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Various pagings.

In Appendix 4, pages 5 & 51 are photoreproductions.

APPENDICES

TO THE

THIRTY-THIRD VOLUME

OF THE

JOURNALS OF THE SENATE

OF

CANADA

THIRD SESSION OF THE EIGHTH PARLIAMENT, 1898

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1898

APPENDIX.

LIST OF APPENDICES.

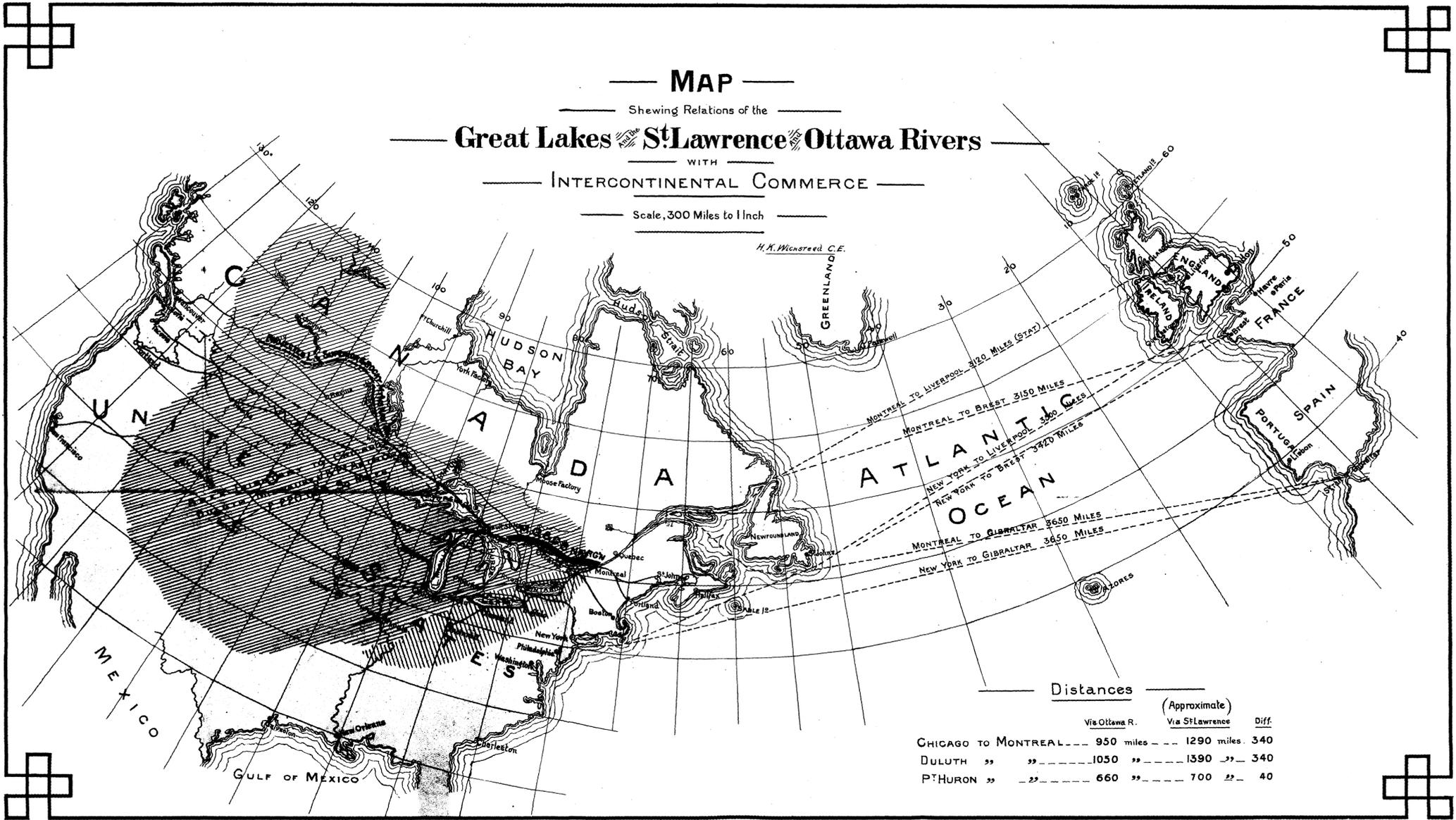
No. 1.—Evidence of witnesses and vouchers adduced before the Standing Committee on Divorce on the Bill (A) intituled: “An Act for the relief of Robert Augustus Baldwin Hart.” (*Printed for the use of Senators and Members of the House of Commons only, in accordance with Rule 103 of the Senate.*)

No. 2.—Evidence of witnesses and vouchers adduced before the Standing Committee on Divorce on the Bill (C) intituled: “An Act for the relief of Edwin Heyward.” (*Printed for the use of Senators and Members of the House of Commons only, in accordance with Rule 103 of the Senate.*)

No. 3.—Evidence of witnesses and vouchers adduced before the Standing Committee on Divorce on the Bill (D) intituled: “An Act for the relief of James Pearson.” (*Printed for the use of Senators and Members of the House of Commons only, in accordance with Rule 103 of the Senate.*)

No. 4.—Evidence of witnesses adduced before the Special Committee appointed to investigate and report upon the advantages which would accrue to the Dominion from the construction of the Georgian Bay Canal. (*Vide Appendix No. 4.*)

No. 5.—Evidence of witnesses adduced before the Special Committee appointed to inquire into Routes to the Yukon. (*Vide Appendix No. 5.*)



MAP
 Shewing Relations of the
Great Lakes, St. Lawrence, and Ottawa Rivers
 WITH
INTERCONTINENTAL COMMERCE

Scale, 300 Miles to 1 Inch

H. A. Wichoreed C.E.

Distances

	Via Ottawa R.	(Approximate) Via St. Lawrence	Diff.
CHICAGO TO MONTREAL	950 miles	1290 miles	340
DULUTH " "	1050 "	1390 "	340
PITHURON " "	660 "	700 "	40

APPENDIX No. 4.

