive 6·25 per cent interest, plus a sum which, if contributed annually and put at interest, will amount to $20 in fifty years, or something like 0·25 of one per cent, a total of about 6·5 per cent. At all events, the company, if it provides for amortizing the discount, as it should, will provide this sum out of earnings. During the fifty years, if the credit and financial stability of the company remain good, the price of the bonds should gradually rise to par. Under the same circumstances, 6½ per cent bonds should bring par. The company has the option of issuing bonds at par, or lower rate bonds at a less price; in either case, if provision is made for amortizing the discount, as should be made, the total charge for interest will be the same, no matter what the rate of interest or discount. If bond discount were allowed in the physical valuation, the company might boost the value of the property to almost any extent, without increase of annual interest charge, simply by selling securities at a discount.

It is not intended to question the fact that it is frequently wise to sell bonds at a discount, nor, that it is sometimes desirable to give shares of stock as a bonus with a block of bonds. Such transactions, however, are merely part of the methods of financing, and have no bearing on the physical valuation.

It is proper, however, to charge a fair percentage to cover the expenses of interesting financiers, paying for such examination or investigation as they may desire to make before underwriting and the proper expense of marketing the securities. In the present valuation, the allowance for commissions has been taken at 3 per cent. While this may be generally low for a new property, yet in this case I think it ample, considering that the bonds in this case carried a Government guarantee.

Some of these overhead charges apply not only to the valuation of the physical elements, but to some of the other contingencies. For instance, the cost of engineering is a percentage of the cost of the work including contingencies; the charge for interest is for interest on the money expended, not only for the physical items, but for contingencies, engineering, etc. The charge for commissions is a certain percentage on the total amount of capital invested in the property, including all other overheads and, indeed, including itself.

These overhead charges can only be estimated approximately, and they would undoubtedly vary in the same property depending upon the date of construction, or the engineer in charge, or the promoter, or the fiscal agent. All that can be done in a valuation is to allow reasonable amounts. The total of these overheads, however, amounts to a considerable sum, so large as to be surprising to those who have not given attention to this phase of the question, or who have the idea that a property only costs what is necessary to pay for steel or concrete or land or other physical property.

The following tables show the method by which the overhead charges in the present valuation have been determined, and the percentage used.

In these tables, unity (1) represents the total estimated cost of reproduction of the physical items, without any allowance for overhead charges. If 6 per cent is allowed for contingencies, then the total, with this allowance, will be 1·06. If 6 per cent is allowed for engineering, this 6 per cent is computed on the total with contingencies, namely, 6 per cent of 1·06, which equals ·0636, which, added to the previous total (1·06), gives a total, including contingencies and engineering, of 1·1236. In this manner the total overhead charge has been computed.

On the Prairie Division, where the grading was less, and where there were not so many hidden or uncertain items, allowance for contingencies was taken less than in the Eastern Division where there were more muskegs and generally greater uncertainty.

The principal item of overhead charge is interest. In order to estimate this, a programme of construction had to be assumed. We assumed that the main line would be constructed in three years, and that the payments would be made practically uniformly throughout that time. The interest charge would, therefore, be an average period of one and one-half years on the whole expenditure. We assumed the interest rate at 6 per cent, making the total interest charge 9 per cent on the entire expenditure including previous overheads listed in the table. For Branch Lines, we assumed that the period of construction would be one and one-third years, or practically two working seasons, making the average period two-thirds of a year, which at 6 per cent would make the interest charge 4 per cent on the total cost, including previous overheads.

With reference to the land values which we have allowed in our estimate of the cost of reproduction, it has already been explained that, for the right of way in general, we allowed double our estimated value of adjoining lands. To this has been added, for overhead charges for the main line, 24 per cent. Our estimate, therefore, of the cost of reproduction, is practically two and one-half times our estimate of the fair normal value of adjoining lands. In cities we have allowed for the cost of reproduction, about 25 per cent in excess of the value of adjoining property which, with the addition of 24 per cent for overhead charges, makes our estimate of the cost of reproduction 1·55 times the fair normal value of adjoining property.

There is no question, in my mind, that our estimate of the cost of reproduction of the right of way and real estate is liberal, and not fairly open to criticism as being too low. If anything, I believe it is high. It must be borne in mind, however, that this estimate includes all costs of acquisition, including damages, and it is intended to be an estimate of what it would cost to acquire these properties under normal conditions. It must be borne in mind also, that much of this right of way when the railroad was constructed, was in undeveloped territory of little value; and, indeed, that much of it is still of very small value.

CANADIAN NORTHERN RAILWAY.

Eastern Division, Main Line, East of Port Arthur.

OVERHEAD CHARGES.	Total without overheads=1. Total.
A. *On all items except land—*	
(a) Contingencies, 6 p.c.	1·06
(b) Engineering, 6 p.c. on 1·06	1·1236
(c) Legal, etc., 1 p.c. on 1·06	1·1342
(d) Administration, 1 p.c. on 1·07	1·1449
(e) Taxes, say 1 p.c.	1·1549
(f) Interest, 3 year period, say, 9 p.c. on 1·1549	1·2588
(g) Commissions, 3 p.c. on 1·2588	1·2966
Say, 30 p.c.	
B. *On land—*	
(a) Administration, etc., 1 p.c.	1·01
(b) Taxes, 3 years at ½ p.c.=1½ p.c.	1·025
(c) Interest, 3 years at 6 p.c. equals 18 p.c. on 1·025	1·2095
(d) Commissions, 3 p.c. on 1·2095	1·2458
Say, 24 p.c.	

CANADIAN NORTHERN RAILWAY.

Prairie Division, Main Line.

OVERHEAD CHARGES.	Total without overheads=1. Total.
A. *On all items except land—*	
(a) Contingencies, 5 p.c.	1·05
(b) Engineering, 5 p.c. on 1·05	1·1025
(c) Legal, etc., 1 p.c. on 1·05	1·1130
(d) Administration, 1 p.c. on 1·06	1·1236
(e) Taxes, say, 1 p.c.	1·1336
(f) Interest, 3-year period. Average 1½ years at 6 p.c. equals 9 p.c. on 1·1336	1·2356
(g) Commissions, 3 p.c. on 1·2356	1·2727
Say, 27.2 p.c.	
B. *On land—*	
As on Eastern Division, main line, 24 p.c.	

NOTE: Special terminal appraisals made by special engineer include all overheads.

CANADIAN NORTHERN RAILWAY.

Eastern Division, branch lines east of Port Arthur.

OVERHEAD CHARGES.	Total without overheads=1. Total.
A. *On all items except land—*	
(a) Contingencies, 6 p.c.	1·06
(b) Engineering, 5 p.c. on 1·06	1·113
(c) Legal, 1 p.c. on 1·06	1·1236
(d) Administration, 1 p.c. on 1·07	1·1343
(e) Taxes, ½ p.c.	1·1393
(f) Interest, ½ (1-year period), say 4 p.c. on 1·1393	1·1849
(g) Commissions, 3 p.c. on 1·1849	1·2204
Say, 22 p.c.	
B. *On land—*	
(a) Administration, 1 p.c.	1·01
(b) Taxes, 1 year at ½ p.c.	1·015
(c) Interest, 1 year at 6 p.c., 6 p.c. on 1·015	1·0759
(d) Commissions, 3 p.c. on 1·0759	1·1082
Say, 11 p.c.	

CANADIAN NORTHERN RAILWAY.

Prairie Division, branch lines.

OVERHEAD CHARGES.

	Total without overheads=1. Total.
A. *On all items except land—*	1·05
(*a*) Contingencies, 5 p.c.	1·1025
(*b*) Engineering, 5 p.c. on 1·05..	1·1130
(*c*) Legal, etc., 1 p.c. on 1·05..	1·1236
(*d*) Administration, 1 p.c. on 1·06..	1·1336
(*e*) Taxes, say 1 p.c.	
(*f*) Interest, 1-year period; ½-year at 6 p.c. equals 3 p.c. on 1·1336,	1·1790
say 4 p.c. on 1·1336..	1·2143
(*g*) Commissions, 3 p.c. on 1·1790..	
Say, 21·5 p.c.	
B. *On land—*	1·01
(*a*) Administration, etc., 1 p.c.	1·015
(*b*) Taxes, 1 year, ½ p.c..	1·076
(*c*) Interest, 1 year, 6 p.c. on 1·015..	1·108
(*d*) Commissions, 3 p.c. on 1·076..	
Say, 11 p.c.	

CANADIAN NORTHERN RAILWAY.

In British Columbia.

OVERHEAD CHARGES.

	Total without overheads=1. Total.
A. *On all items except land—*	1·02
(*a*) Contingencies, 2 p.c.	1·071
(*b*) Engineering, 5 p.c. on 1·02..	1·0787
(*c*) Legal, etc., ¾ p.c. on 1·02..	1·0864
(*d*) Administration, ¾ p.c. on 1·0275..	1·0914
(e) Taxes, ½ p.c.	1·1896
(*f*) Interest, 3-year period equals average 1½ year, 9 p.c. on 1·0914.	1·2253
(*g*) Commissions, 3 p.c. on 1·1896..	
Say, 23 p.c.	
B. *On land—*	1·0075
(*a*) Administration, ¾ p.c.	1·0175
(*b*) Taxes, 1 p.c.	1·2006
(*c*) Interest, 3-year period, 18 p.c. on 1·0175..	1·2366
(*d*) Commissions, 3 p.c. on 1·2006..	
Say, 23 p.c.	

GENERAL REMARKS.

From the foregoing description of the methods of valuation employed and the time allowed for the work, it may perhaps be inferred that the results are so inaccurate as to be unreliable. I do not, however, consider such to be the case. There are undoubtedly certain elements of these properties, for the accurate estimation of which additional time would be desirable, and our figures would undoubtedly be modified if a more thorough study could be made. Such, for instance, is probably the case with some of the real estate values, and certain lines which it has not been possible for us to examine with the care which would be desirable. However, I am convinced that Mr. Cauchon, who has estimated the real estate values in the large eastern terminals, as well as the field engineers who have estimated right of way and the western terminals, have handled their work with great skill and discrimination, and with the sole desire of arriving at the truth, and I feel well satisfied with their results.

