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.

(a) A COMPARISON BETWEEN THE CANADIAN NORTHERN LINE AND THE CANADIAN PACIFIC LINE BETWEEN KAMLOOPS AND VANCOUVER.

These two lines parallel each other between these two points, sometimes on opposite sides of the river and sometimes on the same side.

A comparative study of these two lines between the points mentioned were made by Mr. C. S. Gzowski; he submits the following typical unit showing his estimate of the cost of the Canadian Northern line to be $88,230 per mile, and of the Canadian Pacific Railway line $95,252, a difference of about $7,000 per mile.

The Canadian Pacific has somewhat heavier grading, heavier rail, more ballast, and a larger length of second or auxiliary track; while the Canadian Northern line has greater expense for bridges and tunnels. Mr. Gzowski's interesting report with reference to this comparison is appended hereto.

(b) A COMPARISON BETWEEN CERTAIN PRAIRIE LINES OF THE CANADIAN NORTHERN, GRAND TRUNK PACIFIC, AND CANADIAN PACIFIC.

This comparison is shown in the following table.[1] It will be observed that of these lines the Grand Trunk Pacific is the most costly per mile, with the Canadian Pacific next and the Canadian Northern lowest.

It will be observed that the Grand Trunk Pacific has the lowest grades, and this fact probably explains the higher cost. These comparisons have been made by Mr. G. R. Balloch, who was in charge of field examination of the Prairie lines of the Canadian Northern System.

(c) A COMPARISON BETWEEN THE CANADIAN PACIFIC, CANADIAN NORTHERN AND GRAND TRUNK PACIFIC, BETWEEN WINNIPEG AND BRANDON.

The following table[1] gives a comparison of these lines by Mr. G. R. Balloch, from which it will appear that the Canadian Pacific is the most expensive, the Grand Trunk Pacific next, and the Canadian Northern the lowest.

(d) The following table[1] gives some further comparisons of similarly situated lines.

GEORGE F. SWAIN,

OTTAWA, March 15, 1917.

Prof. GEO. F. SWAIN,
Boston, Mass.

DEAR SIR,—The following brief report of my work in connection with your valuation of some of the railroads in the Dominion of Canada, is handed you herewith.

After some preliminary negotiations with you, I came to Ottawa September 6, 1916, and proceeded at once, with your approval, to engage a force of men and to make such plans and arrangements as were necessary to have the various lines inspected before snow came to seriously interfere with the work. Much difficulty and delay was experienced in organizing the force on account of so many capable men having gone to the war or being engaged in other work. The short period of employment offered would not induce men to leave other jobs, so that it required much correspondence and time to secure the force. Most of the men had not had previous experience in work of this character, so that considerable time and detailed instruction were required in order to have them all do the work uniformly and expeditiously. It soon became apparent

[1] These tables are shown on pages 72, 73, and 74.

that details of the property of the railway would not be available for the field engineers during their inspection, if the same was made prior to the coming of snow. Therefore, it was necessary to send the field engineers over the lines with incomplete data. Profiles had been received from the company for a considerable part of the line; bridge, building, and track lists for an inconsiderable part; together with a few yard and bridge plans. The yard plans furnished at that time did not show the limits of the right of way, and many of those furnished were incorrect in respect to the data which they did contain. The profiles did not contain all of the data usually found on a complete construction profile, so that they were not of as much assistance to the engineers as expected.

As soon as profiles were received, the assistant engineers were set to work making profile estimates of quantities, using scales for the purpose. They also estimated from profiles quantities for wooden trestles, box culverts, pipe drains and similar items. These estimates were tabulated, and were ready for the inspecting engineers when they returned to the office. The assistant engineers engaged in the above work, assisted the field engineers in the preparation of their estimates.

On the 16th of October, the field engineers were sent into the field with such information as was then at hand. The territory was divided between six division engineers, some of them having assistants, in such manner that it was believed they could make the inspection before the snow came. A much larger mileage of the prairie lines was given to the engineers in charge of the same than in the case of the more varied and costly lines in the mountain region and in the east. A general inspection trip reaching as far west as Vancouver was made by the consulting engineer and chief engineer, Mr. W. B. Kellett, special engineer, and Mr. D. O. Johnson, contractor. Some of the field engineers accompanied this party over part of their territory, and some of the detailed inspection was made by this special party, thus breaking in the divisional engineers into the method of doing their work. Furthermore, this special party made careful inquiry and determined tentative prices for various classes of work and various kinds of material. These prices were the result of much consideration and were considered as tentative only, to be modified slightly by the divisional engineers in the light of such further information as they secured.

The field engineers covered practically all the lines of the railway, making as many detailed notes as possible, relative to all elements of the construction. From these notes, aided by the profiles and other data submitted by the railway company, the final estimates of the various lines were prepared. Details are given below regarding the various items entering into the railway construction, classified in accordance with the railway accountant's classification.

Right of Way.—General notes regarding right of way were made, showing the average width of right of way, and the extra amount at stations or other places, and also approximate estimates of the value of adjoining land. These values were later modified as necessary, from further information gathered whenever and wherever opportunity offered.

At all of the larger towns and cities, special investigations were made concerning land values, subsequent to the general road inspection, as at Montreal, Toronto, Ottawa, Winnipeg, Edmonton, and Calgary, where a most careful inquiry was made by a special engineer, taking into account values of adjoining property, assessed values, etc. Local residents and real estate dealers were consulted regarding the values, and from all this information, proper figures to apply to the property of the railway company were arrived at. At other important points not mentioned above, the divisional engineer pursued the same method, so far as time permitted.

The amount of right of way was in general determined as that acreage which the usual width of right of way would give per mile, plus an allowance made for the average extra amount at stations and terminals proportioned for the whole mileage of each line in question. After the determinations had been made, the incomplete right of way

plans were received from the railway company, which were examined and totaled and the results compared with the previous determinations, and it was found that there were inconsequential differences, and no changes were made in our previous determinations except in a few instances.

No attempt whatever has been made, or could be made in the allotted time, to determine whether property claimed by the railway company is actually possessed by it. A few instances have come to our notice where property claimed has not been duly transferred to the railway company, but it is presumed that such instances are few. The general principle adopted concerning ordinary right of way was that the cost to the railway company of reproduction, would be approximately twice the amount per acre of the real value for farming and industrial purposes of the adjoining land, such increment including cost of acquisition, as well as the special engineering expenses, and also any damages, payments for severance or other reasons. No account whatever was taken of cases where land had been given to the railway company by the Government or individuals. Where land values are high in the larger towns and cities, where it is generally purchased by the lot, a value per lot or per foot front, or per square foot was determined from various methods previously described and an increment of 25 per cent generally applied and in most cases, further allowances made for taxes, as well as an interest carrying charge. No additional overheads were added to the appraised value of land as determined in this manner.

Grading.—Quantities were obtained in all cases where possible from an estimate made from the profile as modified by the field engineers. In very rough territory, such as Fraser Canyon and mountain work, where the quantities for each cut and fill were shown on the profile, the field engineer travelled such territory slowly and determined in each case, by approximate methods, if the quantities were reasonable, and if so, they were accepted by him. Every effort was made, however, to arrive at an approximate classification, and determine, as nearly as possible, whether the work was of a side-borrow nature or a cut and full nature involving long hauls or where train fill had been necessary. The location of ballast pits was noted where possible, and also the slope of the ground surface at cuts, in order to be able to make profile estimate quantities from a single line profile. Notes were made of the length of line requiring clearing and grubbing.

Tunnels.—Special study was given to each tunnel to determine whether any unusual features existed. Detailed information was always available or secured, relating to the comparatively few tunnels on the line.

Bridges, trestles, and culverts.—The inspecting engineers made notes relative to all bridges and trestles, this data being later supplemented by detailed lists supplied by the railway company. Exact lengths were taken from the profiles. No effort was made by the field engineers to make notes relating to small openings, such as pipes and wood boxes. These were all estimated from the profiles.

An approximate method of determining the quantity of material in wooden bridges was necessary, because no information was supplied relating to the length of piles, in the case of pile bridges, and because time did not permit detailed estimates to be made of each bridge, even if sufficient information had been at hand to permit such detailed estimate. A formula was devised for determining quantities in wooden bridges based on information contained in standard plans and on detailed information of total quantities covering many bridges as submitted by the railroad company. In most cases, the quantities were given for steel bridges, but these quantities were roughly checked by comparison with diagrams prepared for such estimation. The masonry in bridges was determined from plans submitted by the company, but these were in general, entirely inadequate for the purpose, so that a general theoretical quantity for a pier or an abutment of the approximate height as determined from the profile was made. Every

effort was made to be fair in this determination, and if our estimate is deficient in these matters, it is largely because the railroad company failed to submit suitable data for such estimates in time for use. The foundation work covering coffer dams, pumping, wet excavation, etc., has been estimated at a certain percentage of the cost of the masonry. The percentage to be used for this determination was arrived at from a careful study of numerous bridges where the actual cost of the foundation work was available on this and on other railroads and in other cases of similar work. The short time available necessitated approximate methods such as this, and if in special cases the result is deficient, it must be said again, that it is primarily because the railway company did not submit suitable plans and data in time to be available for use.