REPORT

EVIDENCE and other documents presented to the Senate by the Special Committee appointed to investigate and report upon the feasibility of, and the advantages which accrue to the Dominion, from the construction of a canal uniting the waters of Lake Huron with those of the St. Lawrence via the Ottawa River—with power to send for papers, persons and records, and to employ such persons as the Committee may deem necessary for the investigation, and to report from time to time.

Georgian Bay Canal.

ORDER OF REFERENCE.

EXTRACT FROM THE MINUTES OF PROCEEDINGS OF THE SENATE.

Friday, 18th February, 1898.

The Honourable Mr. Clemow moved, seconded by the Honourable Mr. Casgrain, That a Select Committee be appointed to investigate and report upon the feasibility of, and the advantages which would accrue to the Dominion from the construction of a canal uniting the waters of Lake Huron with those of the St. Lawrence via the Ottawa River, the said Committee to consist of the Honourable Messieurs Sir Mackenzie Bowell, Scott, Casgrain, McMillan, Dobson, Bellerose, de Boucherville, Ogilvie, Owens, Almon, Miller, McKay, Power, Bernier, Boulton, Perley, Macdonald (P.E.I.), Prowse, Reid, and the mover; with power to send for papers, persons and records, and to employ such persons as the Committee may deem necessary for the purpose of the investigation, and to report from time to time.

The question of concurrence being put thereon, the same was resolved in the affirmative, and

Ordered, accordingly.

Georgian Bay Canal.

REPORT.

THE SENATE,
COMMITTEE ROOM No. 8,
WEDNESDAY, 1st June, 1898.

Your Committee appointed to investigate and report upon the feasibility of, and the advantages which would accrue to the Dominion from the construction of a canal uniting the waters of Lake Huron with those of the St. Lawrence *via* the Ottawa River—with power to send for papers, persons and records, and to employ such persons as the Committee might deem necessary for the investigation and to report from time to time; have the honour to make their final report, as follows:—

Your Committee had before them personally, Mr. S. A. Thompson, of Duluth, whom they have reason to believe, is one of the greatest authorities upon the waterways of America.

Major General Gascoigne, the Commanding Officer of the Canadian Militia.

Mr. Marcus Smith, M. Inst. C. E., of Ottawa.

Mr. James Meldrum, M. Inst. C.E., of London, England, the head of the Foreign Department of Messrs. S. Pearson & Son (Limited), the foremost and most extensive contractors in England, who have been approached with regard to constructing and operating the proposed canal.

Mr. Ormond Higman, Chief Dominion Electrician, Ottawa.

Mr. H. K. Wicksteed, C.E., of Cobourg, who has been over the work and studied it fully.

Your Committee have also received answers to a series of questions sent to various parties, among others—Sir Wm. Van Horne, President of the Canadian Pacific Railway Company; Mr. Walter Shanly, C.E.; Mr. T. C. Clark, M. Inst. C.E., &c., of New York; Mr. R. W. Shepherd, Man. Dir. of the Ottawa River Navigation Company; Mr. Andrew Bell, C.E., Almonte, and many others.

From an Engineering standpoint, those experts who have traversed the proposed route, and those who have carefully examined the data supplied them, report that no physical difficulty exists in the construction of such a waterway.

Mr. T. C. Clark, M. Inst. C. E., in his report to the Government of Canada, in 1860, says:—

“ In the first place I have to report that the distance between Montreal and the mouth of the French River on Lake Huron (according to the plans furnished me by the department), is, following the line of navigation adopted, 430·76 miles.

“ That of this distance 351·81 miles are already a perfect natural navigation, and require no improvement, and that it is perfectly practicable so to improve the remaining 78·95 miles, as to convert the whole chain of waters into a first-class navigation for steam vessels, and to reduce the length of canalling to 29·32 miles, or, exclusive of the Lachine Canal, to 20·82 miles.”

In a later report he says :—"To improve the navigation of such a river system is comparatively easy, for the greater part is already accomplished."

Mr. Marcus Smith, M. Inst. C. E., in reply to a question sees "no possible physical difficulty."

Mr. H. K. Wicksteed, C.E., says :—"The feasibility of the undertaking has been repeatedly reported upon by the most distinguished men in the profession."—"One of the most remarkable points in this connection is that the almost universal presence of hard solid rock at the salient points which in the 60's was looked upon as a drawback, and a source of almost insuperable difficulty, has come to be regarded as one of the happiest conditions. Lock chambers become little more than rock excavations, instead of the great masses of concrete, masonry and puddle as is observable on other canals. The water supply is ample; the other conditions are phenomenal."

Mr. A. M. Wellington writes :—"The finest place upon the globe for a deep water canal, is the Ottawa River route.

As to the Water power which could be developed and made available for manufacturing purposes, it is an unknown quantity.

Mr. Andrew Bell, C.E., says :—"There probably is no River on this Continent from which so large and available an amount of power can be obtained. The falls and rapids.....are distributed in such a manner that it is possible to make use of a very large percentage of the power."

Mr. Ormond Higman says :—"The power that could be used for electrical purposes is infinitely superior to Niagara, for the reason that the power at Niagara is confined to a radius of, say 40 miles; and the Ottawa River affords power along 400 miles at convenient distances. The electric power could be used as fuel for the smelting of iron, and the country all along the route abounds with iron; it could be used for railway purposes, for canal purposes and an endless variety of purposes. The generating stations would occur at such convenient intervals that they would only stretch from thirty to forty miles either way, so that there would be a continuous current right along the whole route."