On the whole, I long ago became convinced of the fact that in making a physical valuation it is not desirable to go into extreme detail, in view of the many sources of inaccuracy, and the impossibility in any case of arriving at an exact result, and the further uncertainty, after the final valuation has been completed, as to what the courts or determining body will decide to be the fair value. Many people delude themselves with the idea that a lot of figures necessarily means exactness. In this as in other computations, much depends upon the skill and good judgment with which the work is carried on and the various prices and percentages determined, and if skill and good judgment are exercised, while individual results may be largely in error, such errors will largely compensate each other in the total, and the final result may be very close to the truth.

The present valuation has afforded several remarkable instances of such agreement, which may be mentioned.

1. On the Canadian Northern Railway, the section from Rideau Junction to Current, a distance of 595 miles, was estimated by us on the basis of our field inspection. After our final figures had been obtained, it was learned that the Government Department of Railways and Canals had upon its books official figures for this line. The following table gives a comparison of these figures. It will be observed that our total cost, including contingencies, representing the cost of reproduction of the physical elements without overheads, was four-tenths of one per cent in excess of the figure given by the Department of Railways and Canals, the actual difference being but $125,571 out of a total of nearly $34,000,000.

Our estimate of engineering was slightly less than the actual figure on the books of the department, and our estimate of interest during construction slightly greater than theirs. Our total cost, excluding legal expenses, administration, taxes and commissions, was 2 per cent in excess of theirs. To this we added overhead charges which were not included in their estimate. This is a remarkable agreement, particularly with regard to the physical items, the engineering and the interest during construction.

CANADIAN NORTHERN RAILWAY.

Rideau Junction—Current, 895 miles.

Comparison of estimate made by the Commission of Inquiry from field inspection with statements by the Department of Railways and Canals taken from the Canadian Northern Railway Company's books and final estimates of May, 1916.

—	Total.		Difference.	Per Mile.		Difference.	Per cent.
	Commission of Inquiry.	Department Railways and Canals.		Commission of Inquiry.	Department Railways and Canals.		
	$	$	$	$	$	$	
Basic cost	31,875,930	33,284,810	−1,629,880	35,615	37,190	−1,575	−4
Contingencies	1,916,505	382,054		2,141	427		
Subtotal No. 1	33,792,435	33,666,864	+ 125,571	37,756	37,617	+ 139	+4/10
Engineering	2,031,495	2,380,973		2,270	2,660		
Subtotal No. 2	35,823,930	36,047,837	− 223,907	40,026	40,277	− 251	−6/10
Maintenance and deferred Construction	896,790	As me none		1,002	....		
Subtotal No. 3	36,720,620	36,047,837	+ 672,783	41,028	40,277	+ 751	+ 2
Interest during construction	3,442,380	3,254,143		3,846	3,635		
Subtotal No. 4	40,163,000	39,301,980	+ 861,020	44,874	43,912	+ 962	+ 2
Other overhead charges	2,391,678	248,375		2,672	277		
Grand total	42,554,678	39,550,356	+3,004,323	47,546	44,189	+3,357	+ 8

Contingencies—Commission of Inquiry gives 6% on basic cost, less land; Department Railways and Canals' item consists of difference between total ledger cost and cost computed on unit price basis.

Interest during Construction—Commission of Inquiry give 9% (1½ year period at 6%) on Subtotal No. 3 plus legal and Administration Expenses. Department Railways and Canals give ledger cost.

Engineering—Commission of Inquiry gives 6% on Subtotal No. 1, less land; Department of Railways and Canals give ledger cost of same.

Maintenance—during and Deferred Construction—Commission of Inquiry give: Maintenance during Construction, ... $ 250
Solidification and Adaptation, $200 plus 1/30 grading cost 752

Per mile.......... $1,002

Department Railways and Canals do not include anything for this item.

Other Overhead Charges—
Commission of Inquiry include—Legal Expenses 1% on Subtotal No. 1.
Administration 1% on " No. 1 plus Legal Expenses.
Taxes 1% on basic cost.
Commission 3% on Subtotal No. 4.

CANADIAN NORTHERN RAILWAY SYSTEM—CANADIAN NORTHERN ONTARIO RAILWAY.

Rideau Junction—Current, 895 Miles.

Comparison of estimate made by the Commission of Inquiry from field inspection with statement by the Canadian Northern Railway Valuation Summary Sheet of December 30, 1916.

—	Commission of Inquiry.	Canadian Northern Railway.		
		Gross.	Deduction	Adjusted.
	$	$	$	$
Rideau Junction—Pembroke..........	....	4,655,010	....	
Deduct cost of road..........	....	....	184,199	
Deduct discount..........	....	....	262,228	4,208,583
Pembroke—Capreol..........	....	12,394,001	....	
Deduct cost of road..........	....	....	498,937	
Deduct discount..........	....	....	710,295	11,184,769
Capreol—Ruel..........	....	2,042,678	....	
Deduct cost of road..........	....	....	116,562	
Deduct discount..........	....	....	165,939	1,760,177
Ruel—Current..........	....	28,102,045	....	
Deduct cost of road..........	....	....	1,158,720	
Deduct discount..........	....	....	1,738,673	25,204,652
	42,554,678	47,193,734	4,835,553	42,358,181

2. Subsequently to this comparison, the Canadian Northern Railway Company submitted its statement of cost of this line. This statement contained two items which we threw out, namely "discount" and "cost of road." The first was probably discount on bonds, which, as above explained, I do not consider a fair charge in a valuation; and the second item, stock given to contractors, which should not be included.

Deducting these two items, our total cost of reproduction was $42,554,678, while that of the company was $42,358,181, a truly remarkable agreement. These results are as shown above.

RESULTS.

1. CANADIAN NORTHERN RAILWAY SYSTEM.

The results of this work for the Canadian Northern Railway System are given in the following tables: Table 1 gives a summary of the various lines in operation and under construction and all other items which have been included in our estimate of the cost of reproducing the property, all being physical elements. Tables 2 and 3 show these results more in detail, with reference to each division or branch of the Canadian Northern Railway System:

TABLE 1.—Estimated cost of reproduction.

Lines in Operation.	Total.		C.N.R. Proportion Based on per cent of Stock Owned.		Total.	
	New.	Less Depreciation.	New	Less Depreciation.	Land.	Interest.
	$	$	$	$	$	$
*Halifax & S.W.	6,614,976	5,298,176	6,614,976	5,298,176	+223,821	549,291
Que. & L. St. J.	11,319,589	9,796,240	10,017,836	8,669,672	1,666,002	364,881
C.N. Sys. Term.	543,986	543,986	543,986	543,986	543,986	
C.N. Que. Ry.	16,212,912	14,608,730	9,679,161	8,771,414	2,929,358	1,171,227
C.N. Ont. Ry.	71,118,221	64,713,421	71,118,221	64,713,421	4,068,944	5,573,557
B., W. & N.W. Ry.	754,105	579,038	754,105	579,038	45,414	28,681
Bay of Quinte Ry.	1,199,540	970,518	1,199,540	970,518	42,317	45,052
Cent. Ont. Ry.	3,197,672	2,524,159	3,197,672	2,524,159	143,848	120,688
I., B. & Ottawa Ry.	839,173	636,990	839,173	636,990	11,037	31,163
Duluth, Win. & Pac. Ry.	8,092,168	6,880,366	4,127,006	3,608,969	1,860,797	280,294
Niag., St. C. & Tor. Ry.	3,088,825	2,749,740	3,088,825	2,749,740	358,864	114,439
C.N. Ry.	142,822,453	122,264,278	142,822,453	122,264,278	26,384,310	7,999,120
N.P. & Man. Ry.	13,232,353	11,619,723	13,232,353	11,619,723	5,849,814	469,452
C.N. Sask Ry.	1,064,400	867,116	1,064,400	867,116	170,405	40,627
C.N. West. Ry.	8,333,919	7,644,723	8,333,919	7,644,723	139,771	312,554
C.N. Alberta Ry.	12,685,999	11,979,112	12,685,999	11,979,112	174,919	1,045,375
C.N. Pacific Ry.	45,976,455	44,681,158	45,976,455	44,681,158	1,195,844	3,800,890
Total lines in operation.	347,096,746	308,357,474	335,296,080	298,122,193	45,809,451	21,947,291
Lines Under Construction.						
Que. & L. St. John.	344,937	344,937	305,269	305,269	41,648	13,701
C.N. Que. Ry.	150,417	150,417	89,799	89,799	3,340	5,702
C.N. Ont. Ry.	17,298,640	17,298,640	17,298,640	17,298,640	9,100,055	835,784
C.N. Ry.	1,252,946	1,252,946	1,252,946	1,252,946	170,465	44,979
C.N. West. Ry.	2,891,878	2,891,878	2,891,878	2,891,878	622,716	103,680
C.N. Sask. Ry.	116,653	116,653	116,653	116,653	37,925	5,037
C.N. Pac. Ry.	19,229,110	19,229,110	19,229,110	19,229,110	11,402,908	1,882,611
Various Loc. Surveys	71,954	71,954	71,954	71,954	....	
Total lines under construction.	41,356,535	41,356,535	41,256,249	41,256,249	21,379,057	2,891,494
Total railroad lines	388,453,281	349,714,009	376,552,329	339,378,442	67,188,508	24,838,785
Hotels and lands	62,068	53,604	54,930	47,440	....	....
	1,436,625	1,260,261	1,436,625	1,260,261	329,350	....
Elevators	2,955,000	2,680,000	2,955,000	2,680,000	205,000	....
Material on hand	2,452,618	2,452,618	2,452,618	2,452,618	....	....
Industrial spurs	1,751,392	1,050,835	1,751,392	1,050,835	....	....
Canadian Northern Express Co. and Transfer Co.	330,579	198,347	330,579	198,347	....	....
	8,988,282	7,695,665	8,981,144	7,689,501	534,350	....
Grand total	397,441,563	357,409,674	385,533,473	347,067,943	67,722,858	24,838,785

*Figures given by Railway Company as shown on letter from Mr. Mitchell, 9th March, 1917, copy of which is attached.

CANADIAN NORTHERN RAILWAY SYSTEM.

OTTAWA, Ont., March 9, 1917.

W. H. CHADBOURN, Esq.,
Commission of Inquiry into
Transportation and Railways,
Citizen Building, Ottawa Ont.

DEAR SIR,—With respect to the Halifax and South Western Railway, I attach herewith a statement showing the cost of these lines to the company.