Track.—The estimation of the quantities of the various items entering into track is based on the notes of the engineers, showing number of ties per rail length, weight of rail, the character of the fastenings and average amount of ballast per mile. The length of auxiliary tracks was determined from statements submitted by the railway company, and approximately checked by the inspecting engineer. The ratio of the total length of auxiliary tracks on a certain line to the main line mileage is determined, and that per cent of ties, rail and fastenings is added to the correct amount for one mile of main line track, making allowances for any different weight of rail in auxiliary tracks. The number of frogs and switches has been determined from the number of passing tracks and auxiliary tracks and other auxiliary tracks as noted by the engineer and from yard plans where the same had been checked by the engineer, or if his notes approximately correspond to the plan. The yard plans were only available to the inspecting engineers in a few instances. They were entirely lacking in the central territory, and it has been found that the number of turn-outs as estimated is uniformly less than the number now reported by the railroad company. This is due to the fact that the company did not supply us with plans or data early enough.

The roadway tools are estimated on the basis of one outfit for about eight miles of track in general. Some slight variance was made from this basis where more definite information was available, but in general, no data was available and the item was too small to deserve any particular attention under the circumstances.

Fencing.—The inspecting engineer noted the amount of each line fenced, and the character of the fence. Approximate estimates were also made of the amount of snow fence available, which at the time of inspection, was piled along the right of way in spots, but not set up. In general, our estimates made in this way agree fairly close with the statements submitted later by the railway company. The number of cattle guards were determined from the number of highway crossings, as noted by the engineer.

Crossings and Signs.—The number of crossings, both highway and farm, were noted by the inspecting engineer, and the amount of plank in the crossing determined from standards for each crossing, it having been determined that the standard was approximately correct. The number of signs of various kinds has been determined somewhat arbitrarily based on the number of crossings, miles, bridges, etc., it having been observed that the proper number of these signs for these various purposes in general existed. Where they did not exist, the field engineer made notes concerning the same and they were omitted.

Interlocking.—Each interlocking plant was carefully noted by the inspecting engineer, together with its general character. It was found that they were practically all of the same general style and character. The plants were all treated on the same basis, making modifications solely on account of the angle of the crossing and type of the crossing frogs. The results were later checked with information supplied by the company.

Telegraph and Telephone Lines.—The inspecting engineer made suitable notes concerning the telegraph line, showing the number of poles per mile, number of wires,

whether of iron or copper, and other special features. An arbitrary addition of 10 per cent was made for instruments, etc., this being based on previous experience and more detailed estimates, covering not only the instruments and batteries but the master batteries at terminals, the switch board apparatus and all other special apparatus, also the special cables at certain stations, extra wire and wiring at stations.

Station Buildings and Fixtures.—The field engineers made the necessary notes relative to all station buildings, noting them by classes and making note of any special features which were observed by them. They also noted all other roadway structures, such as tool-houses, dwelling-houses, etc. The railway company submitted carefully prepared statements showing all structures existing along all lines, which statements enabled us in some cases to correct apparent omissions in the notes or to reconcile statements. The lists from the railway company, however, were received at such a late date (about February 1) that they were not of as much help as would have been the case had they been in our hands during the inspection. Cost of reproduction of the various types of structures in different parts of the country was estimated by a man experienced in building construction, on rather a liberal basis, on account of the small amount of information available relative to foundations, grading, interior finish, and heating appliances, as well as furniture and fixtures. Since these estimates were made the railway company has submitted data relating to these structures, and it has been found that our estimates are from 10 to 25 per cent higher than those of the company; but it is quite possible that the railway figures do not always contain items of freight, superintendence, etc., and also their figures are based in many cases, if not all, on cost figures, and the buildings were constructed at a period when material and labour was less costly than at a time just prior to the war, it is thought that prices used in this estimate, for the reasons given, should be higher than the figures given by the railway company. These remarks also apply to general office buildings, water stations, fuel stations and the miscellaneous structures. Large and expensive stations or structures were examined independently and carefully and in most cases detailed plans were submitted and were carefully considered by the architectural engineer.

Shops, Water Stations, Fuel Stations, Etc.—The field engineers made as careful inspection as time permitted of these structures, noting the location, the general character, and such detail notes as were necessary to make a reasonable estimate of cost. The same applies to all miscellaneous structures. In large yards, terminals in large cities, where there are numerous structures of all kinds, inspection was made on foot, such time as necessary being given to make careful notes regarding all structures.

Shop Machinery and Tools.—Very little information was available relative to shop machinery. The railway officials were asked in November to submit information relating to this item, but up to this time they have only done so in a few cases. When data was submitted by the railway company, and when the information submitted was judged approximately correct by the inspecting engineer, the figures as submitted were adopted. In many cases in the west, especially where no information was available, an arbitrary amount has been included in the estimate for this item.

Dock and Wharf Property.—There are very few items on the railway coming under this heading. They have been inspected by the field engineer and notes made of the same; and an estimate has been prepared from the plans submitted by the railway company as checked by the field engineers.

CONSTRUCTION OF THE ESTIMATE.

Our estimate of cost involves two things: the quantity of each item, and the unit price. Our quantities have been determined in the manner explained.

In arriving at our unit prices, numerous sources have been consulted and considered, such as contractors on this road and other roads, opinions of men experienced in railroad construction, and also figures used in numerous other valuations and reports, making due allowance always for the location, the geography of the country, character of the work, etc. Very little information was supplied by the railway officers of this nature in time to be of any assistance to us, although they were repeatedly urged to submit data of this character. The unit price data which has been generally used with slight modifications is annexed to the report as an appendix.[1] Preparation of this data had the careful attention of the chief engineer, and was checked with all available data and discussed with several of the assistants most qualified in such matters, and was finally approved by the consulting engineer in charge. In cases where the divisional engineer thought that modifications should be made in the general prices, he was permitted to do so with the approval of the chief engineer in each case. It is quite likely that prices used are at variance, on certain lines or in some localities, with actual prices paid; but it seemed better for the sake of uniformity and consistency to adhere to what had been considered to be reasonable and fair prices, notwithstanding such differences.

In order to adopt a method by which quick results could be obtained and at the same time, a method by which easy comparisons could be made, and also the liability of error eliminated as much as possible, it was decided to make an estimate of each distinctive line on a mileage basis and this unit of value, for convenience called a typical unit, was then applied to the correct mileage of the line in question. It was possible to make determination originally of one mile of many items. In cases where this was not possible, such as grading, tunnels, bridges, stations, etc., a determination was made of the total quantity on the line and this total quantity divided by the mileage of the line produced the average amount per mile which appears in the "typical unit" under the proper classification along with the other items originally determined for one mile, and thus a proper amount per mile for each line was determined. The auxiliary tracks were determined to be a certain per cent of the total, and in each case this additional per cent of one mile has been taken into account for all track items, making due allowances where necessary for a different weight of rail in the auxiliary tracks. Two arbitrary items have been added to the measurable items falling under one or the other of the thirty accounting classifications which are: (*a*) Maintenance and temporary work during construction; (*b*) solidification and adaptation or deferred construction. The first of these items has been estimated at $250 per mile, which is based on figures used in other valuations and theoretical estimates of this cost. Concerning (*b*), the amount has generally been taken as $200 plus one-thirtieth of the grading, because the items consist of track items which are nearly constant per mile and of grading and drainage items which vary with the amount of same. This amount has been reduced in cases where very little work coming under this heading appeared to have been done or where present conditions were very poor, and has been omitted entirely in some instances, such as on new lines.

The typical unit for a line having been thus prepared, a simple multiplication by the mileage of the line produces the basic value of the said line, to which are added the overheads on the percentage basis, thus producing the final estimate of the cost of reproduction.

The summary for each line is made on a card on the back of which is shown the total of the land and interest separately, and also the depreciation. The cards, about 125 in number, show complete consolidated information for the entire system, and are indexed and filed in a suitable box.

GENERAL.

The field inspection commenced on the 16th of October, 1916, and was substantially completed December 24, 1916, although the investigations relating to land values have

[1] Not printed.

continued until March 1. At the same time that the field inspection was going on, assistant engineers were at work in the main office making profile estimates of quantities, grading and bridging, so that when the field engineers came into the office, these items were, in most cases, ready for them. The entire work of making up the typical unit for each and every line and estimating the special features has been accomplished in about six weeks, say from January 1 to February 15. Since the latter date, work has been largely consolidation, reviewing, checking, and consideration of a few large special items.

The railway company has sent representatives to the office to make comparisons of our results with their figures, and to discuss matters where substantial differences existed. The railway company, up to February 22, has not submitted any statements of original costs of complete lines except for one or two lines east of Port Arthur, so that comparisons with cost figures could not generally be made, except with reference to some special items. It appears now, that the work is practically completed, that the railway company will submit cost statements for most of the lines. It cannot be said at this time what the comparisons with such statements will disclose. During February the railway company has submitted many statements, covering approximately two-thirds of the lines, which give the quantities of most of the measurable items, but show no unit prices or original costs. The overheads, land, and some other items are shown for a lump sum. On some of these lines we have applied the same unit prices as were used in our estimate and thus made a complete estimate out of the railway company's incomplete statement. Where comparisons have been made in this manner, taking the railway company's estimate, deducting from the same its item of discount and also its item for interest, and then applying the same amount for interest as used in our estimate, it has been found that there are very slight differences between the estimates in general. The following items are generally higher in the railway company's estimates, either expressed in dollars or in quantities, than our estimates. Land, trestle timber, switches, farm gates, rail, ties, fastenings, ballast and interest. Our estimates are generally higher than the railway company's figures in grading, buildings and engineering. Our higher grading figure and lower trestle timber figure is probably accounted for by numerous bridges having been filled in since the railway company's figures were made, which in most cases, are construction figures. Our lower figures in rail, ties, etc., are partly due to the railway company including industrial spurs in its statement, and generally our auxiliary track figures are slightly lower than those now shown by the railway company. Though there is not much difference regarding ballast, we believe that the railway company's figures are purely estimates, and that it has been entirely too liberal in making such estimates; at least, it is the opinion of our engineers that there is not nearly the amount of ballast on any of these lines as claimed by the railroad company. It is possible that the amount claimed has been put on at some time or other and much of it disappeared as ballast, having become incorporated in the road bed, in which case we have covered it by our item termed "solidification."