Sir Wm. Van Horne says :—"It should result in the establishment of important industries along its course."

Mr. Walter Shanly thinks the Ottawa Valley might become the greatest flour milling country in the world."

Mr. Wicksteed says :—"The navigation works would of themselves render the enormous water power now running to waste, available, so much so, that the whole Ottawa Valley could be supplied with light and electrical power at such rates as would completely discount the use of steam, and make it the most favourite district for manufacturing industry in the world."

Upon the benefit to the Commerce of Canada generally, Sir William Van Horne says :—"I am of the opinion that the construction of the Montreal, Ottawa and Georgian Bay Canal will benefit the Commerce of Canada generally. Anything that will tend to lessen the cost of transportation must unquestionably have a beneficial effect. It would increase the trade of Montreal and Quebec and other Canadian seaports. It would develop local resources and would have a good effect upon the Canadian Pacific Railway as it would create more traffic than it would take away. Pulp and wood industries would be beneficially affected. The mineral resources of the Ottawa Valley would be developed."

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Mr. Walter Shanly and others expressed themselves to the same effect.

Mr. S. A. Thompson very strongly and clearly points out in his evidence, the effect that waterways have in reducing the cost of transportation, mainly in the heavier and coarser freights; such as grain, mineral, lumber, &c.

Major General Gascoigne in his evidence says:—"From a military view I may state broadly, from a strategic point of view, I look upon this scheme as the most desirable possible. Of course, I should qualify my statements in this respect, that a great deal depends upon the depth of the water that you propose to make.

The Chairman—The depth will be fourteen feet.

Major General Gascoigne—I was going to ask for fourteen feet. If you make it fourteen feet deep, I can only say that it will be of the utmost value from a strategic point of view, to the country. I know the Imperial authorities look at it in that light also."

To this evidence of the Military authorities the Committee desire to add nothing, as they deem it speaks for itself.

Your Committee were highly pleased with the evidence and explanations given by Mr. James Meldrum with regard to the proposition made to and by Messrs. S. Pearson & Son, (Limited) and their willingness to entertain the same, respecting the building and operating of the proposed canal.

Your Committee, reviewing the evidence as a whole, are of the opinion:—

That the construction of such a canal as that proposed by the Montreal, Ottawa and Georgian Bay Company is, beyond a doubt, feasible and practicable.

That its construction will be of great commercial advantage to the trade of Canada, affording, as it would, an additional outlet for the conveyance of the heavier grades of freight from the west to the seaboard, *via* Montreal and Quebec. It would also, from its being a more direct route and shorter, have the effect of reducing the cost of transportation upon these freights; for instance, grain from Lakes Michigan and Superior could be laid down in Montreal at a lower rate, and at Quebec at no higher rate than the lowest ever yet reached between the Lakes and New York. Consequently a great deal of that trade which now goes by way of the Erie Canal would be diverted to Montreal and our Canadian ports. And furthermore, your Committee are unanimously of the opinion that the development and use of the enormous water power along the route for electrical purposes, in the mining and smelting of iron and other ores which are so abundant in the Ottawa Valley, and which cannot now be developed by reason of the want of cheap communication and transportation, would of itself alone almost warrant the construction of the canal. It would also develop an enormous industry in the hard wood, pulp wood, pulp and other lumber industries of the Ottawa Valley. The development of all these industries and the opening up for settlement of the country will necessarily be a means of creating centres of population, and so, as your Committee have already observed, it will be a means of greatly increasing and benefiting the Commerce of the Dominion, and its construction is not only advisable but necessary.

Your Committee can only refer to the evidence of the Major General Commanding in respect to the advantage of the proposed canal as viewed by the Imperial Military authorities.

Your Committee, therefore, in submitting the evidence adduced by the various Scientific, Expert, Commercial and other witnesses, feel that it proves most conclusively that the construction of the Montreal, Ottawa and Georgian Bay Canal will be of inestimable benefit to the general prosperity of the Dominion of Canada.

They also desire to call attention to the advantage to be derived therefrom as respects the present settlers of the North-west; as also to the impetus that would ensue in the future to the increase of the agricultural population of that fertile section of the country by affording them easy, cheap and safe transportation for their products, and thus the large area of land now unproductive, would become owned by a desirable producing class of settlers, who would consequently be contributors to the revenue of the Dominion. Under the various circumstances, your Committee would strongly recommend the contemplated enterprise to the favourable consideration of the Government, and that they may be pleased to extend such assistance in such manner, mode and conditions as will ensure the early construction and speedy completion of the work; feeling quite assured that the people of the Country when they are made aware of the advantages to be derived from the undertaking, will duly appreciate any action the Government may take which will facilitate the construction of a work of such National importance; it being an all-Canadian route from and to the seaboard to the North-west.

Your Committee deeming that the information now embraced in their Report, with the Evidence of the various persons, now presented, should be circulated as extensively as possible; would recommend that five thousand copies in English and two thousand copies in French, with Maps and profiles (in addition to the regular distribution number), be printed as soon as possible for general distribution.

All which is respectfully submitted.

FRANCIS CLEMOW,
Chairman.

MINUTES OF EVIDENCE.

THE SENATE,
OTTAWA, 23rd March, 1898.

The Committee met at 11.30 a.m.