The Halifax and South Western Railway was built under agreement with the Nova Scotia Government, by which they advanced $13,500 per mile of railway, the company giving to the Provincial Government a mortgage over the railway for the amount advanced and for interest on advances during construction. The agreement with the Government provided that the mortgage would be cancelled by payment of $10,300 per mile; in other words, leaving the company a cash subsidy at the rate of $3,200 per mile. In 1912 the company arranged with the Government for a new mortgage, under which the total advances of the Government, plus accrued interest, less $3,200 per mile cash subsidy, were retired by the issue of new 3½ per cent bonds of the company, amounting to $4,447,000.

In addition to the above, the company received from the Dominion Government cash subsidy of $1,364,210.93, and expended this, together with a further amount of $641,231 on the construction of the lines, the total expenditure being as shown on the statement enclosed.

The statements of cost already submitted will furnish you with details of the expenditure.

Yours truly,

A. J. MITCHELL,
Assistant to Vice-President

	Miles.
Halifax and Mahone	68.10
Lunenburg to Middleton	71.00
Middleton to Port Wade	39.40
Caledonia Branch	22.10
Bridgewater to Barrington	117.50
Barrington to Yarmouth	50.10
Liverpool to Milton	4.98
Torbrook Branch	4.16
	377.34

Total cost of construction of lines		$ 6,452,441 43
Betterments, etc.		162,534 28
Cost of road, stock	$ 1,500,000 00	
Less cash subsidy	1,364,210 93	
		$ 135,789 07
Interest (operating, capitalized)		212,915 37
		$ 6,963,680 15

NOTE.—Under agreement with Nova Scotia Government, interest to amount of $878,141.80 was offset by $823,200, provincial subsidy (257.25 miles at $3,200 per mile), and balance capitalized.

TABLE 2.—Lines in Operation—Canadian Northern Railway.

Item.	M. L. Mileage.	Total M. L. Mileage.	Estimated Cost Reproduction.	C.N.R. System Proportion.	C.N.R. Proportion less Depreciation.
			$	$	$
Halifax and Southwestern Ry.—					
100% stock owned by C.N.R. System	368·20	368·20	6,614,976	6,614,976	5,298,176
Land $223,821					
Interest 549,291					
Quebec and Lake St. John Ry.—					
88·5% stock owned by C.N.R. System—					
Quebec—Chicoutimi	227·00	....	9,387,974	....	
La Tuque Branch	39·00	....	1,415,942	....	
Chamboad—Roberval	12·30	....	374,575	....	
Valcartier—Clarke	5·40	....	118,330	....	
Hotel Junction—Lake St. Joseph	0·69	....	22,768	....	
		284·89	11,319,589	10,017,836	8,669,672
Land $1,666,002					
Interest 364,881					
*Canadian Northern System Terminals, Limited—					
100% stock owned by C.N.R. System—					
In Quebec and Montreal	....	....	543,986	543,986	543,986
Land .... $ 543,986					
Canadian Northern Quebec Railway—					
59·7% stock owned by C.N.R. System—					
Quebec—Montreal	176·07	....	10,731,448	....	
Rinfret—Huberdeau	45·28	....	1,216,517	....	
Garneau Junction—Riv. a Pierre	39·84	....	859,514	....	
Montmorency Branch	7·22	....	134,516	....	
Aldred Junction—Shawinigan Falls	3·80	....	152,127	....	
Paradis Junction—Rawdon	15·88	....	452,557	....	
Joliette—Hawkesbury	67·90	....	2,666,232	....	
		355·99	16,212,912	9,679,161	8,771,414
Land $2,929,358					
Interest 1,171,227					
Canadian Northern Ontario Ry.—					
100% stock owned by C.N.R. System—					
Todmorden—Capreol	270·40	....	10,409,965	....	
Rideau Junction—Capreol	302·00	....	15,713,729	....	
Capreol—Current	593·00	....	26,840,949	....	
Hawkesbury—Hurdman	56·52	....	1,789,570	....	
Todmorden—Ottawa	251·00	....	12,703,278	....	
Branches	30·71	....	1,341,558	....	
Toronto Terminals	4·24	....	2,319,172	....	
		1,507·87	71,118,221	71,118,221	64,713,421
Land $4,068,944					
Interest 5,573,557					
Brockville, Westport and N.W. Ry.—					
100% stock owned by C.N.R. System	44·40	44·40	754,105	754,105	579,038
Land .... $ 45,414					
Interest 28,681					
Bay of Quinte Ry.—					
100% stock owned by C.N.R. System—	54·50	54·50	1,199,540	1,199,540	970,518
Land .... $ 42,317					
Interest 45,052					
Central Ontario Ry.—					
100% stock owned by C.N.R. System—					
Picton—Trenton	30·30	....	510,596	....	
Trenton—Wallace	122·30	....	2,477,041	....	
Branches	14·40	....	210,035	....	
		167·00	3,197,672	3,197,672	2,524,159
Land $143,848					
Interest 120,688					

*All other properties of this company are shown under lines where located.

TABLE 2.—Lines in Operation—Canadian Northern Railway—*Continued.*

Item.	M. L. Mileage.	Total M. L. Mileage.	Estimated Cost Reproduction.	C.N.R. System Proportion.	C.N.R. Proportion less Depreciation.
			$	$	$
Irondale, Bancroft and Ottawa Ry—					
100% stock owned by C.N.R. System	51·90	51·90	839,173	839,173	636,990
Land.....$ 11,037					
Interest..... 31,163					
Niagara, St. Catharines and Toronto Ry.—					
100% stock owned by C.N.R. System	61·61	61·61	3,088,825	3,088,825	2,749,740
Land.....$358,864					
Interest..... 114,439					
Duluth, Winnipeg and Pacific Ry.—					
51% stock owned by C.N.R. System—					
Duluth Junction—Ranier	1·55		131,595		
Ranier—Virginia	97·58		2,997,480		
Virginia—Duluth	71·43		3,763,374		
Terminal properties			1,199,719		
		170·56	8,092,168	4,127,006	3,608,969
Land.....$1,860,797					
Interest..... 280,294					
Canadian Northern Ry.—					
100% stock owned by C.N.R. System—					
Port Arthur—St. Boniface	436·50		17,070,103		
Winnipeg Terminals			13,737,973		
Beaver—Edmonton	748·34		20,702,003		
Saskatoon—Munson	302·50		6,692,753		
Munson—Calgary	97·00		4,995,011		
Regina—East Prince Albert	249·59		11,121,981		
Edmonton Yards	5·80		5,784,197		
				80,104,021	71,266,296
Twin City Junction—North Lake	59·15		1,050,027		
Stanley Junction—Kakabeka	3·94		122,791		
Emerson Junction—South Junction	72·69		1,377,760		
Paddington Junction—Victoria Beach	72·88		1,363,535		
Transcona—Dundee	4·02		62,606		
Carman Junction—Somerset	78·67		1,731,383		
Cardinal—N.D. de Lourdes	2·63		39,816		
St. James—Gypsumville	158·01		3,060,276		
Greenway—Deloraine	80·18		1,539,987		
Grosse Isle—Hodgson	80·98		1,264,406		
Steep Rock Junction—Steep Rock	12·36		186,615		
Arizona Junction—C.N. Junction	297·09		6,967,825		
Craven Northeasterly	6·00		73,570		
Carberry Junction—Brandon Junction	22·85		380,394		
Hartney—Virden	37·27		687,091		
Maryfield—Bengough	184·35		4,000,465		
Luxton—Estevan	25·08		389,831		
Moosejaw Junction—Moosejaw	85·67		2,227,374		
Gravelbourg Junction—Gravelbourg	79·25		1,837,445		
Oakland—Amaranth	44·18		653,678		
Neepawa Junction—McCreary Junction	70·41		1,352,384		
Hallboro—Beulah	75·43		1,514,350		
Ochre River—End of Steel	14·90		234,186		
Rossburn Junction—Ross Junction	190·57		3,808,420		
North Junction—Prince Albert	360·59		6,774,463		
Sifton Junction—Winnipegosis	21·06		306,701		
Thunderhill—Preeceville	72·90		1,408,348		
Hudson Bay Junction—The Pas	88·06		1,594,492		
Melfort—St. Brieux	21·91		366·223		
Sturgis Junction—Canora	21·44		371,218		
Delisle—Dunblane	59·67		1,167,225		
Elrose Junction—M.P. 76·28	76·28		1,637,332		
Dalmeny—Carlton	36·80		535,376		
Prince Albert—Denholm	116·55		2,877,563		
Shellbrook—Big River	56·97		948,129		

TABLE 2.—Lines in Operation—Canadian Northern Railway—*Concluded.*

Item.	M. L. Mileage.	Total M. L. Mileage.	Estimated Cost Reproduction.	C.N.R. System Proportion.	C.N.R. Proportion Less Depreciation.
			$	$	$
C.N.R.—*Continued.*					
N. Battleford—Turtleford	56·74		969,859		
Battleford Junction—Battleford	7·91		181,533		
Vegreville—Munson Junction	161·30		3,470,897		
Edmonton Terminal Ry	9·20		951,293		
Camrose Junction—Terminal Junction	45·80		924,944		
Edmonton—Stony Plains	20·10		445,339		
St. Albert—Athabaska	86·30		1,861,282		
		4,917·87	62,718,432	62,718,432	50,997,982
Land .... $ 26,384,310					
Interest 7,999,120					
Northern Pacific and Manitoba Ry.—*999 Year Lease*—					
Winnipeg Terminals	3·73		4,569,233		
Winnipeg—Beaver	73·08		2,270,436	6,839,669	6,468,223
Portage Junction—Emerson Junction	62·81		1,641,406		
Morris—Brandon	145·70		3,568,825		
Hartney Junction—Hartney	50·45		929,955		
Delta Junction—Delta	15·05		252,498		
Land $5,849,814		350·82		6,392,684	5,151,500
Interest 469,452					
Canadian Northern Saskatchewan Ry.—*100% stock owned by C.N.R. System*—					
Wroxton—Willowbrook	41·37		878,124		
Mile 76·28—Eston	8·66		186,276		
Land .... $ 170,405		50·03		1,064,400	867,116
Interest 40,627					
Canadian Northern Western Ry.—*100% stock owned by C.N.R. System.*—					
Brazeau Subdivision	170·23		6,140,237		
Peace River Subdivision	33·00		1,055,598		
Alliance Subdivision	60·00		1,138,084	8,333,919	7,644,723
Land .... $ 139,771		263·23			
Interest 312,554					
Canadian Northern Alberta Ry.—*100% stock owned by C.N.R. System*—					
Edmonton Junction—Tollerton	135·00		6,055,511		
Tollerton—Yellowhead Pass	123·90		6,630,488		
Land .... $ 174,919		258·90		12,685,999	11,979,112
Interest 1,045,375					
Canadian Northern Pacific Ry.—*100% stock owned by C.N.R. System*—					
Yellowhead Pass—Lucerne	5·00		394,318		
Lucerne—Blue River	110·70		9,833,956		
Blue River—Kamloops	139·40		8,283,329		
Kamloops—Boston Bar	125·50		16,361,610		
Boston Bar—Port Mann	118·23		11,041,399		
Okanagan Branch	3·12		61,843		
Land $1,195,844		501·95		45,976,455	44,681,158
Interest 3,800,890					
Total		9,409·72		335,296,080	298,122,193
Total land .... $ 45,809,451					
Total interest .... $ 21,947,291					

TABLE 3.—Lines under Construction—Canadian Northern Railway System.