CONCLUSION.

My thanks are due to Sir Henry Drayton for much information and help, and for his interest in the matter; also to the staff of engineers and assistants who have worked hard and faithfully. The Department of Railways and Canals detailed an inspecting engineer to assist us, who gave us much information relative to unit costs and costs of certain lines, and our thanks are due them for this valuable assistance.

Very truly,

WM H. CHADBOURN.

Prof. G. F. SWAIN,
in Charge of Valuation
Commission of Inquiry into
Railways and Transportation,
Ottawa, Ont.

Comparison of Physical Values of Canadian Northern Railway and Canadian Pacific Railway between Kamloops and Vancouver.

I beg leave to submit the following report comparing the Canadian Pacific line and the Canadian Northern line between Kamloops and Vancouver.

Inspection of the portion of the Canadian Northern and Canadian Pacific between Kamloops and Vancouver was made October 30 to November 3, 1916, and December 15 and December 17, 1916, respectively.

Field work on the Canadian Northern Railway was done from an inspection motor with ample opportunity to stop at pleasure. Complete profiles showing details of pay quantities of material and notes of other items were at hand.

The Canadian Pacific railway was inspected from the rear end of regular trains. The profiles furnished having full information of tracks, etc., but no quantities of materials in grading or bridging shown.

Basis of Comparison.—In making the comparison of the roads, the terminal properties, yards, docks, etc., at Port Mann and Vancouver, as well as both railway company's properties and yards at Kamloops have been excluded.

At North Bend where the Canadian Pacific own a hotel and practically all of the town and buildings in it, only the yard proper and buildings which can strictly speaking be called railway structures, have been taken into account.

C.P.R. Route.—From Kamloops going west the Canadian Pacific Railway follows the south side of the Thompson river to the junction of this river with the Fraser river at the town of Lytton, and for six miles is on the south side of the Fraser river before it makes its only crossing to the north side, down which it runs to within 24 miles of Vancouver. The line then works over to the south arm of Burrard inlet at Port Moody, which was the original terminus of the road. From Port Moody the south shore of the inlet is followed into Vancouver.

The alignment of the Canadian Pacific Railway has a very large percentage of curvature with a maximum of 11° 30′ curves, which maximum, however, is used only in a few places.

The track at Kamloops is 1,050 feet in elevation above that at Vancouver, and although the railway is following a watershed, there are a number of adverse grades going west with a maximum grade in that direction of 1·1 per cent uncompensated, while eastbound the maximum grade is 1·3 per cent uncompensated.

C.N.R. Route.—The Canadian Northern Railway general route from Kamloops west is the same as the Canadian Pacific, following the Thompson and Fraser rivers to its terminus.

At Kamloops after first crossing the North Thompson river it is on the north side of the Main Thompson river and crosses or recrosses it seven times before its junction with the Fraser, at Lytton where the railway is on the south side.

Where the Canadian Northern is on the south or same side as the Canadian Pacific it is between that road and the river, and in elevation somewhat lower.

Half a mile west of Lytton it crosses to the north side of the Fraser river, and after following that side for five miles crosses to the south side by a high crossing of the river and an overhead crossing of the Canadian Pacific Railway. Immediately

below this point the Canadian Pacific has crossed to the north side, and from here west the Canadian Northern runs on the south bank to Port Mann while the Canadian Pacific follows the north.

Port Mann is the terminus of the road owned by the Canadian Northern Railway, but they have running rights over the Great Northern Railway and the Dominion Government Fraser River bridge over Fraser River Junction into Vancouver, and use the Great Northern station in Vancouver.

There is now under construction at Vancouver by the Canadian Northern Railway a station and yard facilities which will not be finished for some time, and no arrangements have been completed for their own track from Port Mann to Vancouver.

The alignment of the road, although having probably nearly as much curved track as the Canadian Pacific Railway, is of considerably flatter curvature, making the total angle of curves much smaller. The maximum degree of curve is eight degrees.

Going west there are no adverse grades except small velocity grades which can be neglected. Eastbound the maximum grade is 0·40 per cent compensated.

In general the ground traversed by the two railways might be considered the same.

General Comparison of Route.—Where the roads are on opposite sides of river, on the whole, the work would have the same quantities of material for equal alignment and gradient, although for short distances one is on a bench with lighter work necessary than that on the opposite side. This condition is reversed in the next stretch and about balances.

Both cover approximately an equal length of flat ground where work of grading is light.

The Canadian Northern Railway along the Thompson river, where it is on the same side as the Canadian Pacific Railway, crossed to avoid particularly heavy grading and did the bridging to get to the less rugged side of the valley.

General Comparison of Roadway.—The general alignment of the Canadian Northern Railway being of flatter curves, necessitated having the line located further into the side hill and consequently had heavier grading than if located with the sharper curves used on the Canadian Pacific Railway. Also the lighter gradient used and no use of adverse grades made the work heavier than if the same grades as those of the Canadian Pacific Railway had been employed.

With the exception of some timber cribbing, three small trestles and a few wooden culverts, the Canadian Pacific has all road bed structures now built of a permanent character, that is to say, of steel, concrete or stone masonry.

The Canadian Northern Railway has considerable length of wooden trestles, some timber cribs and culverts.

Typical Unit Sheet.—Appended is typical unit of each road showing per mile value of each accounting item.

Unit Prices.—In making up valuation for each line, where the items were of the same kind and character, equal unit prices were used for both, where items varied in kind, prices as far as possible were based on equal conditions.

Length of Track.—The length of the lines, as compared, are: Canadian Northern Railway, 243·7; Canadian Pacific Railway, 250·5.

The latter from Kamloops station to Vancouver station. The Canadian Northern Railway from Kamloops station to Port Mann at Fraser River Junction, which is the end of this road and junction with the Dominion Government railway bridge across the Fraser river at New Westminster. It is 14·0 miles from this point to Vancouver over the Great Northern Railway, making the distance Kamloops to Vancouver 257·7 by the Canadian Northern Railway.

The Canadian Northern Railway has 22·55 miles or 9·25 per cent of auxiliary tracks, while the Canadian Pacific Railway has 50·76 miles or 20·26 per cent of auxiliary tracks, and 89·97 miles or 35·93 per cent of double tracking, 8 miles of which is out of Kamloops and 81 miles out of Vancouver.
T.U. (2).

Right of Way and Station Grounds.—Each has about the same area, but that of the Canadian Pacific is probably worth more; the immediate territory being better developed, so 10 per cent more has been allowed the Canadian Pacific.
T.U. (4).

Clearing and Grubbing.—These items are the same for each road, the character of timbered country being alike.

Excavation and Embankment.—Having no actual pay quantities on the Canadian Pacific Railway the comparison is made in reference to the Canadian Northern Railway, which averaged 81,600 cubic yards per mile.

Dividing the ground into three classes of grading, light, heavy, and very heavy, and assuming the two roads traverse the same percentage of each, and that in each case for simple track grading the light and heavy work are the same yardage per mile but that the very heavy work on the Canadian Pacific Railway is two-thirds of yardage per mile of the Canadian Northern Railway, and that the Canadian Pacific double track is 110 per cent in quantities of the heavy work and the auxiliary track grading in quantities is 125 per cent of light work, we have about the same quantities per mile thus:—

Class of Grading for Ground Traversed.	Canadian Northern Railway.			Canadian Pacific Railway.		
	Per cent of Line.	At yards per mile single track.	Amount cubic yards.	Per cent. of line.	At yards per mile single track.	Amount cubic yards.
Light	15	16,000	2,400	15	16,000	2,400
Heavy	25	48,000	12,000	25	48,000	12,000
Very heavy	60	109,000	65,400	60	72,600	43,600
	100		79,800	100		58,000
Double track				36	52,800	19,000
Auxiliary track	9	20,000	1,800	20	20,000	4,000
			81,600 cu. yds. per mile.			81,000 cu. yds. per mile.

Retaining Wall and Crib.—In the Canadian Northern Railway, 12 per cent of this item, or $35 per mile, is wooden cribs, and the balance is retaining wall either of dry masonry or concrete. This item will be very much increased when the present wooden trestles are replaced with permanent work.

The Canadian Pacific amount is very heavy on account of the line having been located "out in the air" instead of well into the side hill—5 per cent of the amount, or about $200 per mile, is cribbing; these cribs are mostly deflection cribs at the water's edge to divert the current from embankments.
T.U. (5).

Tunnels.—The Canadian Pacific Railway have twenty-nine tunnels in all; twenty-eight are through solid rock, one of which is a parallel one for double track; six of

these are concrete or masonry lined, and two timber lined. One is a dirt tunnel, masonry and concrete lined. Total length of tunnelling is 10,629 feet.