Mr. S. A. THOMPSON, of Duluth, appeared and addressed the Committee as follows:—

Mr. Chairman and Gentlemen of this Honourable Committee: I understand it to be the wish of Mr. McLeod Stewart that I should proceed to make a statement rather than that he should bring out the points which I have to present to you by question and answer. Of course it goes without saying that it is the privilege of this Honourable Committee, and my desire quite as well, if there be anything in my testimony that you wish to ask questions about, that I am certainly at your disposition. Not knowing exactly the amount of time which you can allow me, I shall endeavour to go as rapidly as I may to lay for your consideration the broad basis, first of the value of waterway improvements in general, second of their importance to a community, and third of their importance in promoting certain interests which ordinarily—at least, that is on the other side of the line—are considered somewhat antagonistic. I must take a moment to express my great pleasure at the honour which has been conferred upon me to be called before this Honourable Committee of our neighbour sister nation here upon the north, to speak upon a subject which has been near my heart for many years. I am called in my own country—and I glory in the title—a crank on the subject of waterway improvements, but I believe I can give good grounds for the faith that is in me, and I hope to present to you, not perhaps many new facts, but as is often the case, to throw a side light on them which will aid you in your deliberations on the matter before you. A certain distinguished ex-Governor of the State of New York once remarked that economy of transportation of persons and property is the chief factor in our modern civilization; it constitutes the marked difference between civilization and barbarism. Doubtless some of you, as I have, have been in Countries where there were no roads. Cutting my way painfully step by step through the jungles of South America, I have understood something about the difference between civilization and barbarism in the matter of transportation. Therefore, if this statement be true, it behooves us to find what is the cheapest form of transportation. Some fifteen years ago two distinguished Railway Presidents, one of them President of an eastern railway, the other President of a western railway, sat talking in an eastern office. The eastern man called attention to the constantly increasing efficiency of railways—the substitution of steel rails for iron, of steel in bridges, of more powerful locomotives, of cars with greater carrying capacity, of the improvements in the way of grades and curves which had been made, so that the roads were carrying very much greater quantities of freight with the same engine and in the same cars and with a much greater degree of economy, and he said, “Canal boats are played out already; the river steamer is almost gone, and it will only be a little while until the steamship of the Great Lakes will follow these others into retirement and leave to the railways the undisputed carrying trade of all the Continent, if not of the world, except on the Ocean where the railways cannot run.” The other railway man, telling the story in my hearing a few years ago, said, “I might have continued to believe, as I did then, in the ultimate triumph of the railway if I had not during that time had occasion to operate some steamboats myself.” But before I finish the story let me

give you just a few points on this subject. I have here, and can give you entire, if you wish, a table compiled from the reports of the Chicago Board of Trade, showing the charges for carrying wheat from Chicago to New York city by three different methods for a series of years—by rail, by lake and rail (that is by lake to Buffalo and thence by rail to New York), and lake, Erie Canal and the Hudson River, the all water route.

Calendar Years.	Lake and canal.	Lake and rail.	All rail.
1868.....	25·3	29·0	42·6
1869.....	24·1	25·0	35·1
1870.....	17·5	22·5	33·3
1871.....	21·6	35·0	31·0
1872.....	26·6	28·0	33·5
1873.....	19·2	26·9	33·2
1874.....	14·2	16·9	28·7
1875.....	11·4	14·6	24·1
1876.....	9·7	11·8	16·5
1877.....	7·5	15·8	20·3
1878.....	10·1	11·4	17·7
1879.....	13·0	13·3	17·3
1880.....	13·2	15·7	19·7
1881.....	8·6	10·4	14·4
1882.....	8·7	10·9	14·6
1883.....	8·40	11·5	16·5
1884.....	6·59	9·09	13·2
1885.....	4·55	9·6	14·0

Since 1885 there have been no radical or marked changes. We find that the all rail rate had decreased to fourteen cents a bushel, while the all water rate had decreased to 4·55 cents per bushel. In other words, while there had been a reduction of two-thirds in the all rail rates, there had been a reduction of 4·5 in the all water rate. So we find during this time the all water has been below the rail rate by from 25 to 67·5 per cent. Now, suppose we take for a moment the cost of transportation: we find that according to Poor's Manual for 1896, the last year for which I have statistics to compare, in 1896 the average rate received by the railways of the United States (and of course you will pardon me for quoting the statistics of my own country, with which I am naturally most familiar) the rate received per ton per mile for the transportation of freight averaged 8·21 mills. There has been a magnificent reduction in the rail rates corresponding to this table which I have shown you here, but suppose we turn now to the water rates. We find that on the Erie Canal the rate is very much less. Turn to the lakes. There at the outlet of Lake Superior the records are kept very close, and in 1896 the average price received for the transportation of freight which went through the canals at the outlet of Lake Superior was ninety-one hundredths of one mill. We can state the fact broadly by saying that in general the cost of deep water transportation is only about one-tenth the average cost of rail transportation. Suppose I go, just for a moment, into a little further elaboration of the figures. During that same year, according to a statement made before a meeting of the Lake Carriers' Association, the average rate of freight transportation on all the Great Lakes was only eighty-five one-hundredths of a mill, and that mainly because there was deeper water in some of the channels below than in the St. Mary's Canal and some of the outlets in that neighbourhood. Let us now find the ultimate limits of competition in order to discover the cheapest known form of transportation. A careful series of experiments conducted on the Grand Trunk Railway here in Canada some years ago showed that the actual net cost of transportation, that is exclusive of interest on bonds, &c., was five mills per ton per mile. The average net cost in 1896 on the railroads of the United States was somewhat larger than that, being nearly six mills per ton per mile. There are a few coal roads where practically all the loads are carried by gravity, and the

Georgian Bay Canal.

engines are used merely for the purpose of running the empty cars back again, and on these the average cost is three and a half mills per ton; but the best rate in actual railroad transportation under ordinary conditions is four mills per ton per mile.