Item.		Estimated Cost Repro-duction.	C.N.R. System Proportion.
		$	$
Quebec and Lake St. John Railway—			
88·5% stock owned by C.N.R. System—			
Roberval—Dufferin		214,740	
Loretteville—Stoneham		130,197	
		344,937	305,269
Land	$ 41,648		
Interest	13,701		
Canadian Northern Quebec Railway—			
59·7% stock owned by C.N.R. System—			
Arundel—China Clay		150,417	89,799
Land	$ 3,340		
Interest	5,702		
Canadian Northern Ontario Railway—			
100% stock owned by C.N.R. System—			
Montreal—Grenville Junction		13,623,141	
Duncan—Leaside and North Toronto Terminals		2,069,378	
Longue Pointe—Tunnel Junction		66,121	
Toronto, Niagara and Western		1,540,000	
		17,298,640	17,298,640
Land	$ 9,100,055		
Interest	835,784		
Canadian Northern Railway—			
100% stock owned by C.N.R. System—			
Calgary—McLeod		533,102	
McLeod—Pincher Creek		228,488	
Winnipeg Cutoff		75,373	
Dundee North Easterly		51,349	
Carlton North		6,142	
Preeceville West		151,500	
Turtleford North		30,031	
Vonda Northeasterly		136,496	
Craven Northeasterly		24,259	
Gravelbourg Westerly		16,206	
		1,252,946	1,252,946
Land	$ 170,465		
Interest	44,979		
Canadian Northern Western Railway—			
100% stock owned by C.N.R. System—			
Lacombe Spur		83,105	
Strathcona Southerly		300,681	
Oliver—St. Paul des Metis		612,820	
Red Deer Spur		469,097	
Alliance Southerly		8,480	
Peace River Subdivision		865,143	
Medicine Hat—Hanna		520,401	
Bruderheim East		32,151	
		2,891,878	2,891,878
Land	$ 622,716		
Interest	103,680		
Canadian Northern Saskatchewan Railway—			
100% stock owned by C.N.R. System—			
Willowbrook West		15,462	
Easton Westerly		101,191	
		116,653	116,653
Land	$ 37,925		
Interest	5,037		

TABLE 3.—Lines under Construction—Canadian Northern Railway System—*Con.*

Item.	Estimated Cost Reproduction.	C.N.R. System Proportion.
	$	$
Canadian Northern Pacific Railway—		
100% stock owned by C.N.R. System—		
Special Vancouver Terminals	9,200,000	
Vancouver Island Branch	5,729,766	
Okanagan Branch	693,801	
Lulu Island Branch	2,105,097	
Patricia Bay Branch	1,259,807	
Real Estate not included elsewhere	240,639	
	19,229,110	19,229,110
Land .... $ 11,402,908		
Interest 1,882,611		
Various Location Surveys (New Lines)		71,954
		41,256,249
Total		
Land (Total) .... $ 21,379,057		
Interest (total) 2,891,494		

TABLE 3a.—Canadian Northern Railway.

Item.		Estimated Cost Reproduction.	C.N.R. System Proportion.	C.N.R. Proportion less depreciation.
		$	$	$
Hotel Properties—				
Hotel Lake St. Joseph—				
88·5% stock owned by C.N.R. System		62,068	54,930	47,440
Bala Park and Lake Joseph Hotels—				
100% stock owned by C.N.R. System		35,205	35,205	26,405
Prince Arthur and Prince Edward Hotels—				
100% stock owned by C.N.R. System		1,401,420	1,401,420	1,233,856
Land	$ 329,350			
Terminal Elevators of Port Arthur—				
100% stock owned by C.N.R. System		2,955,000	2,955,000	2,680,000
Land	$ 205,000	4,453,693	4,446,555	3,987,701
Material on hand			2,452,618	2,452,618
Industrial Spurs—				
478 miles at $3,574 per mile		1,708,372		
478 switches and frogs at $90		43,020		
		1,751,392	1,751,392	1,050,835
Canadian Northern Express Co. and Trans. Co.—				
100% stock owned by C.N.R. System			330,579	197,347
Total land	$ 534,350			
Total			8,981,144	7,688,501

Lines, the capital stock of which is not owned entirely by the Canadian Northern Railway Company.—The Canadian Northern System comprises several companies, the control of which has been acquired by the Canadian Northern Railway by the control of the majority of the stock. The percentage of stock owned is stated in each case in tables 2 and 3. There is some doubt as to how the values should be treated in cases where the entire stock is not owned by the operating company, and I have, therefore, given in each of these cases the cost of reproduction new, and the depreciation of the entire property, and also a percentage of these figures equal to the percentage of stock owned by the Canadian Northern Railway. I desire to call your special attention to this because your purposes may require a different treatment of these cases. The lines in question have bonds outstanding, and they may also have a floating debt, or short term notes outstanding. All these obligations would, of course, stand first against the assets, and any balance of assets above these obligations would represent the stock equity, and if such balances were divided in proportion to stock ownership, would give the value of the equity represented by the Canadian Northern stock ownership. The value of this equity, however, may not be of any importance to your Commission; and on the other hand, it may fairly be argued that the entire value of the property should be divided in proportion to stock ownership in estimating the physical assets of the Canadian Northern. The equity represented by the stock in one of these roads might be worth nothing; yet in such case, if the Canadian Northern Company owned the entire stock, it would own the entire company, and the entire physical value of that company would be represented among its assets. If it owned 99 per cent of the capital stock, and this stock were worthless, because the bonded indebtedness and the floating debt exceeded the value of the property, it would certainly not be fair to include none of the physical property of the line among the assets of the Canadian Northern. On the whole, the fairest view in general would seem to be that assets and liabilities should all be divided in proportion to stock ownership.

Leased Lines.—The Northern Pacific and Manitoba Railway is merely a line which is leased by the Canadian Northern Company, but the lease is for 999 years. The rental paid is understood to be in the neighbourhood of $200,000 per year, being the interest on outstanding bonds. The original line, therefore, when leased, represented no capital investment of the Canadian Northern, but merely a contingent liability for payment of the rent. The question is, whether the physical value of this line would be included in the physical value of the Canadian Northern System.

This physical valuation includes, I understand considerable property representing sums of money which have been expended by the Canadian Northern on the line since it was leased. A 999 year lease is practically ownership, since the sum of one cent placed at compound interest to-day would in 999 years, much more than equal the present value of the line, or probably its value at that time. Such a lease is therefore practically ownership, and at all events should be treated so, as regards the expenditure of money for improvements. Notwithstanding the fact therefore, that the rental paid would represent the interest on a smaller sum than the physical value of the line, I have included such physical value in the tables just as though the property were owned by the Canadian Northern. If your Commission desires to omit it, it can be subtracted from the total.

Leases.—I understand that the Canadian Northern Company has made some contracts, either as lessee or lessor, for joint use of certain properties, with other lines, as for joint use of tracks or buildings. In the present valuation, no attempt has been made to place a value upon contracts, although they may have a very decided value. It was assumed that such values, which may be called intangible, were not desired in the valuation of the physical property.

Lines Under Construction.—The tables show considerable sums representing the value of lines partially constructed or surveyed. Some of this property may never be put into operation; at least, some of the surveys may never lead to the construction of the contemplated lines, and may thus represent abandoned property. I believe that it is generally proper in railroad valuations not to include abandoned property; although

I am very well aware that in questions of rates or capital, there are strong arguments in favour of including such property in some instances, and I personally believe that in such instances, it should be included.

Nevertheless in the present valuation, no such property, has to my knowledge, been included in the figures given.

Hotels.—The estimate includes only three hotels. The value of these has been estimated as accurately as the circumstances would permit, together with the land on which they stand. In one case, the hotel stands on railroad right of way which has been elsewhere included.

Material on hand.—The company has furnished an inventory of materials on hand and its value. It was, of course, impossible to check this. Certain items, however, have been excluded because they were considered as improper items in a physical valuation, and as belonging rather to maintenance expenditures. Approved items have been given the values on the inventory.

Working Capital and Cash on hand.—In an estimate of physical valuation on the cost of reproduction basis, it is usual to add to the value of physical elements a certain sum for working capital, for the reason that a company beginning operations with only the physical elements in its possession, and no working capital, would be unable to do business. For this reason, the addition of a certain sum for working capital has been frequently approved by courts and commissions.

Cash on hand, is, of course, a physical asset.

Your attention is called to these two matters for the reason that neither have been included in the present valuation, and it may be desirable for you to inquire as to the cash on hand and to take account of it as well as of a proper allowance for working capital, in whatever use you may wish to make of the results of this valuation.

Steamers.—Nothing has been included in this valuation for steamers, for I am informed that all assets under this item have been converted into cash.

Industrial Spurs.—The Canadian Northern Railway Company, like other companies, has connected with its lines a considerable mileage of industrial spur tracks leading to factories, coal yards and other private property. I understand that such sidings are originally built at the expense of the private party desiring them, and that the expense, in some cases at least, is gradually returned to such owners in the way of rebates on freight received or shipped, so that in the course of time, if the individual is successful in his business, and the spur track is justified as an investment by the railway company, it will ultimately be owned by said company.

I understand that in other cases the railroad company pays for the rails only on such spur tracks, the individual requesting such tracks paying all other expenses.

Time did not permit of a careful examination into the value to the railway company represented by such tracks. To ascertain this would have required an examination into the status of every individual spur, and would therefore, have required the services of our whole force for a much longer time than the entire time which we had at our disposal.