There are thirty-four tunnels on the Canadian Northern Railway, two through dirt, and timber lined, and the others through solid rock, seven of which are full timber lined and eight partly timbered. The total length is 19,464 feet, or 83 per cent more length than the Canadian Pacific Railway.

T.U. (6).

Bridges.—The Canadian Northern Railway have 10,668 feet of steel bridges, all on concrete piers and abutments, 640 feet of wooden Howe truss spans on pile and crib piers. This bridging is mainly made up of the crossings of the Thompson and Fraser rivers; in all nine crossings.

The steel bridges on the Canadian Pacific Railway have a less total length than on the Canadian Northern Railway, being 7,882 lineal feet; most of them are on stone masonry piers and abutments, only a few having concrete substructures; over half are double-track structures. There is one crossing of the Fraser river, but the heaviest structure is a double-track bridge of thirteen spans, with one swing, across the Pit river. Besides the steel bridges there are three stone arches of 81-, 54-, and 30-foot spans.

Trestles.—There are 31,380 feet of trestles on the Canadian Northern Railway, mostly crossing small ravines, but some are *grasshoppers*, replacing what will eventually be fills with retaining wall.

This is the main item which takes from the permanency of the Canadian Northern railway line as compared with the Canadian Pacific Railway, and to make it favourably comparable to that road will increase the retaining wall item materially and further increase steel bridges.

Trestles on the Canadian Pacific railway are a very unimportant item, consisting of only five small structures with a total length of 585 lineal feet; three of these are constructed of creosoted timber and piles.

Culverts.—About half this item on the Canadian Northern is for cedar box culverts for smaller drainages. The balance is for concrete culverts and tunnels in solid rock, driven under the roadway for the heavier drainage. This item, to compare with the Canadian Pacific Railway for permanency, would be increased considerably; partly in replacing wooden culverts but largely for drainage where some present trestles would be filled.

The Canadian Pacific Railway culvert item has about 7 per cent for wooden boxes, a great number are track ballast boxes, and a very few culverts through the dump. A considerable part of the drainage is taken care of by stone or concrete arches and there are a lot of rail concrete culverts, besides concrete boxes, stone boxes, concrete, iron and tile piping.

The total item for bridges, made up of spans, trestles and culverts, is larger on the Canadian Northern railway on account of the number of main river crossings and eventually will have to be considerably increased.

T.U. 7-8-9-10 and 12.

The items for ties, rails, frogs and switches, track fastening and track laying which may all be treated with the same comment, are greater on the Canadian Pacific railway, mainly because of 36 per cent of double and 10 per cent more auxiliary tracks, but partly by the fact that 75 per cent of the Canadian Pacific railway of main line track is 85 pound and the balance 80 pound against the Canadian Northern railway all 80-pound track. The Canadian Pacific auxiliary track is 56-pound or 60-pound rail, while the Canadian Northern railway is almost all 80-pound.

T. U. (11).

The ballast on the Canadian Northern railway has as many yards per mile as the Canadian Pacific railway but the latter is largely increased by the greater length of subsidiary tracks and 80 miles of double track rock ballast.
T. U. (13).

The Canadian Pacific has a larger equipment of roadway tools.
T.U. (14).

Each road is about 50 per cent fenced, but the Canadian Northern Railway have a few more gates, and this increases their amount.
T.U. (15).

Crossings and signs with the Canadian Pacific railway is greater because they have three subway road crossings, while the Canadian Northern railway have none.
T.U. (16).

In interlocking and other signal apparatus, the Canadian Northern Railway has a diamond crossing with interlocking plant with the British Columbia Electric Railway, and the Canadian Pacific Railway are the senior road in the only level crossing they make with the Great Northern Railway.
T.U. (17).

The Canadian Pacific Railway have either three or four cross arms on their telegraph line with 11 to 29 iron wires and two copper wires, against the Canadian Northern Railway's one cross arm with two iron wires.
T. U. 18-19-20-21-22-23-31.

Buildings and various structures on the Canadian Pacific Railway are somewhat more complete and greater in number accounting for the larger amounts in station buildings and the balance of the typical units.

Maintenance and temporary work during construction are on each road the same, but for solidification and adaptation the Canadian Pacific Railway, being more matured, is counted higher.

Overhead.—If, for purposes of reproduction value, the conditions of construction are considered the same, overhead charges need not be compared as they would be proportional.

Conclusion.—No account is taken of depreciation on either road, although that of the Canadian Pacific Railway would, in some items, be considerably more than the Canadian Northern Railway, particularly in buildings; it would be largely offset by their bed and track being kept up in excellent condition and their roadbed structures being of substantial character. On the whole, there would be no material difference between them.

As to their total physical reproduction value, by the accompanying estimate it would appear the Canadian Pacific Railway is greater by some $7,022 per mile, or 7 per cent. This excludes, as before noted, terminal properties, etc., which on the Canadian Pacific Railway are very comprehensive.

Operating features.—The operating features have not been gone into, but if this were done the main considerations would be the advantages the Canadian Northern Railway has of no adverse grades westbound, a lighter ruling grade eastbound, less total elevation to overcome and less and flatter curvature; while the Canadian Pacific Railway has the advantage with 36 per cent of double track line, some better ballast, partly heavier rail and, consequently, better track, the roadbed more consolidated, and better facilities for doing business.

The lack of detailed information of quantities of material moved in grading and particulars of substructures in bridging on the Canadian Pacific Railway and the hurried inspection on that road as well as the short time available for computations, makes the comparison lack the finality one would desire.

Respectfully submitted,

C. S. GZOWSKI.

March 10, 1917.

COMMISSION OF INQUIRY INTO RAILWAYS AND TRANSPORTATION.

TYPICAL UNIT.

C. P. R. and C. N. R., Kamloops and Vancouver

Single Track

		C.N.R.	C.P.R.
	Main line	243·73 miles	206·50 miles
	Double track		35·93%
	Auxiliary track	9·25%	20·26%
		$	$
2	Right of way and station grounds	3,248	3,573
3	Real estate		
4	Grading		
	Clearing and grubbing	1,544	1,544
	Grading (except retaining walls)	49,160	49,160
	Cribbing, retaining walls, etc.	291	3,750
5	Tunnels	50,995	54,454
6	Bridges	7,288	4,169
	Trestles	2,220	66
	Culverts, pipes and drains, etc.	1,090	2,013
7	Ties per mile at	12,929	10,571
	Bridge ties M.B.M. at		
	Switch ties turnouts at	1,765	2,308
8	Rail (pounds) tons at $ per ton	5,536	7,747
9	Frogs and switches	69	153
10	Track fastenings and other material—		
	% A bars at $ per mile =$		
	% bolts at $ per mile =$		
	Spikes ties at pounds		
	per tie= cwt. at $ per cwt. =$		
	Tie plates per mile at each =$		
11	Ballast cubic yards per mile at per cubic yard in place	1,040	2,049
12	Track-laying and surfacing per cent of a mile at $ per mile,	1,732	3,553
	plus (for laying) of a turnout at $ each	751	1,146
13	Roadway tools, 1 outfit at $ divided by	21	32
14	Fencing—right of way fence miles at per mile	403	372
15	Crossings and signs	29	270
16	Interlocking and other signal apparatus per cent station semaphore at $	19	26
17	Telegraph and telephone lines—1 mile at $ plus per cent for instruments, etc.	307	755
18	Station buildings and fixtures	267	529
19	General office buildings		
20	Shops, etc.	139	250
21	Shop machinery	41	51
22	Water stations	255	289
23	Fuel stations	4	151
31	Miscellaneous structures	118	924
	Maintenance and temporary work during construction	250	250
	Solidification and adaptation or deferred construction: C.N.R. 200 plus 1/60 grading; C.P.R. 200 plus 1/30 grading	1,024	1,63
	Total	88,230	95,252

NOTE.—Where details are not shown, they may be found in detail book.

Comparison between the following lines:—

1. C.P.R., Saskatoon—Macklin.
2. C.N.R., Saskatoon—Munson Junction.
3. C.N.R., Warman—Vermilion.
4. G.T.P., Biggar—Battle River.

NOTE.—Grades are actual, not virtual.

Line No.	C.P.R.	C.N.R.	C.N.R.	G.T.P.
	1	2	3	4
Number of tracks	1	1	1	1
Length of road in miles	161.7	303.5	206.5	150.0
Auxiliary track, per cent of main line	23.2	10.3	11.6	17.6
Cost per mile	$31,577	$22,125	$27,664	$39,681
Grades, westbound	1.0	1.0	0.75	0.5
" eastbound	1.12	1.0	0.5	0.4

G.R.B., March 8, 1917.

SESSIONAL PAPER No. 20g

Comparison between the C.P.R. and C.N.R. and G.T.P. between Winnipeg and Brandon. In all cases the Winnipeg and Brandon terminals and Portage la Prairie land are omitted. The C.P.R. is double track, the C.N.R. and G.T.P. are single track.

NOTE.—Grades are actual, not virtual.

	C.P.R.	C.N.R.	G.T.P.
Number of tracks	2	1	1
Length of road in miles	133.0	135.7	129.4
Auxiliary track, per cent of main line	15.25	11.0	22.2
Cost per mile	$45,353	$26,205	$37,910
Grades, westbound	1.75	0.9	0.7
" eastbound	0.771	0.9	0.92

G.R.B., March 8, 1917.

SUMMARY OF COMPARISONS.