Sir MACKENZIE BOWELL—Does that include the long and the short haul?

Mr. THOMPSON—Yes. The road on which freight is carried at that low cost is the Lake Shore and Michigan Southern Railway. Coming back to the story I was starting to tell you about the two railway Presidents, I may mention the name of one of them: the western man was Mr. James Hill, President of the Great Northern Road. He said: "I have built some steamships myself. Those steamships are built to the full draught of water at the Sault." This was before the larger canals were open. "They carry twenty-seven hundred tons of freight, and they make the run from Duluth to Buffalo in three and a half days, and cost an average of \$120 per day." Now, in round numbers, almost as exactly as we can name it, the distance from Duluth to Buffalo is 1,000 miles, and working that down we find that the cost is fifteen one thousandths of a cent per ton per mile. Turning that into figures that business men understand better than they can understand these microscopic rates, it means one-twenty-seventh of four mills, and that is the absolute net cost of carrying freight on the Great Lakes. That is to say, we do on the Great Lakes for \$1 what it costs the best situated railway in the United States \$27 to do. Therefore, without going further into these figures—I could give them by the hour, if necessary—you will agree with me in my conclusion that water transportation is the cheapest, and therefore if economy in transportation is the chief factor in the prosperity of nations, that nation which enlarges its waterways and develops them to the greatest possible extent will have done for its citizens, its producers and its consumers alike, the very best which can be done. But we are not through with these interesting matters. I find on the other side of the line that there has been some times a question in the minds of some of us whether the people run the railroads or the railroads run the people. I do not know, of course, whether you have any such questions over here; I merely wish to point out the fact that we have found, and we have the testimony of most eminent railway men, Mr. Albert Fink, who was Railway Commissioner, Mr. G. R. Blanchard, one of the most noted railway men in the country—they all testify, and without going into it at length, I will sum up their conclusion—that water competition is the most powerful possible regulator of railway rates which can be conceived, far exceeding in its power and operation any of the edicts of legislative bodies, even though they be the highest in the land. For instance, Mr. Fink points out that a few sailing vessels at Chicago, in connection with a few canal boats on the Erie Canal, have been able, during the season of navigation, to fix the rates for the transportation of grain from Chicago to New York. Does it stop there? No. Here are the Lake Shore and the New York Central which practically form a continuous line which parallels the waterway from Chicago to New York, they are compelled to make their rates under stress of water competition. Competing roads cannot impose higher rates than those which prevail on the Lake Shore and Michigan Central and New York Central; if they do, the business goes to the New York Central. So you follow it on to lines further south, the Baltimore and Ohio, the Louisville and Nashville, down to the Gulf of Mexico. Their rates are fixed, or materially modified during the season of navigation by the competition of a few sailing boats on the Great Lakes and a few canal boats on the Erie Canal. When I have talked for a time about the cheapness of water transportation as compared with rail transportation, and urged that we should have the waterway improvements made in order that we might get for the people of the country cheaper transportation, since they made the most tremendously powerful regulator of railway rates possible, I have been asked, "Well, but do you want to drive all the railways into bankruptcy?" Not at all, gentlemen, and let me make to you what will appear at first sight, a paradoxical statement, and then proceed to prove it, not by any opinions of mine, but by the uncontrovertible logic of facts that you cannot dispute, that waterway improvements not only promote the prosperity of the people in general, but that the best

thing that could happen to every railway in the world would be to have a waterway at least twenty-one feet deep parallel to every mile of its track. And I will say, to bring the thing out broadly and flatly, to bring it right down to the case that is being considered in this honourable committee, that the railroads that run from Ottawa to Lake Huron and the Georgian Bay would be doing the best possible thing for themselves and their stockholders and the dividends they are able to pay, if they would underwrite the bonds of this canal along the Ottawa River, and see that it is built as soon as men and money could achieve it. Does that seem ridiculous? Do you smile at it? Give me fifteen minutes and I will do the smiling, with the honourable gentlemen's permission. The best thing always to do is simply to go to the facts. I do not happen to have a newspaper in my pocket, but it makes no difference about that. I make the broad statement and you can verify it any day you please. Take up the stock quotations, and take the railroads like the New York Central and the roads running alongside of waterways generally, and you will find their stock quoted higher every day in the year than the roads away off inland that do not touch water except when they stop at the tanks for the engine to take water. There is my first point, and I know that it is so. The stock of the New York Central and roads alongside of great waterways is higher because it is worth more, because the traffic is there and the dividend is earned. But let us go a little further. I am sorry that the rapidity with which I came from the sunny groves of Florida to the capital of the Dominion did not give me time to go to my home where I had a great mass of papers which I must now quote to you, but if there be any gentleman who doubts the accuracy of the figures I give, I can send him the official documents later. I have on file a letter from President Ingalls of the Chesapeake and Ohio road. President Ingalls was fearful at one time when the Government of the United States took up the improvements of the Great Kanawha River that it might interfere with the traffic on his road. But what is the fact? The traffic of the river increased, of course; they took out bars and put in locks and dams and opened up the river for good sized boats, where formerly one-half of the year it was dried up and the other half frozen up. The traffic of the river increased tremendously. President Ingalls writes me, sends me a statement, that the traffic on his road, not merely the general traffic, but the traffic in coal originating on the Great Kanawha River has increased in great proportions, and we have no warmer friend of waterway improvement in the United States than President Ingalls of the Chesapeake and Ohio road. I have a letter from Chauncey M. Depew, the President of the New York Central, in which he says that as the result of years of study in the matter that anything that would damage the Erie Canal and its efficiency would damage his road, that he is in favour of every improvement to increase its efficiency, knowing it increases the traffic of his road. I will give the Committee the reasons in a little while, but let me give you the absolute facts just now. A few years ago they canalized the River Main from Frankfort to Mayence. The first year after that improvement was completed the business of the river increased sixty-four per cent, and the next year it made a further increase of thirty-six per cent. There is a railroad right along each bank of that river between those same places. These roads had been in trouble for years. For a time the cities had nothing to sell and everything to buy. The trains went loaded one way and empty the other. Did these roads go on down into hopeless bankruptcy? Not at all. The very first year after the improvements were completed, coincident with that enormous increase of traffic on the river of which I have spoken, the traffic of the roads increased thirty-eight per cent; and the second year the traffic increased fifty-six per cent more. They went with loaded trains in both directions and paid dividends for the first time in a good many years. Let me proceed. I can give you these statistics for a long time, but I do not wish to tire the patience of the Committee completely. Take France. France began building canals one hundred years before Christ and has never stopped since. Wars and revolutions have taken place, and they have simply hindered or delayed for a little time. But through the very wars and the terrible upheavals that have come to that country, they have kept on building canals until to-day, they have eight thousand miles of canals and improved rivers in that country.