In this valuation, the value of such spur tracks has been given as the value of the rail alone, assuming a probable weight in cases where the actual weight was not known.

The following comparison of our results with cost claimed by the company is of interest:—

Company's statement of cost..			$ 494,112,489
" " additional terminal and other properties..			5,922,946
			$ 500,035,435
Deduct—			
Capital stock..	$ 105,000,000		
Less cash subsidies..	28,000,000		
Cost of land, approximate..		$ 77,000,000	
Interest..		34,022,946	
Discount..		31,533,200	
Canadian Northern Steamships..		20,822,000	
For industrial spurs, which Commission report allows for metal only but which Company includes as Company track—excess..		2,300,000	
		2,957,289	
			$ 168,635,435
C.N.R. cost, minus items above..			$ 331,400,000
Commission, estimated cost of reproduction (not cost)..			$ 397,441,563
Deduct—			
N.P. and Manitoba Ry. (leased line) Excess of appraisal over expenditure since lease..		$ 4,960,000	
Reproduction cost of land (except N.P. and M. land which has been deducted above..			
Materials and supplies..		62,549,445	
Interest..	$ 24,839,000	2,452,618	
Minus Int. N.P. and M..	469,500		
		$ 24,369,500	
			$ 94,331,563
Add equipment..			$ 303,110,000
			56,590,000
Commission of Inquiry..			$ 359,700,000
C. N. R. System..			331,400,000
Difference..			$ 28,300,000

This last figure is about $28,000,000 above the corresponding figure for the company. The company's statement of cost, however, includes amounts paid for branch lines purchased, which amounts may have little or no relation to the original cost or to the cost of reproducing said lines. Moreover, the company does not own the entire capital stock of some of the lines which it controls.

These facts render any comparisons between our figures and their statement of total cost, of little or no value. There may be a great difference between the cost of a railroad and the cost of reproducing it. However, this comparison, such as it is, indicates, if it indicates any thing, that our estimate is a liberal and fair one, and cannot be justly criticised as being too low, on the whole.

DEPRECIATION.

The examination of the various properties made by our forces was not in sufficient detail to enable the depreciation of the various elements to be estimated with any degree of accuracy. It was not at first contemplated that depreciation would be taken account of. However, at the request of the Commission, our field engineers have estimated the depreciation of the various items and the various lines as accurately as possible under the circumstances, on the basis of their observations and notes. Information was not at hand with reference to the age of the various elements of value, so that the depreciation could not be estimated on the basis of the proportion of useful life elapsed. Such a method, however, is not necessarily the correct one. There is much uncertainty with reference to the average life of the various elements in the property, and age tables should be employed with great caution. All that our engineers could do was to estimate, to the best of their judgment, the average depreciation of the various elements, based upon their general observations. It is, however, only a rough approximation.

In order that there may be no misunderstanding in the minds of those who read this report, it may be well to discuss briefly the bearing which depreciation may have upon the valuation of the property.

When an investment is made in the construction of a railroad, assuming that the funds have been provided and invested properly, the physical property is represented by a definite amount of capital carried on the books under the title "Cost of Road." The actual amount of capital issued may be considerably greater than this, for various reasons, such as discount on securities issued which is to be amortized, stock bonus which may have been properly given away with bonds, etc.

The road, however, immediately begins to depreciate. Certain parts of it indeed have depreciated before the entire line is open. Ties, rails and bridges gradually wear out, and in the course of a few years, even before any renewals may have become necessary, a considerable depreciation may have occurred. This depreciation is an operating liability of the company; in other words, the company must replace worn out items, paying out of earnings for such replacement in kind, or to the extent of the original cost, and capitalizing any excess when a worn out unit is replaced by a new unit of greater size, capacity or cost.

In the case of a railway company which has a great multiplicity of units, and a great number of units under each heading, that is to say, millions of ties, thousands of bridges, hundreds of locomotives and cars, thousands of tons of steel rail, the cost of renewals will generally settle down after a few years to a nearly uniform annual charge. For instance, if the life of a tie is eight years, this means in practice that each year about one-eighth of the total number of ties in the road will have to be renewed. It may be approximately the same with the other elements of value; but whether it is or not, the company must make replacements in kind out of earnings, and earnings should be sufficient to allow the company to do this besides earning all other expenses and a fair rate of return on the investment. If large amounts of money are suddenly required for replacing large items, the company may be allowed, with the approval of the proper authorities, to issue short term notes or bonds, to provide the necessary funds for such replacements, with the requirement that such notes or bonds shall be gradually amortized by means of a fund which is added to yearly out of earnings, to such extent that said fund may be large enough to pay the notes or bonds when due. Such a transaction does not alter the principle that renewals in kind must be paid for out of earnings.

The conclusion to be drawn from these considerations, as it seems to me, is that, if a physical valuation is used as a basis of rates, or capitalization, or condemnation, no depreciation should be deducted from such figure as may be finally determined to be the true value *new*, unless depreciation has not been properly provided for by renewals; in other words, unless the company has failed to maintain the property in reasonably good operating condition, making necessary renewals when required.

If the property has been adequately maintained, it is as valuable for operating purposes as if it were new. A fixed amount of capital went into it, and that capital was entitled to earn a fair rate above a sufficient amount to pay operating expenses, fixed charges, taxes and depreciation. If, subsequent to the original construction, a valuation is made and the true value of the property is determined, there is no logical reason for deducting depreciation, unless excessive dividends have been paid and undue depreciation allowed. The entire original capital, properly invested, as the fair present value, is entitled to earn its fair return just as it was originally.

Suppose, for instance, that a public service corporation for which business is ready and waiting, issues and expends the sum of $1,000,000 for its property and that the elements of physical value are such that no large renewals will be required at any one time, but that the maintenance of the property required a tolerably uniform annual expenditure; in such case there will be no necessity for the accumulation of a so-called depreciation fund. Necessary renewals are paid for yearly as they occur, yet in the course of few years time, the depreciation of the physical property may amount to say 25 per cent. Is there any reason in this fact for the claim that the company is over-capitalized or that it should be allowed to earn a fair return on only $750,000, or that if taken by condemnation only the sum of $750,000 should be paid for it? It is true that if the public should take over the property it would be taking physical elements whose actual value would be only $750,000, but the public would take over the property subject to the necessity of making repairs and renewals when needed; and as an operating concern, the property would be worth the original investment of $1,000,000 which had been legitimately expended on its construction, or whatever might be its subsequent value new. If the owners were only paid $750,000, and if since its construction the stockholders had received only fair dividends upon their original legitimate investment, and the property had been adequately maintained, it would clearly be unfair to take their property and pay them only $750,000, or to decide that their corporation was over-capitalized or to allow them thereafter to earn a fair return upon only $750,000.

The case would be very different if the stockholders had received excessive dividends, or if the property had been inadequately maintained, and necessary renewals neglected in order to pay such excessive dividends. In such cases, it would be proper to deduct from the true value new a portion or the whole of the accrued depreciation.

If the property of the concern is of such a character that renewals require the expenditure of large sums at the expiration of considerable periods of time, as for instance, in replacing the machinery of a power plant, a steamship, or pipes in city streets, proper management would require that in order to provide for such renewals a depreciation fund should be established and should be added to each year out of earnings to such extent that the fund would be adequate to provide for such renewals when they should become necessary. In this case a valuation of the property would show among the physical assets, the amount of money in this depreciation fund, and if this amount were adequate and were being added to each year upon a plan that would provide for renewals when necessary, the fund should be considered as offsetting all accrued depreciation.

A water company or gas or electric company whose property consists of large units which are not renewed to any large extent prior to total replacement, should establish such a depreciation fund. Railroad companies, however, have rarely established such funds in the past, inasmuch as their expenses for renewals, while varying from year to year, settle down approximately to a fairly uniform annual charge.

It has seemed desirable to express in the above discussion, my views with reference to the matter of depreciation, for the reason that I have always held that in railroad valuation the fair present value of the property, new, should be determined, using as a basis either the original cost *new*, or the cost of reproduction *new*, and that from this sum no depreciation should be deducted in valuations made for rate or capitalization, or condemnation purposes, *unless excessive dividends have been paid and the property has been allowed to depreciate unduly in consequence thereof.*

I may add that it is perfectly clear to my mind that in the case of a railroad property which has only paid reasonable dividends, and which has been adequately maintained in good operating condition, if depreciation is deducted from a valuation of the property new, then thereafter, the operating liability of the company for maintenance should only amount to keeping the property *up to the assumed depreciated condition.* In such case, when a new tie is put into the track, inasmuch as the tie removed has no value, the entire cost of the new tie should be capitalized, or if the condition of all the ties has been assumed as 50 per cent of the value new, then every tie renewed should have half the value of the new tie charged to capital. In other words, the valuation gives each and every item with a depreciated value, depending upon its age and condition; and in renewing that item later, the company should only be obliged to renew it out of earnings up to that identical depreciated value. Such a plan would, in a few years, more or less depending on circumstances, result in allowing an increase of capital precisely equal to the assumed depreciation, since each item when renewed new, would involve an increase of capital equal to its depreciation shown in the valuation and thereafter the operating liability would be for renewal in full. This would bring us back again to the original proposition that no depreciation should be deducted from the value new, although if this result should be reached through the process described, the stockholders, while the adjustment was taking place, would have been penalized by being allowed a fair return, not on their original investment honestly made or the true value new, but on a smaller sum.

One further point should be mentioned. It is often argued that if the value of land, in an estimate of reproduction new, is taken at its present value, then inasmuch as this value has in all probability increased or *appreciated* since the road was built, it is also necessary that elements whose value has decreased or *depreciated,* should have such depreciation deducted. If we allow appreciation of land, it is said, why should we not allow depreciation of rails, ties, bridges, etc.? This proposition however, involves the fallacy that the word "appreciation" when applied to increased value of land is not the converse of depreciation as applied to rail, ties and bridges. Land has appreciated, if it costs more to buy it to-day than it did originally. If rails, ties or bridges cost less to buy to-day than they did originally, then in an estimate of the cost of reproduction, we would take this lesser cost; we would properly allow this depreciation of those elements just as we allow the appreciation of land. But the depreciation of rails, ties and bridges, due *to wear or the action of the elements* is a totally different thing, and that is the sense in which the word is generally used. In other words, a false antithesis between the words "appreciation" and "depreciation" is the fallacy involved in the argument referred to. This fallacy has been the source of much confusion of thought on this particular subject. The above is a general discussion of the subject of depreciation. In the present valuation, which is simply to ascertain the total present normal value of the property, the depreciation stated is the estimated total depreciation. It is an undoubted fact that some parts of the Canadian Northern System have been allowed to depreciate unduly, and to a considerable extent.