Canadian Northern Railway.—Capreol—Current, 593 miles (including yard, tunnel, shop and machinery). Grade: 0.4 eastbound, 0.6 westbound	$ 34,816 00
Canadian Northern Railway.—Nipigon—Current, 69 miles (including yards, tunnel, shops and machinery). Grade: 0.4 eastbound, 0.6 westbound. Sidings, 4·8 miles, 107 per cent	38,645 00
Canadian Pacific Railway.—Nipigon—Current (Nipigon subdivision), 65 miles—including allowance per mile for complete yard at Chapleau; double track, 6 miles, 9·3 per cent. Sidings, 14·3 per cent. Grade, 1 per cent	45,460 00
Canadian Pacific Railway.—Mile 20—40 (Nipigon subdivision), 20 miles—including allowance per mile for Chapleau yard double track, 13 miles, 65 per cent. Sidings, 3·25 miles, 16·2 per cent	60,048 00
Average of above 8 sections of Canadian Pacific Railway	52,754 00
NOTE:—	
Canadian Northern Railway.—Capreol—Current, 593 miles; sidings, 52·9 miles	8·9%
Canadian Pacific Railway.—Sudbury—Current, 550 miles; double track, 168 miles	30·5%
Sidings, 110 miles	20%

SUMMARY OF COMPARISON—C.P.R. AND C.N.R. SUDBURY AND CAPREOL TO CURRENT.

Field Inspection by T S Armstrong

Grades—C.P.R. 1%
C.N.R. 0·4% eastbound 0·6% Westbound.

	Estimated Cost of Reproduction per Mile.	
	C.N.R.	C.P.R.
	$	$
Nipigon—Current, 69 miles—		
Single track, auxiliary track, 7 per cent	46,154	
Nipigon—Current, 65 miles—		
Double track, 9·3 per cent		
Auxiliary track, 14·3 per cent		59,061
C.P.R., Mile Post 20–40—		
Nipigon Subdivision—		
Double track, 65 per cent		
Auxiliary track, 16·2 per cent		78,045
Capreol—Current, 593 miles—		
Single track, Auxiliary track, 8·9 per cent	45,263	
Sudbury—Current, 550 miles—		
Double track, 30·5 miles		
Auxiliary track, 20 per cent		
Average of above two sections of C.P.R.		68,426

In the above estimate allowance is made for yard trackage and facilities, shops, shop machinery, etc., in both cases.

SUMMARY OF COMPARISON OF C.P.R. AND C.N.R., TORONTO—SUDBURY AND CAPREOL.

Field inspection by A. H. N. Bruce.

Grades: C.P.R. 0·5% max.
C.N.R. 1·0% max.

	Estimated cost of reproduction per mile.
Toronto—Capreol C.N.R.—	
Single track, auxiliary track, 9%	$ 38,498
Toronto—Romford Junction C.P.R.—	
Single track, auxiliary track, 26%	$ 61,958

APPENDIX B.

Examination of Mr. E. J. Chamberlin of the Grand Trunk and Grand Trunk Pacific Railways, at Montreal, on February, 24, 1917.

(Extracts from shorthand report.)

E. J. CHAMBERLIN, sworn and examined:

Sir HENRY DRAYTON: Mr. Chamberlin, you have been asked to prepare a statement of the money required to keep things going, or an estimate of performances. Have you that statement prepared?

Mr. CHAMBERLIN: This statement I produce was made up by our Auditing Department.

Sir HENRY DRAYTON: This statement is an estimate merely?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: Which has been prepared for you, according to your instructions, for ten years, by your Audit Department?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: The first column shows "Total Interest on Outstanding Bonds." That is as they now are?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: The second column is headed "Less Interest on Three per cent Bonds, Mountain Section, Payable by the Government"?

Mr. CHAMBERLIN: That is correct.

Sir HENRY DRAYTON: The total amount of interest the Government ought to pay, according to that column, is $9,930,000?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: The total bond interest payable, as shown in the next column, coupled with the second column, will correspond with the total shown in the first column?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: The fourth column shows "Interest on Government Loans to December 31, 1916"?

Mr. CHAMBERLIN: It does.

Sir HENRY DRAYTON: That is computed, I assume, on all Government loans over and above the bonds already referred to?

Mr. CHAMBERLIN: Yes. Those are different loans we had.

Sir HENRY DRAYTON: You do not know about the details?

Mr. CHAMBERLIN: No, I do not.

Sir HENRY DRAYTON: This statement was just prepared for you?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: The next column is headed "Interest at 6 per cent on amount required to meet Deficits, and for Capital Expenditure." What does that really mean?

Mr. CHAMBERLIN: That means the deficit each year over Operating Expenses and Interest, and interest has been charged on it. For instance, the total requirements for the year 1917, as shown in the top line of the statement, amount to $5,809,000. Interest has been charged on that into next year.

Sir HENRY DRAYTON: It keeps accumulating, then, from year to year.

There is a footnote to the statement which says: "From the above, it would appear that we will require to raise loans amounting to $65,887,110 to carry the property to December 31, 1926, but if requirements on Capital and Deficit Account were furnished by the Dominion Government without interest, the amount required would be $32,145,000."

Mr. CHAMBERLIN: More than one-half of it is interest on advances that will be made in the future.

Sir HENRY DRAYTON: We really find a difference in this $18,000,000 plus column?

Mr. CHAMBERLIN: I will let Mr. Ardley explain that.

Mr. ARDLEY: That big interest really represents paying interest on interest.

Mr. CHAMBERLIN: Interest on Advances from year to year. We must bear in mind that it is simply guesswork. One cannot tell how the country is going to develop, or how much the railway is going to earn.

Sir HENRY DRAYTON: What percentage of increase do you allow?

Mr. ARDLEY: Mr. Rosevear got that statement up. We have a supplementary statement which you may use to work on.

Mr. CHAMBERLIN: I thought you were going to give all that downstairs?

Mr. ARDLEY: We had not reached that point.

Sir HENRY DRAYTON: Are you satisfied that this is a fair estimate, Mr. Chamberlin?

Mr. CHAMBERLIN: I think so. It is a guess, as I have already said.

Sir HENRY DRAYTON: But it is the best guess you can make?

Mr. CHAMBERLIN: It is the best guess I can make now.

Sir HENRY DRAYTON: There is one other matter: You think that the Government as a matter of fairness to the Grand Trunk, ought to relieve the Grand Trunk Railway Company of its total Grand Trunk Pacific investment?

Mr. CHAMBERLIN: I do.

Sir HENRY DRAYTON: And repay to the Grand Trunk the money it has in the Grand Trunk Pacific, and relieve the company of all its responsibility. That is a large order. We want to give you every opportunity to state every ground on which you think that should be done.

Mr. CHAMBERLIN: Well, Sir Henry, if you will look at this map you will see where the Grand Trunk Pacific stretches away off up through the north country, while the Grand Trunk is away down in this part of the country. It is not a natural connection of the Grand Trunk, is it? It is not only not a connection of the Grand Trunk, but it is not of any benefit to the Grand Trunk.

In the first place, we are under contract to send all business over this north line, away from the Grand Trunk. The Grand Trunk cannot derive any benefit from it, under the contract with the Government.

Commissioner ACWORTH: That is a new point, to me.

Mr. CHAMBERLIN: In addition to that, the company is bound to put steamers on the Atlantic and steamers on the Pacific, to accommodate all that business, and yet it does not bring one dollar of business to the Grand Trunk.

Commissioner ACWORTH: How does that obligation arise?

Mr. CHAMBERLIN: It arises out of the contract with the Government.

Commissioner ACWORTH: The original contract with the Government?

Mr. CHAMBERLIN: The original contract.

Mr. BIGGAR: Of July 29, 1903.

Commissioner ACWORTH: Is the agreement a schedule to the Act?

Mr. BIGGAR: Yes, sir, a schedule to the Act of 1903. Chapter 80, I think it is.

Commissioner ACWORTH: Therefore, if the Grand Trunk, as it does at present, operate or control the operation of the Grand Trunk Pacific, were to send traffic through Portland instead of through Halifax, it would be a fraud on the agreement?

Mr. CHAMBERLIN: Yes. We are bound to go on with all that tremendous outlay and to carry that load, and yet not get one dollar of benefit from it. The Grand Trunk simply cannot carry it.

Commissioner ACWORTH: Let me ask this question: When you went away from the agreement to work the Transcontinental, was that question of the obligation of the Grand Trunk Pacific to carry over the Transcontinental ever raised?

Mr. CHAMBERLIN: No. The agreement is with the Grand Trunk Pacific, not with the Transcontinental.

Commissioner ACWORTH: But it was practically Grand Trunk, rather than Grand Trunk Pacific?

Mr. CHAMBERLIN: It is in the name of the Grand Trunk Pacific, not of the Grand Trunk.

Commissioner ACWORTH: The Grand Trunk Pacific said they could not work the Transcontinental, with its present cost?

Mr. CHAMBERLIN: Yes.

Commissioner ACWORTH: And the Grand Trunk Pacific did not raise, and the Grand Trunk was not in a position to raise (that is what it comes to) the question of whether the obligation remaining on the Grand Trunk Pacific to run over the Transcontinental was a reasonable one?

Mr. CHAMBERLIN: Well, it was not raised, anyway.

Commissioner ACWORTH: I am an outsider, in regard to these matters, and have to pick them up as we go along.

Mr. CHAMBERLIN: The only body that could raise that question would be the Government, I should say.

Mr. BIGGAR: The only company which could raise any objection would be the Grand Trunk Pacific.