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And as I have sometimes said on our side of the line, take our state of Texas and convert it into a circular sea, and convert France into a circular island, and there would be a strip of sea one hundred miles wide around the island, and yet that little country since 1814—go no farther back than that—has spent upon water improvements seven hundred and fifty million dollars, and has spent seven hundred millions on railways, and about six hundred and fifty million dollars on their wagon roads. And while for a time it was a mystery to me, the way in which France paid off her war indemnity after the war with Germany, I am convinced now, that the fundamental reason is, that she has a system of transportation, railways, wagon roads and waterways, a trinity of transportation which is equalled by no other country in the world. Transportation is a tax. When you make transportation the least bit higher than it should be, it constitutes an unnecessary tax. If by some magic we could bring the grain from your western prairies here to your consumers, the farmer would get more and the consumer would pay less than is the case now. However, here is a special point I wanted to call your attention to in speaking of France. They have over there a system of Government guarantees of railway earnings, that their earnings will not be less than a certain amount, and we find that in the districts where they have the greatest canal traffic there they also have the greatest railway traffic. To name one specific instance, the Great Northern Railway of France traverses a district in which there is fifty three per cent of the total boating capacity of France, and that railway is the only one in the country—speaking of a few years ago—which was not obliged to call upon the Government to make good its guarantee. Take another notable instance. I have so many here that I find it is going to take too long. Let me give you one further and notable instance. During the time the Elbe River in Bohemia was being improved—fifteen years was the time—the steamboat traffic, the river traffic, quintupled: it was five times as great at the end of the fifteen years when the improvements were finished as it was at the beginning. During that time the traffic of the railroads running alongside that river increased still more largely, and the dividend on the main line of the road rose to sixteen per cent per annum. I will quote one more instance, and this will be the last of the figures which I will inflict upon you. Germany in 1888 ordered the construction of 1,000 miles more of canal, and the improvement of about 500 miles more of river, although she had at that time 1,300 miles of canal and 5,000 miles of improved navigable rivers already. Now consider that at the same date out of a total of 16,281 miles of railway in Germany, 14,665 belonged to and were operated by the government. Does anybody think the government of Germany was foolish enough to spend these millions of marks upon the improvement of waterways if the result was going to be to decrease the revenue of the Government upon their railways? Not at all. They simply were working according to the result of years of observation, whereby they know that the improvement of the waterway is the surest way, not only to promote the prosperity of the country, but to increase the dividend of the railways that paralleled those waterways. I think perhaps I have gone on that line far enough, unless some gentleman has a question that he wishes to ask. I will state now in a very few words why this takes place, what the fundamental and underlying reason is. It is this: an analysis of the traffic at the Sault Canals shows, that the great bulk of the material transported on waterways is raw materials. It is iron ore, it is grain, it is lumber, it is stone, things in which the weight and tonnage is very large in proportion to the value. The Great Western Railway of England conducted an investigation some time ago. They got into the habit over there of doing just what some railroad men did in the United States, straining every nerve to drive the canals totally out of business, and they wondered why, with all the business they were doing, they did not have more dividend, and they found that the manager, acting under a mistaken idea, was using fifty-eight per cent of their equipment, in a traffic which produced only fourteen per cent of their revenue. They were killing the goose that laid the golden egg. Take the River Main, from Frankfort to Mayence. The opening up of navigation led them to open up the coal mines, and so on, and it produced a different traffic, and increased the business of the railroad. When the elevated railroads were asking for a franchise in New York, the surface roads, the