DEFICIENCY OF EARNINGS.

If the original cost of a property, as of to-day, is being estimated as a basis for the valuation, it is evident that every element of such cost must be included; not only the first cost when the property was built, but any subsequent cost for additions or improvements or renewals, cases where elements of the property have been renewed on greater size or capacity or at greater cost than their original cost. This is one of the difficulties in the first cost method, since it is frequently difficult and not seldom impossible to tell from the annual accounts what proportion of annual expenditures should be charged to maintenance, and what proportion to improvements or capital. In addition, it is generally recognized that any deficiency below a fair rate of return in any one year on the original cost up to that year which the stockholders have suffered should be added at the end of that year to the cost of the property. In other words, an investor expects to receive, and is entitled to receive, a fair return from the outset. If there is doubt as to whether the property can earn such a rate, then the investor will demand a correspondingly larger inducement, in the way of larger bond interest, greater discount on bonds, a stock bonus, preferred stock bearing a high interest return, or by some other means.

Of course if what is assumed as a fair rate of return is taken high enough, deficiency in earnings ought not to be included in the value; but assuming that a fair rate of return is based upon present conditions and a fairly prosperous concern, it is unquestionably fair to capitalize a deficiency of returns if it has existed at any period during the history of the company. It would be entirely unfair, for instance, in the case of a company, properly financed, and which for many years had never paid a dividend until, during a period of a few years of exceptional prosperity, it managed to pay 5 per cent, to allow it to earn thereafter, only 5 or 6 per cent on its original cost without regard for the many years during which its stockholders received nothing.

Similar considerations apply if the valuation is made on the basis of the cost of reproduction new, except that if the property is reproduced to-day, it must be assumed to find the conditions of to-day awaiting it. If the traffic of to-day is such as to enable the company to earn a fair return on its true value, then no allowances should be made for any deficiency in earnings during the early years, although such deficiency may have actually existed during the early history of the company. To make such allowances would be confusing original cost with cost of reproduction. On the other hand, if conditions to-day do not allow the company to earn a fair return, then an estimate of the cost of reproduction new made to-day should be increased year by year hereafter by the amount of such deficiency, in estimating allowable returns or capital.

This consideration, which is usually neglected in discussions of this subject, affords another justification for estimating real estate at its cost of reproduction at the present time, this being strictly interpreted to mean the amount which the company would be obliged to pay for the property if purchased to-day. It is another instance of the necessity of adhering, in valuation, to one basis or the other, either the original cost, or the cost of reproduction; and another reason for questioning the soundness of the decision of the court in the Minnesota Rate Case.

In the present valuation, therefore, nothing has been allowed for any deficiency in earnings.

Respectfully submitted,

GEORGE F. SWAIN.

II.—GRAND TRUNK PACIFIC.

The method employed in conducting the work with relation to this system was the same as has been already described with reference to the Canadian Northern System, except that for the entire main line of the Grand Trunk Pacific we have used the actual quantities for grading and bridging as approved by the Dominion Government. The Dominion subsidy, however, only covers the main line, and the Dominion Government had not, therefore, approved the estimate of quantities for branch lines. For branch lines, therefore, we used the results of our own inspection, as well as for many items on the main line.

It is convenient to divide the Grand Trunk Pacific into two sections, namely the Prairie Section, including the main line and branches east of Wolf creek, and the Mountain Section west of Wolf creek.

Table I shows in the last column the result of our valuation of the Prairie Division, main line only.

In the first column the cost is given, based on the statement from the company, certified to the Government for the main line.

Table II gives similar information for the Mountain Division.

The first column gives incomplete cost figures as submitted by the railway company, in response to the request of the Commission; the second column gives the result of our valuation.

The third column gives the same as the second, some items being combined in this column.

The fourth column gives the cost based upon figures certified to the Government by the company.

TABLE I.—Grand Trunk Pacific Railway, Prairie Section.—Main Line Only.
Comparison of Valuation and Cost.

Description of Account.	From Government G.T.P. Statement.	Valuation.
	$	$
Right of way and real estate	807,331	3,705,874
Grading and tunnels	7,261,350	8,597,102
Steel bridges on concrete abutments, etc	2,139,385	2,016,192
Trestles and culverts of timber	1,839,805	1,584,571
Ties	2,490,405	2,288,391
Rails, frogs and switches and fastenings	6,528,752	6,071,893
Track-laying	836,250	650,715
Ballasting	2,868,887	2,223,645
Buildings, water stations, etc	2,136,828	2,245,481
Shop machinery and tools	204,661	134,655
Fencing, cattle guards and snow fences	538,379	529,803
Telegraph and telephone lines	436,281	442,958
Equipment and maintenance of sections	2,644,448	248,537
Solidification	....	446,544
Ploughing fire guards	50,709	
Interlocking signal apparatus	81,657	101,406
Crossings and signs	....	68,105
Fuel stations	92,792	152,000
Gas-making machine	87	
Electric light plant	36	
Transportation charges	25	
Construction rolling stock	422,617	
Fuel stock	43,250	
Dining and sleeping car stock	19,104	
Tie stock	85,892	
Lumber stock	695	
Telegraph stock	29,241	
Totals	31,558,867	31,507,872
Contingencies	....	834,060
Legal and engineering expenses	3,460,300	1,950,528
Interest	8,237,476	3,140,401
Remaining overheads	....	1,330,433
	43,256,643	38,763,294
Deduct—		
Telegraph operating profit	186,366	
Operating trains profit	5,466,817	
Road stock	116,565	
Station lumber stock	62,242	
Totals	37,424,653	38,763,294

TABLE II.—Grand Trunk Pacific Railway, Mountain Division—Comparison Statement.

Description of Account.	G.T.P. Cost from Railway.	Valuation.		G.T.P. Cost from Government.
	$	$	$	$
Right of way	282,090	3,140,490	4,675,779	311,344
Real estate		1,535,289		
Grading	46,953,334	41,516,494	43,948,472	48,035,575
Tunnels	2,509,796	2,431,978		
Steel bridges	7,978,000	6,196,646	6,196,646	7,839,246
Bridges, trestles and culverts	2,518,997	2,346,489	2,346,489	2,161,469
Ties	1,206,059	1,461,668	1,461,668	1,453,762
Rail	4,442,016	4,924,480	5,786,868	5,568,379
Frogs and switches	73,028	75,086		
Track fastenings		787,302		
Ballast	1,500,845	1,505,298	1,505,298	3,129,050
Track-laying and surfacing	2,382,611	664,011	664,011	753,750
Fencing	37,119	89,457	89,457	433,172
Crossings and signs	12,005	21,149	21,149	
Telegraph and telephone lines	492,543	394,443	394,443	503,031
Interlocking and signal apparatus				57
Shop machinery	1,110,908	100,500	100,500	100,703
Shops		649,115		
Water stations	380,442	331,090		
Station buildings and fixtures	405,655	470,655	1,884,190	1,811,042
Storage warehouses		32,616		
Miscellaneous structures	110,689	173,206		
Snowsheds	188,481	227,508		
Fuel stations	164,303	210,600	210,600	156,721
Docks and wharves	222,711	130,333	130,333	222,013
Roadway tools		228,465	228,465	1,502,458
Maintenance during construction		813,689	813,689	
Solidification and adaptation				633
Plowing fire guards				36,132
Transfer boats and barges				620,771
Work west of Prince Rupert dock				*2,642,304
Construction rolling stock				913,986
Operating trains loss				17,427
Operating boats and barges loss				748
Dining and sleeping car stock				43,619
Tie stock				12,316
Telegraph stock				13
General stores				
Total	72,971,632	70,458,057	70,458,057	78,269,721
Interest		8,767,204	8,767,204	9,882,672
Legal and engineering expenses		3,946,987	3,946,987	5,355,470
Contingencies		1,315,646	1,315,646	
Remaining overheads		3,569,608	3,569,608	
Total (carried forward)	72,971,632	88,057,502	88,057,502	93,507,863
Deduct—				
Telegraph Operating profit				38,522
Wharfage and warehouse operating profit				67,351
Road stock				38,887
Fuel stock				12,697
Lumber stock				43,222
Net cost	72,971,632	88,057,502	88,057,502	93,307,184

*This total includes the sum of $2,642,304 for "construction rolling stock," which probably represents equipment furnished by the Company to be used in construction. Our estimate includes no such item because the prices that we have assumed have been based upon the contractor furnishing his own equipment, so that our total is properly comparable with that of the company in column 4. Much of this "construction rolling stock" is still on hand, and I understand that Sir Collingwood Schreiber has approved but one-half of the original item, which would amount to crediting the company with this rolling stock at a depreciated value of 50 per cent.

TABLE III.—Grand Trunk Pacific Railway, Prairie Section.

VALUATION SUMMARY.

	Measureable Quantities.		Including Overheads.	
	Amount.	Rate per Mile.	Amount.	Rate per Mile.
	$	$	$	$
Winnipeg—Melville	8,560,389	30,573	10,614,882	37,910
Melville—Biggar	7,604,070	30,674	9,429,047	38,020
Biggar—Edmonton	8,361,861	32,001	10,368,707	39,681
Edmonton—Wolf Creek	3,949,082	33,523	4,896,862	41,569
Total excluding Edmonton	28,475,402	31,390	35,309,498	38,926
Edmonton Terminals	3,032,470	....	3,453,796	
Total	31,507,872	34,287	38,763,294	42,184
Unearned increment on land	2,898,543	....	3,362,698	
Total exclusive of unearned increment on land	28,609,329	31,136	35,400,596	38,527

	Overheads Included.		
	Comm. Statement.	G.T.R. Statement.	Difference.
Grand total, including unearned increment on land	$ 38,763,294	$ 37,424,653	$+1,338,641
Grand total, excluding unearned increment on land	35,400,596	37,424,653	−2,024,057

LAND AND INTEREST SUMMARY.