Commissioner ACWORTH: An obligation to operate via Halifax rather than via Portland is an obligation of the Grand Trunk, not of the Grand Trunk Pacific?

Mr. BIGGAR: Yes. It is provided for in the agreement dated the 29th of July, 1903, which is a schedule to chapter 71 of the Statutes of Canada, 1903.

Commissioner ACWORTH: The Act constituting the system?

Mr. BIGGAR: An Act confirming an agreement entered into between His Majesty The King, and Sir Charles Rivers Wilson and others acting on behalf of the Grand Trunk Pacific Railway Company.

Clauses Nos. 41 to 45, inclusive, provide:

> 41. At all times during the terms of the said lease, the Company shall continuously and efficiently operate both divisions of the said railway, giving due and sufficient service for the accommodation of all traffic to the satisfaction of the Government.
>
> 42. It is hereby declared and agreed between the parties to this agreement that the aid herein provided for is granted by the Government of Canada for the express purpose of encouraging the development of Canadian trade and the transportation of goods through Canadian channels. The Company accepts the aid on these conditions, and agrees that all freight originating on the line of the railway, or its branches, not specifically routed otherwise by the shipper, shall, when destined for points in Canada, be carried entirely on Canadian territory, or between Canadian Inland Ports, and that the through rate on export traffic from the point of origin to the point of destination shall at no time be greater via Canadian Ports than via United States Ports, and that all such traffic, not specifically routed otherwise by the shipper, shall be carried to Canadian Ocean Ports.
>
> 43. The Company further agrees that it shall not, in any matter within its power, directly or indirectly advise or encourage the transportation of such

freight by routes other than those above provided, but shall, in all respects, in good faith, use its utmost endeavours to fulfil the conditions upon which public aid is granted, namely,—the development of trade through Canadian channels and Canadian Ocean Ports.

44. In respect of the tolls for any traffic carried partly over any line of railway operated by the Company and partly over any of the lines of the Intercolonial Railway, a fair and equitable ratable division of all such tolls shall be made by mutual agreement, or, in case of dispute, such division shall be fixed by arbitrators appointed in the manner provided by paragraph forty-seven of this agreement, or by a Board of Commissioners which may hereafter be duly appointed as mentioned in paragraph nineteen of this agreement, and with the right of appeal as therein mentioned.

45. The Company shall arrange for and provide, either by purchase, charter or otherwise, shipping connections upon both the Atlantic and Pacific Oceans sufficient in tonnage and in number of sailings to take care of and transport all its traffic, both inward and outward, at such Ocean ports within Canada, upon the said line of railway, or upon the line of the Intercolonial Railway, as may be agreed upon from time to time, and the Company shall not divert, or, so far as it can lawfully prevent, permit to be diverted, to ports outside of Canada any traffic which it can lawfully influence or control, upon the ground that there is not a sufficient amount of shipping to transport such traffic from or to such Canadian ocean ports.

Mr. CHAMBERLIN: We are bound to make the same rates from Halifax and St. John as are made to Boston and Portland, and we are bound to provide steamships on the Atlantic and on the Pacific to take care of any business offering.

Commissioner ACWORTH: You never have provided ships on the Atlantic, in fact?

Mr. BIGGAR: No.

Commissioner ACWORTH: And the Government has never called on you to carry out your contract?

Mr. CHAMBERLIN: You talk about the money the Government would have to raise to pay off the Grand Trunk. They would not have to raise $250,000. This has been financed on a three and four per cent basis except on loans from the Government, and I have offered to take the advances in Government bonds of ten or fifteen years.

Sir HENRY DRAYTON: But the obligation is there; the burden is there, and the carrying costs are there.

Mr. CHAMBERLIN: Yes, but it is really a matter of financing, to-day.

Sir HENRY DRAYTON: Your first point, Mr. Chamberlin, is that the Grand Trunk is not interested in all this development at all, and that the railway as contracted for and laid out is something which takes traffic away from the parent Grand Trunk System instead of giving traffic to it.

One answer that might be quite easily made to that is that the representatives of the Grand Trunk must have known all that when this contract was entered into?

Mr. CHAMBERLIN: I don't know They must have. Of course, I do not want to criticize my predecessors.

Sir HENRY DRAYTON: What is the next ground?

Mr. CHAMBERLIN: What do you mean?

Sir HENRY DRAYTON: You have just advanced a reason why you think the Government should take the whole burden of the Grand Trunk Pacific away from the Grand Trunk Railway Company?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: That reason being that the position and the manner in which the line has been built, it is really for a separate system and not for the Grand Trunk System at all?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: That is your first ground. Now what is the next ground?

Mr. CHAMBERLIN: Isn't that enough?

Sir HENRY DRAYTON: I don't know. You are the one to say. You are giving us all your grounds, and we want to give you every opportunity to advance every argument you can.

Mr. CHAMBERLIN: We can no more carry out that contract with the Government than anything in the world. How are we going to raise money to build those steamships? How are we going to build steamships? How are we going to carry the burden if we are forced to carry all that stuff all the way down there at Boston and Portland rates?

Sir HENRY DRAYTON: Your second ground is that of impossibility?

Mr. CHAMBERLIN: It is an impossibility.

Sir HENRY DRAYTON: If it is impossible now, it was always impossible?

Mr. CHAMBERLIN: It was always impossible.

Mr. BIGGAR: It was not thought to be impossible, by the men who made the contract.

Sir HENRY DRAYTON: I think it was.

Mr. BIGGAR: Of course Mr. Hays is now dead. He was very optimistic about it, we all know that.

Sir HENRY DRAYTON: Mr. Chamberlin, you have already, through Mr. Biggar, submitted a letter to this Investigating Commission, pointing out first that your scheme was a scheme for building from North Bay; secondly, that your scheme from North Bay was changed at the request of the Government; thirdly, that in the Railway Committee an amendment was forced which compelled the line to be carried from Quebec down to Moncton.

There is nothing more to be said in that connection is there?

Mr. CHAMBERLIN: Nothing more to be said, that I know of.

Sir HENRY DRAYTON: When the Government have already taken over the burden of the line from Quebec east, haven't they relieved you of every single trouble in that connection?

Mr. BIGGAR: The one fatal omission is the connection between the Grand Trunk Pacific and Ontario.

Sir HENRY DRAYTON: You mean, between the Grand Trunk Pacific and North Bay?

Mr. CHAMBERLIN: Practically that. The Grand Trunk System in Ontario to-day is not connected up.

Sir HENRY DRAYTON: This map of yours shows an alternate line dotted?

Mr. CHAMBERLIN: That was the original scheme.

Sir HENRY DRAYTON: That ties up to Sudbury?

Mr. CHAMBERLIN: That ties up to Sudbury, with a continuous line down to Midland I guess it is, or Allandale.

Sir HENRY DRAYTON: Mr. Biggar, do you want anything further said in so far as construction east of Winnipeg is concerned; you have some letters, Mr. Chamberlin, do you want to put any of them in the record?

Mr. CHAMBERLIN: I will leave that matter to Mr. Biggar.

Mr. BIGGAR: I think we had better put them in.

Sir HENRY DRAYTON: You gentlemen will have to determine yourselves what letters you want to put in.

Mr. CHAMBERLIN: I do not see any objection to putting them in, myself.

There is one particular piece of information to be brought out; that is, that the Grand Trunk officials of that day would never have gone into it if they had thought a competing line would be built alongside their line all the way through. They

thought they would have a chance to go ahead for fifteen years, year after year. If they had thought that instead they would have had competition immediately all the way through, I am sure they never would have entered into the agreement.

Sir HENRY DRAYTON: Give us all your reasons why the Government should help, or why the Government should assist the Grand Trunk Pacific.

Mr. CHAMBERLIN: I say that the situation would not have been nearly as bad as it is now if the Government had not subsidized another line paralleling ours all the way through, to which they gave larger guarantees than they did to the Grand Trunk Pacific, and in addition gave them $12,000 a mile cash.

Sir HENRY DRAYTON: Do you happen to know whether, in the negotiations between the Government and the Railway, the question of aids to other lines was discussed at all. You see your company has not got a provision or a stipulation from the Government that they would not do that which you now complain of. Do you know whether that question was discussed at all?

Mr. CHAMBERLIN: I cannot say as to that. Mr. Biggar can tell you, no doubt. I was not present and had nothing to do with the institution until it was well on to completion.

Sir HENRY DRAYTON: Was that question discussed at all, Mr. Biggar?

Mr. BIGGAR: Not as far as I know, Sir Henry. At the session at which the Canadian Northern was assisted between Winnipeg and Edmonton, it was presumed that that was to be as far as that line would go.

Sir HENRY DRAYTON: But it was contemplated that they would build to the coast?

Mr. BIGGAR: I don't think it was.

Sir HENRY DRAYTON: If I am not very much mistaken, negotiations were entered into between your executive and the executive of the Canadian Northern, looking to the fusion of the systems, so that there would not be this duplication.

Mr. CHAMBERLIN: They tried to buy the Manitoba lines, but they could not get together, Mr. Hays told me at one time, and Mr. Wainwright told me also. I asked them why they did not buy out the Canadian Northern. They said they had had meeting after meeting with them, and that the best terms they could get were that they should assume all obligations, all bonds and everything else, and give $25,000,000 for the common stock for that little bunch of lines up around Winnipeg.

Commissioner ACWORTH: Can you give us the date of that?

Mr. BIGGAR: That was in 1903.