horse car lines, were afraid that if they got that thing up there in the air they would have to go into bankruptcy. Has it proven so? Not at all. The elevated roads take the long distance traffic, leaving to the horse car lines the short distance traffic, and also the benefit of the growth which came from the development caused by the fact that it was possible to come down on the elevated train. So that to-day, with the elevated roads paying large dividends, carrying an enormous number of passengers, having developed a traffic which it was impossible for the surface roads to take care of, the surface roads are paying greater dividends than ever before, and are at great expense changing their lines into electric and cable lines, in order to go faster and take care of the business crowding upon them. In other words when you develop a waterway, you make possible the carrying, in the cheapest possible form, of raw material. When you take manufactured goods, from silks and jewellery down to things which are of a lower grade, comparatively few people can tranship a million dollars' worth of goods of that kind. But, gentlemen, when you get millions of tons of raw materials, it needs a metropolis to handle them, and it produces a metropolis in the manufacture of them. I have gone over the matter rather rapidly, I admit, not desiring to trespass upon your time, and leave to the gentlemen of the Committee to ask any specific questions they may wish to put to me, to point out to you these great fundamental facts. Just for a moment let me speak of this canal. I will say that the very first time that my attention was called to this matter was by Mr. A. M. Wellington, now deceased, at that time one of the editors of the *Engineering News* of New York, and universally recognized among us as one of the greatest Engineers of his day. I have been, as any of these gentlemen who may possibly have heard of me at waterway conventions anywhere will know, I have been for a great many years an enthusiastic advocate of a ship canal out from the lakes to the sea, and naturally I have urged that it be built in our own territory, and I have too high an idea of gentlemen who are British subjects to understand they would expect me to be otherwise than a loyal American, to look after the interests of my country honourably, as you look after yours. And I said to Mr. Wellington: "yes, I think we ought to have a canal, and it should go from Niagara Falls and down the Hudson and soon." And Mr. Wellington brought down from his desk a map, and he showed me the wonderful line up from the Hudson to the St. Lawrence, across to the Ottawa, up the Ottawa and Lake Nipissing, and into Georgian Bay. He called my attention to it, and I wonder gentlemen if it has ever been called to your attention just in that way—the most marvellous approach to an air line of inland water transportation in the world, from the head of Lake Superior to tide water in Montreal. And he said: "We can get thirty feet of water up the Ottawa route, enough to accommodate the largest ocean vessel that floats, for half what it will cost to put it in any other way into the great lakes," and that is what called my attention first to this marvellous approach to an air line; to the natural conditions, so much of the way lying through rock which is solid enough that when you have blasted out the place for your lock you have only to put a little bit of cement on the side to cover up the rough places, and it makes a lock chamber which will be strong enough and staunch enough to stand till the end of time; to the wonderful long reaches where it is deep already, naturally going along the quiet waters, and then rapids and falls concentrated close together, so that it is an easy matter to put the locks in there which will let them down into the next level, and so they go. And as far as the water supplies are concerned, we know how it takes its origin up there among the lakes and the forests, and how very little variation there is, how you can count on a certain supply of water from year's end to year's end, and vessels know how deep they may load without striking the bottom. And then the character of the country—it would be superfluous for me to talk to you about it—its resources, minerals and lumber, and so on. And I must say a word about another matter. Some people thought canals were done with, and we find they were mistaken. For a long time people thought that the water powers were practically gone out, that the steam engine was going to make them of no account, but the developments that have been brought about by Edison and still more by that modern wizard Nicola Tesla, have made a new era for water power. As I have travelled on the

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railroad which runs up the Ottawa Valley and watched from the windows of the car the great water powers on the Ottawa, not to say anything of your magnificent water power here, I thought of the power which you can develop by the construction of this canal, which will be not only a waterway for vessels; but, a magnificent source of water power every few miles; of the electrical distribution which can make it in large units or small units; that you can utilize it at the side of the water power or 100 miles away, you can make this beautiful Ottawa Valley one of the great manufacturing districts of the world from end to end. It is not at all impossible that the Canadian Pacific Railway—I speak of this railway because for a considerable distance it runs along side the Ottawa River—may run its trains from Montreal to Winnipeg by water-power. You know that trains are run on the New York and Hartford Railway by electricity and they are using electric power to take trains on the Baltimore and Ohio Railway through tunnels at Baltimore. The day of electricity for railway purposes is coming and when you have the unlimited power of water, renewed, as certain as the promise of God holds sure that summer and winter and rain and sunshine shall follow in succession, when you have the water powers and the genius of men to furnish dynamos to convert them into electricity, we shall ride on the railroads and not get cinders in our eyes because there will not be any cinders there. I have already given you figures to show the economy of water transportation. The thought just occurs to me that it will cheapen not only the business already in existence, but business yet to be developed. Take this official statement here of the tonnage through the canals at the Sault, and this by the courtesy of the officials in charge of the Canadian canals includes the traffic through your Canadian canals also, so we have the total traffic of Lake Superior. How it has grown! Go back to 1855 when that canal was opened; there went through that year a total registered tonnage of vessels of 106,296 tons. During the year 1897 there went through the canals at the outlet of Lake Superior—and, gentlemen, you and I, Canadians and Americans alike, can be proud of the fact that there is such an enormous traffic away in the heart of the continent—the traffic has been enormous. The two governments have built three ship locks and any one of the three is larger than any other to be found elsewhere in the world, except the two that lie close alongside of it. Through these three magnificent locks there passed last year 18,982,755 tons of freight. Back in 1852, when they were considering the question in Congress of giving a land grant to the State of Michigan to build these first little locks at the Sault, Henry Clay rose in Congress and said: "The thing is as wild as a proposition to build a railroad to the moon." In 1853, after the land grant had been turned over to the state of Michigan and the legislature of the state was considering what size of a lock should be built, Mr. E.B. Ward, of Detroit, who is recognized even at this day as one of the most far-sighted business men ever connected with the trade on the lakes, wrote to a friend in the Legislature that "by advocating locks of such enormous size, locks which will not be needed for a century, if ever, you are jeopardizing the success of the whole project." The little locks were completed and the canal was opened in 1855. Did they solve the problem? No; as you know, in 1881 our government supplemented them with another lock 513 feet long, 85 feet wide and 17 feet deep on the sill. Now, the Engineers said, and I have had many a talk with Gen. Poe since, "We have solved the problem of a connection between Lake Superior and the other lakes for all time to come." The year in which that lock was opened had not expired before they saw that the trade had outgrown that lock. They have blown out the little locks and put in a lock 800 feet long, and 21 feet deep on the mitre sill; and you in Canada have put in a larger lock on your side, and Gen. Poe, sitting on the shore and looking at the great vessels coming in to be locked through, said: "I am an old man now," touching his gray hairs, "but if you live out your days you will see this magnificent lock of 1881, which, until the Canadian lock was completed a few months ago, was the finest in the world, blown out with dynamite as the little lock of 1855 was, and another put in with not less than twenty-six feet, perhaps thirty feet on the mitre sill. I have watched this traffic for thirty years and no man has been able to keep up with its growth, for the