Subdivision.	Construction.	Land.	Interest on		Remaining Overheads on	
			Construction.	Land.	Construction.	Land.
	$	$	$	$	$	$
Winnipeg—Melville	7,924,409	635,980	792,441	114,476	1,109,417	38,159
Melville—Biggar	7,205,220	398,850	720,522	71,793	1,008,731	23,931
Biggar—Edmonton	7,961,461	400,400	796,146	72,072	1,114,604	24,024
Edmonton—Wolf Creek	3,833,362	115,720	383,338	20,830	536,671	6,943
Total excluding Edmonton Terminals	26,924,452	1,550,950	2,692,445	279,171	3,769,423	93,057
Edmonton Terminals	877,546	2,154,924	39,490	129,295	144,795	107,746
Total including Edmonton Terminals	27,801,998	3,705,874	2,731,935	408,466	3,914,218	200,803
Unearned increment on land	....	2,898,543	....	319,228	....	144,927
Total less unearned increment on land	27,801,998	807,331	2,731,935	89,238	3,914,218	55,876

TABLE III.—Grand Trunk Pacific Railway, Prairie Section—*Concluded.*

	Unearned Increment of Land.			
	Excluded.		Included.	
	$	$	$	$
Total construction	27,801,998		27,801,998	
Total land	807,331		3,705,874	
Construction plus land		28,609,329		31,507,872
Interest on construction	2,731,935		2,731,935	
Interest on land	89,238		408,466	
Interest on construction and land		2,821,173		3,140,401
Remaining overheads on construction	3,914,218		3,914,218	
Remaining overheads on land	55,876		200,803	
Remaining overheads on construction, plus land		3,970,094		4,115,021
Grand Totals	....	35,400,596		38,763,294

TABLE IV.—Grand Trunk Pacific Railway, Mountain Section.

VALUATION SUMMARY.

Subdivision.	Measurable Quantities		Including Overheads.	
	Amount.	Rate per Mile.	Amount.	Rate per Mile.
	$	$	$	$
Wolf Creek—Jasper	6,592,409	58,966	8,309,070	74,321
Jasper—McBride	8,719,668	80,217	10,987,825	101,084
McBride—Prince George	14,611,219	100,146	18,414,206	126,211
Prince George—Endako	8,077,981	70,182	10,181,097	88,455
Endako—Smithers	5,785,111	46,281	7,293,123	58,345
Smithers—Pacific	10,012,541	93,575	12,618,744	117,932
Pacific—Prince Rupert	11,257,891	95,406	14,203,444	120,368
Total excluding Prince Rupert Terminals	65,056,820	78,243	82,007,509	98,626
Prince Rupert Terminals	5,401,237	....	6,049,993	
Total including Prince Rupert Terminals	70,458,057	84,634	88,057,502	105,775
Unearned increment on land	4,364,435	....	4,767,086	
Total exclusive of unearned increment on land	66,093,622	79,392	83,290,416	100,048

TABLE IV.—Grand Trunk Pacific Railway, Mountain Section—*Continued.*

—	Overheads Included
	$
Prince Rupert Terminals, exclusive of land	2,045,495
Prince Rupert Terminals, land	4,004,498
	6,049,993

—	Comm. Estimate.	G.T.P. Estimate.	Difference.
	$	$	$
Grand total, including Prince Rupert Terminals, with their land	88,057,502	93,307,184	− 5,249,682
Grand total, including Prince Rupert Terminals, without their land ($88,057,502−$4,004,498)	84,053,004	93,307,184	− 9,254,180
Grand total, excluding unearned increment on land	83,290,416	93,307,184	−10,016,768

LAND AND INTEREST SUMMARY.

Subdivision.	Construction.	Land.	Interest on		Remaining Overheads on	
			Construction.	Land.	Construction.	Land.
	$	$	$	$	$	$
Wolf Creek—Jasper	6,526,554	65,855	848,452	15,805	848,452	3,952
Jasper—McBride	8,693,568	26,100	1,130,164	6,264	1,130,163	1,566
McBride—Prince George	14,509,441	101,778	1,886,227	24,427	1,886,227	6,106
Prince George—Endako	8,006,961	71,020	1,040,905	17,045	1,040,905	4,261
Endako—Smithers	5,688,056	97,055	739,448	23,293	739,448	5,823
Smithers—Pacific	9,938,971	73,570	1,292,066	17,657	1,292,066	4,414
Pacific—Prince Rupert	10,795,318	462,573	1,403,391	111,017	1,403,391	27,754
Totals excluding Prince Rupert Terminals	64,158,869	897,951	8,340,653	215,508	8,340,652	53,876
Prince Rupert Terminals	1,623,409	3,777,828	211,043	....	211,043	226,670
Totals including Prince Rupert Terminals	65,782,278	4,675,779	8,551,696	215,508	8,551,695	280,546
Unearned increment on land	....	4,364,435	....	140,785	....	261,866
Totals, less unearned increment on land	65,782,278	311,344	8,551,696	74,723	8,551,695	18,680

TABLE IV.— Grand Trunk Pacific Railway, Mountain Section—*Concluded.*

—	Unearned Increment. Excluded.		Unearned Increment. Included.	
	$	$	$	$
Total construction	65,782,278		65,782,278	
Land	311,344		4,675,779	
Construction plus land		66,093,622		70,458,057
Interest on construction	8,551,696		8,551,696	
Interest on land	74,723		215,508	
Interest on construction and land		8,626,419		8,767,204
Remaining overheads on construction	8,551,695		8,551,695	
Remaining overheads on land	18,680		280,546	
Remaining overheads on construction and land		8,570,375		8,832,241
Grand totals		83,290,416		88,057,502

TABLE V.—Grand Trunk Pacific Railway, Prairie Section.

ESTIMATE COMPARISONS.

—	G.T.P. Estimate. Including Land.		G.T.P. Estimate. Without Land.	Comm. of Inquiry Estimate. Including Land.	Comm. of Inquiry Estimate. Without Land.
	$	$	$	$	$
Construction cost		31,558,867	30,751,536	31,507,872	27,801,998
Overheads, less interest		3,460,300	3,460,300	4,115,021	3,914,218
Total, excluding interest		35,019,167	34,211,836	35,622,893	31,716,216
Interest		8,237,476	*8,092,362	3,140,401	2,731,935
Total, including interest and overheads		43,256,643	42,304,198	38,763,294	34,448,151
Deduct—					
Telegraph operating profit	186,366				
Trains operating profit	5,460,817				
Road stock	116,565				
Station lumber stock	62,242				
Total deductions		5,831,990	5,831,990		
Total		37,424,653	36,472,208	38,763,294	34,448,151

*NOTE.—Interest amounts in "Without Land" column "G.T.P. Statement" are not exact, but proportioned.

TABLE VI.—Grand Trunk Pacific Railway, Mountain Section.

ESTIMATE COMPARISONS.

	G.T.P. Estimate.			Comm. of Inquiry Estimate.	
	Including Land.		Without Land.	Including Land.	Without Land.
	$	$	$	$	$
Construction cost		78,269,721	77,958,377	70,458,057	65,782,278
Interest		9,882,672	*9,807,950	8,767,204	8,551,696
Remaining overheads		5,355,470	*5,336,789	8,832,241	8,551,695
Total		93,507,863	93,103,116	88,057,502	82,885,669
Deduct—					
Telegraph operating profit	38,522				
Wharfage and warehouse profit	67,351				
Road stock	38,887				
Fuel stock	12,697				
Lumber stock	43,222				
Total deductions		200,679	200,679		
Net cost		93,307,184	92,902,437	88,057,502	82,885,669

*NOTE.—In the G.T.P. "Without Land" column, the reduced interest and overhead is not exact, but arrived at by deducting, from the known total interest and remaining overheads, 24 per cent and 6 per cent, respectively, on the land deducted.

TABLE VII.—Grand Trunk Pacific Railway.

CONSOLIDATED STATEMENT.

Line.	Mileage.	Construction Items.	Land Cost.	Interest.	Other Overheads.	Reproduction Cost.
	$	$	$	$	$	$
Main Lines—Prairie Section.						
Winnipeg—Melville	280·00	7,924,409	635,980	906,917	1,147,576	10,614,882
Melville—Biggar	248·00	7,205,220	398,850	792,315	1,032,662	9,429,047
Biggar—Edmonton	261·30	7,961,461	400,400	868,218	1,138,628	10,368,707
Edmonton Terminals	11·76	877,546	2,154,924	168,785	252,541	3,453,796
Edmonton—Wolf Creek	117·80	3,833,362	115,720	404,166	543,614	4,896,862
Total Prairie Main Line	918·86	27,801,998	3,705,874	3,140,401	4,115,021	38,763,294
Main Lines—Mountain Section.						
Wolf Creek—Jasper	111·80	6,526,554	65,855	864,257	852,404	8,309,070
Jasper—McBride	108·70	8,693,568	26,100	1,136,428	1,131,729	10,987,825
McBride—Prince George	145·90	14,509,441	101,778	1,910,654	1,892,333	18,414,206
Prince George—Endako	115·10	8,006,961	71,020	1,057,950	1,045,166	10,181,097
Endako—Smithers	125·00	5,688,056	97,055	762,741	745,271	7,293,123
Smithers—Pacific	107·00	9,938,971	73,570	1,309,723	1,296,480	12,618,744
Pacific—Prince Rupert	118·00	10,795,318	462,573	1,514,408	1,431,145	14,203,444
Prince Rupert Terminals	1·00	1,623,409	3,777,828	211,013	437,713	6,049,993
Total Mountain Main Line	832·50	65,782,278	4,675,779	8,767,204	8,832,241	88,057,502

Table VIII.—Grand Trunk Pacific Railway.

CONSOLIDATED STATEMENT.

Line.	Mileage.	Construction Items.	Land Cost.	Interest.	Other Overheads.	Reproduction Cost.
Branch Lines Co.	$	$	$	$	$	$
Harte—Brandon	21·9	194,277	96,511	14,533	32,024	337,345
Melville—Canora	54·6	904,079	59,921	44,279	129,566	1,137,845
Melville—Regina	212·0	4,188,850	1,246,034	263,260	648,740	6,346,884
Regina—Northgate	155·1	2,324,236	145,095	113,297	332,647	2,915,275
Young—Prince Albert	111·3	1,780,628	196,145	91,897	259,094	2,327,764
Biggar—Loverna	103·6	1,603,529	85,000	77,259	228,744	1,994,532
Oban—Battleford—Carruthers	97·8	1,825,632	87,391	87,397	259,958	2,260,378
Tofield—Calgary	201·2	4,696,589	1,052,396	274,490	710,142	6,733,617
Alberta Coal Branch	56·7	2,331,958	12,757	105,703	327,112	2,777,530
Total Branch Lines Co.	1,014·2	19,849,778	2,981,250	1,072,115	2,928,027	26,831,170
Saskatchewan Railway.						
Weyburn branch	14·9	177,957	31,075	9,873	26,468	245,373
Summary.						
Main Line, Prairie	918·86	27,801,998	3,705,874	3,140,401	4,115,021	38,763,294
Main Line, Mountain	832·50	65,782,278	4,675,779	8,767,204	8,832,241	88,057,502
Branch Lines Co.	1,014·20	19,849,778	2,981,250	1,072,115	2,928,027	26,831,170
Saskatchewan Railway	14·90	177,957	31,075	9,873	26,467	245,373
	2,780·46	113,612,011	11,393,978	12,989,595	15,901,756	153,897,339

GRAND TRUNK PACIFIC RAILWAY.