Sir HENRY DRAYTON: It was in 1903 that those negotiations were going on?

Mr. BIGGAR: It was either in 1903 or 1904.

Sir HENRY DRAYTON: It was not very long after that before the Canadian Northern went on branching out?

Mr. BIGGAR: Where from?

Sir HENRY DRAYTON: From everywhere. They have been operating since 1908. I quite appreciate, Mr. Chamberlin, the point you make, that is, that your undertaking has been very much injured by another line. But wasn't it a case of the country being open for the two companies? There was no reason why the Government should not do it, if they wanted to?

Mr. CHAMBERLIN: I think there was, because our people looked upon it in this light, that they and the Government were partners, and that one partner would not do anything to injure the other.

Sir HENRY DRAYTON: But you know that the Canadian Northern to-day puts forward the same thing as against you, that they would have been in good shape to-day as a transcontinental line if the Government had not subsidized your company?

Mr. BIGGAR: But the Canadian Northern had not made any arrangement to go west of Edmonton prior to this agreement.

Mr. CHAMBERLIN: Take their lines through British Columbia, and you will find that they took a line down the Thompson river and on to Vancouver which was approved by the Government. Mr. Hays wrote me to Winnipeg asking whether we should oppose it. I said no, if there isn't any other way of going to Vancouver than that, do not let us go.

Sir HENRY DRAYTON: What is your objection to that route?

Mr. CHAMBERLIN: The Thompson river, and those slides there. They had in 1903 a guarantee covering the line to the Prince Albert branch, running straight up north, apparently to Edmonton. They built their line into Edmonton, then did not do anything until 1908; 1903 was the year our charter was being obtained.

Mr. BIGGAR: Not only that, but our agreement with the Government on which the whole scheme is based, from Winnipeg to Prince Rupert, was made in 1903.

Sir HENRY DRAYTON: Can you really say more than this, Mr. Chamberlin, that although there was no agreement that the Government should not help any other line, you assumed that as a matter of good business the Government would not help any other line competing with you?

Mr. BIGGAR: West of Edmonton.

Mr. CHAMBERLIN: West of Edmonton or east of Port Arthur. In carrying out their arrangement with us in good faith, they could not consistently do that.

Sir HENRY DRAYTON: Why do you say, in good faith?

Mr. CHAMBERLIN: We were partners, and were opening up a new country which both sides knew was dependent upon the country filling up. There was nothing in it from one end to the other. You could ride for two days along our line without seeing a house. Then they put another line alongside of ours and divided the thing up.

Sir HENRY DRAYTON: But you are the interloper in prairie lines; surely your complaint if any is confined to the West, on the one hand?

Mr. CHAMBERLIN: So far as the Canadian Northern and the Canadian Pacific Railway are concerned?

Sir HENRY DRAYTON: I am now speaking of the Canadian Northern, not of the Canadian Pacific Railway. They always had the road. They got no bonuses for that. Take it from Edmonton west, and all the way down through; from Edmonton west you make the complaint as to the Canadian Northern, and as to Port Arthur east, but nowhere else is there anything on which you can make that point?

Mr. CHAMBERLIN: Of course they are paralleling our branch lines. That shows who was ahead, conclusively. The first year in which they did anything was 1908. Then they got an extra in 1910, 1911, 1912, 1914, and 1916.

Sir HENRY DRAYTON: You have written me a letter giving some grounds as to why the road should be taken over. We notice that there is a fairly good operating balance on the main line, but a very heavy operating loss on the branches?

Mr. CHAMBERLIN: Yes, but they get more than half of their business on branch lines.

Sir HENRY DRAYTON: The loss on the branch lines is more than compensated for by the long haul on the main line?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: You speak of confiscation, in your letter, Mr. Chamberlin. No person is thinking of confiscating the investment that I know of. If you can afford to carry it, you will be allowed to carry it. That was not really meant, was it? Suppose you are left to yourselves, the thing crashes, no one confiscates it. Isn't that right?

Mr. CHAMBERLIN: To a certain extent, yes.

Sir HENRY DRAYTON: To every extent, isn't it?

Mr. CHAMBERLIN: To every extent.

Sir HENRY DRAYTON: You also mention in your letter that the money was put into the undertaking in good faith, and that it was a national undertaking. We have to look upon that more or less in the way these large terms are usually taken. It is only national to the extent that the agreement makes it?

Mr. CHAMBERLIN: Of course we are very anxious to avoid a break or a crash. The Grand Trunk has to raise a great deal of money, as you know in your department, for grade separations, improvements to hotels, etc.

Sir HENRY DRAYTON: I quite agree with that. You should be able to raise a great deal of money for the purchase of rolling stock and so on.

Mr. CHAMBERLIN: We have to. Of course the debenture stock is a first lien, and these guarantees are right behind the debenture stock.

Sir HENRY DRAYTON: Your point I take it is that it is impossible for the Grand Trunk to continue its service and raise money, under these circumstances?

Mr. CHAMBERLIN: Absolutely.

Sir HENRY DRAYTON: What do you desire to say in order to justify what you say in your letter about competing lines being subsidized?

Mr. CHAMBERLIN: In the first place, all our estimates were made on the basis of $1.50 for labour, $1.75 to make it safe. Labour is the principal part of the construction of a railway. The result was that with the other road working right alongside of us, especially west of Edmonton, we had to pay $3.50 a day right along, and even then the men would not work. If we tried to crowd them and make them work, they would simply climb over the fence, so to speak, and go and work for the Canadian Northern.

Sir HENRY DRAYTON: But your position would be no worse in that respect than that of the Canadian Northern?

Mr. CHAMBERLIN: Not in that respect. Still it tremendously increased the cost of the road. In addition to that, all material was increased in price. The Canadian Pacific Railway was constructing feverishly all the time to keep up with the other two. That increased the cost of material away beyond any expectations. There were also duties put on everything after that contract was made, such as $7 a ton on rails. So you see everything counted.

Sir HENRY DRAYTON: Is there anything you wish to say in justification of that part of your letter in which you speak of the course subsequently followed by the Government, and of the road never being built?

Mr. CHAMBERLIN: That is simply a statement of my judgment, that the officers of the Grand Trunk who made that arrangement with the Government never would have made it if they had known that their line was going to be paralleled. All our correspondence shows that.

Sir HENRY DRAYTON: Have you any correspondence you wish to produce which shows that?

Mr. CHAMBERLIN: Mr. Biggar has a lot here; he is getting it.

Sir HENRY DRAYTON: You had better put in whatever you want to put in.

Mr. CHAMBERLIN: We will give you the whole bunch.

Sir HENRY DRAYTON: Mr. Biggar is going to sort out whatever correspondence he desires to file in connection with this matter which will be put in as a separate exhibit.

I take it that you are not serious when you mention in your letter the repudiation of a legitimate indebtedness, the injury of the Grand Trunk Company's credit, hostile criticism, and so on. I quite appreciate your point, that if anything is done to injure the credit of the Grand Trunk, these consequences might follow. But there is no suggestion that I know of of the Government repudiating any of its legitimate indebtedness.

Mr. CHAMBERLIN: The idea is that if the Grand Trunk and the Grand Trunk Pacific go into insolvency (which they will have to do if the Grand Trunk attempts

to carry out that arrangement) the Grand Trunk Pacific having been heralded and looked upon as a Government-backed road, it would naturally have an effect upon the other securities as well.

Sir HENRY DRAYTON: What I wanted to find out was, what was meant by the statement in the letter in regard to the repudiation of a legitimate indebtedness. There is no suggestion that the Government should repudiate any of its legitimate indebtedness. It is not a matter of repudiation.

Mr. CHAMBERLIN: If the Grand Trunk says it cannot go on with this undertaking, the Government of course will have to take it over—it could not help itself, on account of the guarantees. They would then wipe out $30,000,000, $30,000 a mile, and could wipe out, say, $25,000,000 owing to the Grand Trunk. You see that while they guaranteed the Grand Trunk $13,000 a mile they guaranteed the Canadian Northern $35,000 a mile.

Sir HENRY DRAYTON: The Government would do substantial justice if they took it over at $35,000 a mile, to put yours on a parity?

Mr. CHAMBERLIN: Does that not reflect on the credit of the Government as well, a Government-backed road?

Sir HENRY DRAYTON: But they only backed it to the extent of the guarantees; your complaint is that they did not back it quite enough?

Mr. CHAMBERLIN: If the Grand Trunk Pacific goes to the wall, a Government road, everybody throughout the Northwest would say that the Government built it entirely too high.

Sir HENRY DRAYTON: Doesn't it really come down to this, that the statements in your letter mean that in your view, in order to protect the finances of the Grand Trunk, and as a corollary to protect the finances of the country, the Government ought to relieve the Grand Trunk in regard to its investment; isn't that the whole thing?

Mr. CHAMBERLIN: That is the whole thing.

Sir HENRY DRAYTON: There is nothing else to it?

Mr. CHAMBERLIN: Nothing else.

Commissioner ACWORTH: I can follow the point this far; that the Grand Trunk Pacific, being regarded as a Government obligation, the Government should see that anybody who had put money into the Grand Trunk Pacific should be protected to the last penny. But wouldn't it be absolute justice on the part of the Government to say that the Grand Trunk went into this undertaking, and that the Government must ask the Grand Trunk to pay all it can towards the obligation the Government has to carry; in other words, that the Government must ask the Grand Trunk to accept the sinking of the $26,000,000 they have already advanced, and that the Government must ask the company to contribute, in order to minimize the loss, all the net revenue the company has, that while it is not enough yet the Government must have that.