In British Columbia.

OVERHEAD CHARGES.

	Total without overheads=1. Total.
A. *On all items except land*—	
(a) Contingencies, 2 p.c.	1·02
(b) Engineering, 5 p.c. on 1·02	1·071
(c) Legal, etc., ¾ p.c. on 1·02	1·0787
(d) Administration, ¾ p.c. on 1·0275	1·0864
(e) Taxes, ½ p.c.	1·0914
(f) Interest, 4-year period equals average 2 years, 12 p.c. on 1·0914.	1·2224
(g) Commissions, 3 p.c. on 1·2224	1·2591
Say, 26 p.c.	
B. *On land*—	
(a) Administration, ¾ p.c.	1·0075
(b) Taxes, 1 p.c.	1·0175
(c) Interest, 4-year period, 24 p.c. on 1·0175	1·2617
(d) Commissions, 3 p.c. on 1·2617	1·2996
Say, 30 p.c.	

GRAND TRUNK PACIFIC RAILWAY.

Prairie Section, Main Line.

OVERHEAD CHARGES.

	Total without overheads=1. Total.
A. *On all items except land—*	
(a) Contingencies, 3 p.c.	1·03
(b) Engineering, 5 p.c. on 1·03	1·0815
(c) Legal, etc., 1 p.c. on 1.03	1·0918
(d) Administration, 1 p.c. on 1·04	1·1022
(e) Taxes, say ½ p.c.	1·1072
(f) Interest, 3-year period, average 1½ year at 6 p.c. equals 9 p.c. on 1·1072	1·2069
(g) Commission, 3 p.c. on all previous 1·2069	1·2431
Say, 24 p.c.	
B. *On land—*	
(a) Administration, etc., 1 p.c.	1·01
(b) Taxes, 3 years at ½ p.c. equals 1½ p.c.	1·025
(c) Interest, 3 years at 6 p.c. equals 18 p.c. on 1·025	1·2095
(d) Commissions, 3 p.c. on 1·2095	1·2458
Say, 24 p.c.	

A large part of the difference between the results of our valuation and the cost figures, either those received direct from the company or those certified to the Government, arise from the higher valuation which we have assigned to real estate or right of way, and especially to the terminals at Prince Rupert.

These terminals originally cost little or nothing; at the present time, however, on the basis of the assessed valuation, which is the basis of our figures, the real value is large.

This is a case in which, if the railway were removed, those lands would apparently return to their original value; that is to say, they owe their present value practically entirely to the presence of the railway.

It might perhaps fairly be said, therefore, that in estimating the cost to reproduce the property, inasmuch as if the railway were removed these terminals would be of little or no value, they should be given a small value in the estimate; however, we assigned to them a value based upon the assessed value of adjoining property per square foot or per acre.

In order, therefore, to compare properly our valuation with the estimate of cost, the unearned increment of these and other lands should be deducted. This has been done in table III and in table IV.

Table III gives a summary by subdivisions of the Prairie section of the estimated cost of construction and of land, with interest on construction items and on land, and remaining overheads allowed on construction and on land.

For the estimate in the last line of the table proper, the so-called unearned increment on land, together with interest and other overheads pertaining to land, have been excluded.

The unearned increment on land is the difference between our estimate, namely, $3,705,874, and the cost of right of way and real estate, namely, $807,331.

The other entries in this line are the interest on this unearned increment, and the other overheads, using the same percentages that have been used throughout our estimate for this system.

At the bottom of table III is given a summary which shows that our total estimate, excluding unearned increment, that is to say, putting in the right of way and other real estate at cost, is $35,400,596, which compares with a total of $37,424,653, based on the Grand Trunk Pacific statement submitted to the Government. In other words, our estimate of the cost to reproduce the Prairie section main line of the Grand Trunk Pacific using, however, the cost figures for real estate, is about $2,000,000 less than the actual cost.

In a similar manner table IV summarizes the figures for the Mountain section of the Grand Trunk Pacific, as shown in table II, which shows that our total estimate, excluding unearned increment as in table III, is $83,290,416, which compares with a total of $93,307,184, based on the Grand Trunk Pacific statement submitted to the Government.

In order to compare these figures, however, it is further proposed to eliminate the interest charges, which are quite different in the cost estimate and in our own valuation. This comparison is made in tables V and VI. The former in the Prairie section, the latter in the Mountain section.

Taking up table V, line 1 shows the construction cost from table I, first including the land, and second, omitting the land. Our estimate including the land but not the interest is $35,622,893. Our allowance for interest is $3,140,401. Our total, including interest and all overheads, is $38,763,294, agreeing with table I.

The Government figures, however, have offset against interest paid, receipts from operation of trains, from telegraph and certain items of stock as shown, while our estimate has taken account of none of these items.

Leaving out the land, it will be seen that our total figure for the Prairie section is about $2,000,000 less than the Grand Trunk Pacific figure after the deduction above referred to has been made, while including land (and its unearned increment) we are $1,300,000 above the company's figure.

Table VI makes similar comparison for the Mountain section, which shows our total, excluding land but including interest and other overheads, is about $10,200,000 less than the estimate of the company, while after making the company's deductions for receipts and stock our estimate is about $10,000,000 less than the company's.

If our figures are correct, therefore, the Grand Trunk Pacific system should have been built for nearly $12,000,000 less than it actually cost.

Just why there should have been this excess of cost is not for me to explain, although it would appear that some of the prices paid were higher than should have been paid.

It will be observed that our estimate of the cost of reproduction of the Prairie section of the Grand Trunk Pacific, excluding the unearned increment on land, is about $38,500 per mile, including all overheads. This is considerably larger than our estimate for the Canadian Northern prairie lines.

The reason for the difference lies partly in the character of the country through which the Grand Trunk Pacific passes, which is less favourable for construction than that through which the other line passes, and partly also in the fact that the gradients on the Grand Trunk Pacific are lower than those of the Canadian Northern Railway. If the Grand Trunk Pacific had been built with a more undulating gradient, the quantity and cost of grading would have been considerably reduced, and also the cost of bridges, and especially of timber trestles, of which this line has a large number of costly ones.

On the whole also, the Prairie section of the Grand Trunk Pacific is more substantially constructed in many ways than the Canadian Northern; it has in general more ballast, better ties, and wider shoulders to the banks than the Canadian Northern, and I should expect for this reason alone a considerable difference in cost. I may say, however, that it seems to me, after riding through the territory covered by these lines, that the Grand Trunk Pacific was a more expensive line than was justified by the traffic, and that a more undulating gradient with a smaller first cost, would have produced economically just as good results.

On the Mountain section considered as a whole, however, the Canadian Northern line is not inferior to the Grand Trunk Pacific, but is in some respects superior; its roadbed is good, its grades are easy, and it is in every way well constructed.

Between Edmonton and Resplendent the two lines are closely parallel, and here the Grand Trunk Pacific is on the whole the more substantially constructed line, and the more economical to operate. Its grades are lighter, it has less rise and fall, and less curvature, avoiding one summit which occurs on the Canadian Northern east of Jasper. On the whole, the Grand Trunk Pacific is, between these two points, the better line, although it has longer and higher trestles, and experiences considerable trouble each year where it passes along Brulé lake, near Jasper, on account of the drifting of sand from the river-bed, which completely covers the tracks and requires considerable expense for removal. The Canadian Northern line is, at this point, on the opposite side of the river, and the prevailing winds are in its favour, blowing the sand away rather than upon its tracks.

West of Resplendent the two lines diverge, the Canadian Northern following the North Thompson river southward, and the Grand Trunk Pacific following the Fraser river in a northwesterly direction. The two lines thus pass through essentially different country, and cannot fairly be directly compared. The character of the country traversed by the Canadian Northern is the more favourable, and the portion of the Canadian Northern from Resplendent to the coast is the best part of that line. The grades are easy and the road-bed and structures substantial. The Grand Trunk Pacific west of Resplendent passes through some very soft ground, as far west as Hazelton. This material has been a serious source of expense to the Grand Trunk Pacific, and will continue to be for some years to come. Not only was it necessary to change the original location in many instances, but in many cases almost an entire hillside was put in motion by the construction of the road, filling up ditches and cuts and moving embankments, requiring heavy expense for excavation, subsequent to the opening of the line. The movement has not stopped, and there will continue to be heavy expense for some time to come. Here again the general limits adopted for grades and curves probably greatly increased the expense. Had an undulating grade been adopted, with more curvature, the line would have cost much less.

The Grand Trunk Pacific line is located generally on the south side of the rivers which it follows between Yellowhead pass and Hazelton. South of the line there is a range of hills and as the line is on the south side of the rivers it is not exposed to the sun as much as the land on the north side and, consequently, cuts do not dry out as quickly as they would if the line had been located on the north side.

At first glance it would seem that an error in location had been made and that the railway should have been located on the north side, but snap judgments are dangerous, and I would not wish to make the above statement unconditionally without further information as to the actual character of the ground on the north side of the river.

Tables VII and VIII give our final consolidated figures for the Grand Trunk Pacific and the Grand Trunk Pacific Branch Lines Company (the distinct corporation owning the branches of the Grand Trunk Pacific system.) No account has been taken of subsidiary corporations of the Grand Trunk Pacific Company, such as the Grand Trunk Pacific Development Company and the Grand Trunk Pacific Steamship Company. Our attention has been confined entirely to the railroad lines scheduled in tables VII and VIII.

III.

In addition to making the estimate for the Canadian Northern and the Grand Trunk Pacific, we were asked to make comparisons between certain portions of these lines and portions of the Canadian Pacific system running through similar territory.