Mr. CHAMBERLIN: The fact is that the Grand Trunk is not able to contribute anything towards paying its own security holders and making the improvements the people of Canada demand and the business of Canada require.

Sir HENRY DRAYTON: But last year the Grand Trunk gave its shareholders half a million sterling?

Mr. CHAMBERLIN: Yes.

Commissioner ACWORTH: Do you mean to say that that was a necessary expenditure—I am not a shareholder?

Mr. CHAMBERLIN: If you strike off the interest on your securities . . .

Commissioner ACWORTH: It was not a security; they gave half a million to their guaranteed shareholders?

Mr. ARDLEY: Four per cent on the guaranteed stock was paid.

Commissioner ACWORTH: Which came to half a million sterling. Wouldn't it be absolute justice for the Government to say . . .

Mr. CHAMBERLIN: To wipe out these poor shareholders?

Commissioner ACWORTH: To say to the Grand Trunk that they must pay these liabilities to whatever extent they can, because as far as the public was concerned the Government would have to face the rest, but that the Grand Trunk must do all it can?

Mr. CHAMBERLIN: The Grand Trunk can just about meet it, but cannot pay the shareholders anything.

Commissioner ACWORTH: It divided a profit last year of $2,500,000?

Mr. CHAMBERLIN: You do not call it munificent, to pay interest on your guaranteed securities, do you?

Commissioner ACWORTH: But guaranteed stock is a share, not a bond. Are we agreed upon it, that the company divided a certain amount last year as a profit, a profit divisible as a dividend?

Mr. CHAMBERLIN: How about the first, second, and third preference stock?

Commissioner ACWORTH: Those holders would not get anything. For a series of years there has always been some amount paid as dividend?

Mr. CHAMBERLIN: We would not have paid so much last year, if we had paid out on the Grand Trunk as much as we ought to have paid for betterments.

Sir HENRY DRAYTON: If you had paid all you should have paid out for betterments, you would not have been likely to have paid anything?

Mr. CHAMBERLIN: No. We have not put in any rails for two years past, of any account.

Sir HENRY DRAYTON: How much do you think you should put in, to keep things right, in order to look after proper operations?

Mr. CHAMBERLIN: We should have at least three and perhaps four per cent put aside every year on rolling stock. That would amount to from $2,000,000 to $2,500,000.

Sir HENRY DRAYTON: You have never done that?

Mr. CHAMBERLIN: We have never done that. I have had it before the Board, and have practically insisted upon it being done whenever we get any new rolling stock. I bought about 10,000 cars the first year I was here. They were all charged to Capital Account. We should have had a reserve fund for taking care of them. We now have to go and do the same thing over again.

Sir HENRY DRAYTON: Supposing you were to reconstruct your accounts now; I want to see what effect these items would have on the Grand Trunk. What would the providing of three or four per cent annually amount to?

Mr. CHAMBERLIN: My idea is that it would take five per cent. Take engines and cars, they are either worn out or out of date in twenty years.

Sir HENRY DRAYTON: I agree with you absolutely. If you were to tell your accountants to go and make provision of that kind in respect of your equipment, on that basis, it would preclude the shareholders from receiving anything for years and years?

Mr. CHAMBERLIN: You mean, if we made it up for back years?

Sir HENRY DRAYTON: Yes.

Mr. CHAMBERLIN: Yes, it would. It would mean $2,750,000 a year.

Sir HENRY DRAYTON: You would have to go back probably twenty years to make it right?

Mr. CHAMBERLIN: Yes.

Sir HENRY DRAYTON: To put your accounts in proper shape, in regard to a proper equipment, would require a reserve of $25,000,000?

Mr. CHAMBERLIN: Take the matter of grade separation at Toronto, for instance . . .

Sir HENRY DRAYTON: Suppose you suggest $27,000,000—wouldn't $25,000,000 be enough to properly provide for reserves for equipment?

Mr. CHAMBERLIN: Yes, I think it would. We have now a lot of new equipment charged to Capital. If we had $25,000,000 now, it would put us in fine shape.

Sir HENRY DRAYTON: To look after replacements and amortizations?

Mr. CHAMBERLIN: Yes, to do that.

Sir HENRY DRAYTON: To do that you should have that credit?

Mr. CHAMBERLIN: We could have that credit. That is one reason I am fighting so hard for that $25,000,000. I want it to spend here on the Grand Trunk.

Commissioner ACWORTH: Apart from equipment, there is the question of road up-keep. You said you had not put in any new rails during the past two years?

Mr. CHAMBERLIN: We put in quite a few in 1915, but in Canada we only put in 2,500 tons last year, because our friend Mr. Flavelle grabbed all the steel at the Soo, and would not let them roll any rails. We had them bought, and have them bought now. I have been trying to get them to let us have them now.

Commissioner ACWORTH: I don't know about 1916, but even in 1915 you did not put in very many new rails?

Mr. CHAMBERLIN: No, we did not.

Commissioner ACWORTH: And did not make a reserve for the money you would have spent if you had got the rails?

Mr. CHAMBERLIN: I do not mean to say that the rails are dangerous. But we must put in a certain percentage every year. If we go over a couple of years, the first thing we know we will have a lot of rotten rails.

Commissioner ACWORTH: Are you behind in your calculation on ties?

Mr. CHAMBERLIN: We have done pretty well on the tie question. We should have had a few more last year, but could not get them.

Commissioner ACWORTH: When you did not get them, you did not charge the money to Road Reserve in any shape or form that you might have charged?

Mr. CHAMBERLIN: No.

Sir HENRY DRAYTON: What do you put the life of a rail at, Mr. Chamberlin?

Mr. CHAMBERLIN: That is very hard to tell. It depends altogether upon the traffic. On one line a rail will last fifty years, while on another line it will not last five years.

Sir HENRY DRAYTON: Between Montreal and Toronto say?

Mr. CHAMBERLIN: On that line the rails are 100-pound rails. I should say about ten years would be the life of those rails, although I have not had any statistics taken of them.

Sir HENRY DRAYTON: Only ten years for a 100-pound rail?

Mr. CHAMBERLIN: Yes, I should think about that.

Mr. ARDLEY: They would be useful on branch lines, after that.

Mr. CHAMBERLIN: We saw off the ends of them, and use them for branch lines.

Commissioner ACWORTH: I saw some figures this morning for eleven months, that is, eleven months as against the corresponding period of the previous year. The road maintenance costs have increased $334,000 in cash, but the percentage dropped from 9.97 (which is practically 10) to 9.06, which is practically 9.

Mr. CHAMBERLIN: Mr. Ardley can explain that better than I can. A great deal of that is rails.

Commissioner ACWORTH: You have not been able to get them, and therefore have not charged them?

Mr. CHAMBERLIN: That is it.

Commissioner ACWORTH: Similarly in regard to equipment. The equipment for the eleven months to November, 1915, amounted to 16·69 of the expenses, while in 1916 it dropped to 11·62, or, in actual cash expended there has been $328,000 of an increase. Does that mean the same thing again, that you could not get the equipment?

Mr. ARDLEY: That is operation for the eleven months, of the Grand Trunk. Of course I have not got the sheet before me, but I do not think we did as much repairing as we did in previous years.

Mr. CHAMBERLIN: We have employed every man we could employ, and have worked full hours, something we never did before in winter time.

Mr. ARDLEY: If you examine the statements you will see exactly where the increase was.

Mr. CHAMBERLIN: Take Motive Power, $53,000 up; Car Department, $24,000 up; Car Department, $31,000 up; Car Department, $25,000 up. You will see that the motive power went up to $50,000.

Mr. ARDLEY: A lot of the increase in motive power represents the wages of enginemen and firemen, which do not go into Maintenance and Equipment. Of course we really do not come to a conclusion until the end of the year.

Commissioner ACWORTH: You accept the question as to Maintenance of Road?

Mr. ARDLEY: I can quite understand, because we have not had the rails to put in.

Commissioner ACWORTH: What about the Maintenance of Way?

Mr. ARDLEY: I think the Maintenance of Way will practically by the end of the year be about the same as last year.

Mr. CHAMBERLIN: If we had got those 17,500 tons, it would have meant $600,000 for rails alone, let alone the new angle-bars, nuts, bolts, spikes, and labour taking them out. It would probably run to $700,000 on that one item, if we had had them. But we could not get them.

Commissioner ACWORTH: And as you do not keep a reserve, you have not charged it up in cash?

Mr. CHAMBERLIN: No.

Sir HENRY DRAYTON: I see, discounts on securities sold, getting into Capital Account?

Mr. ARDLEY: We have always charged that account with that item.

Commissioner ACWORTH: Is that right?

Mr. ARDLEY: It is not right, under any Interstate Commerce Commission Law. They make us carry our discounts.

Commissioner ACWORTH: Is it right, as a matter of business?

Mr. ARDLEY: I don't know whether it is right as a matter of business. The only thing is, that our Debenture Stock is special. It does not appear in the statements.

Commissioner ACWORTH: Well, these things come home to roost in a very few years.

Mr. ARDLEY: The people in London say they won't do it that way, so we are going to do it, when they want it done that way.

Sir HENRY DRAYTON: Is there anything more you want to say, Mr. Chamberlin, on general principles, without going into details?

Mr. CHAMBERLIN: I don't think so.

Sir HENRY DRAYTON: There are no further reasons you wish to advance?