wildest dream of one year seems tame beside the reality of the next." Here is a little hint of the magnificent country that lies beyond; I know something of my own country, Minnesota, (my home State), Iowa, Dakota, and those States which sweep westward to the Pacific. I have also had the pleasure of knowing something by personal observation of your Canadian North-west and it was my good fortune to enlighten James G. Blaine as to the character of that region. We Americans thought he was pretty well informed on most topics, but he had read and believed that article which I cannot think of without laughing, published by C. Wood Davis in a magazine, in which he said that the United States would soon be a wheat importing rather than a wheat exporting country, but this is the particular remark which I laughed at—he said, "The whole of the country north of the international boundary line adapted to the cultivation of wheat is so small that it may be left out of consideration." (Laughter). While I was travelling for days in that country, by the courtesy of some of your officials, I was taken in charge by that most admirable organization, the Mounted Police, and went away out beyond the railroad—went up and down, and back and forth, and had the honour to be upon the train for some days in which their Excellencies the Governor General and Lady Aberdeen were making a visit to the North-west, and I saw away up yonder on the North Saskatchewan, where the average American thinks the ice is always at least 10 feet thick, (laughter)—I saw a watermelon which had been grown there, weighing seventy-four pounds. That was in October. I had read something about that country. I count among my friends Consul Taylor, whom the people of Winnipeg knew and loved, who through all the changes of our administrations for twenty-one years represented the United States there, and was loved, if possible, more by the Canadians than by the Americans (applause)—I had read his reports and knew something of the resources and possibilities of that country, but I went to what was considered the jumping off place and found that they had incandescent lights in the hotel where I stopped, and they brought in plates to dinner that I was obliged to drop when I touched, because they were so hot, something you could not have got so far west on our own side of the line. It was the sixteenth day of October, yet they had on the table two dishes of ripe tomatoes which had been raised in that locality out of doors. I have learned something by personal observation of Manitoba, Assiniboia, Alberta and British Columbia, and by reading of things that lie still further beyond. I have talked with men representing your own Government who have gone on beyond where I have been, and from reading the reports they have given, I say to you: gentlemen, the day is coming, and it is not very far in the century that is about to dawn, when the Canadian North-west is going to regulate the wheat and flour market of the world (applause). When I have stood in conventions, meeting my good friends—and I am glad to say I have many on the Canadian side—and have advocated that my own government should build a ship canal through our own territory from the lakes to the sea, I have said I am just as willing to go, as I now have the honour of doing, to plead with your government to build another ship canal through your territory. And further, when you go by the Ottawa route and we go out by Oswego, is that going to be all? No; take the St. Lawrence, too, and I say to you, gentlemen, and I repeat it in all honesty, that the man who does not understand that all three of those routes are going to be needed, and every inch of water that can be got in them to transport the magnificent products of the combined Canadian and United States North-west, has not realized the magnificent endowment of this continent. I have sometimes thought that the Great Index shaped finger at the west end of Lake Superior, was put there by the Almighty to point to the final seat of power upon the earth. I say it without any political meaning, "what God has joined together, no man can put asunder, and we Anglo-Saxons, while under different flags, over all is the Cross of the Christian religion that we both profess, and I believe it to be that God has put into this great North America the point where the Anglo-Saxon race shall have the seat of its power to dominate the earth, not for universal conquest, but to compel universal peace. So I have travelled over your land, I have gone up and down your Ottawa, I have gone over the length and

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breadth of the lakes, your lakes as well as ours, and I have studied this matter of transportation until again I say to you, as Gentlemen representing this great Dominion and legislating for its advancement, nothing can so advance it as to increase the means of transportation. You have done grandly already. You have done infinitely better in proportion to your population and resources than our country has done, but do not be weary of well-doing. Open your St. Lawrence canals. We in the Western States are waiting and praying for the day when ships can go through from Montreal to Duluth without breaking bulk. It means value to us, and it means business for you. Open those other marvellous waterways. It is not for me to say just how deep your Ottawa Canal should be, but I say to you that for every foot less than twenty-six feet in depth, you build it in the first place, there will be increased cost and increased work for you in the future. Build it as deep as you can now, and let the traffic that is to come provide for its enlargement. Let us hope for the day when Ocean steamships will be able to go as freely from the sea-board to the Upper Lakes, as they can pass between Liverpool and New York to-day, and so for the prosperity of your own people, develop this waterway and all your waterways just as fast as your resources will allow it.

Hon. Mr. BERNIER—Have you ever considered the possibility of having a waterway from Winnipeg to Lake Superior?

Mr. THOMPSON—I believe there is a magnificent possibility, and if the Gentleman will allow me to defer that subject for a moment it will come in appropriately in connection with another matter. The report which your Honourable Chairman holds in his hand shows that of the total traffic out of Lake Superior last year, 19,000,000 tons in round numbers, over 10,000,000 tons was iron ore, and counting the ore which went by rail to Lake Michigan ports there were twelve and a half million tons of iron ore sent out from the Lake Superior region last year. Knowing the cost of transportation in proportion to the value of the product, I am as certain as that I am alive to-day that if, instead of having the Great Lakes to carry out this ore, there had only been broken land or little rivers merely for water and drainage, not one ton of that ore would have been moved. There are over \$260,000,000 invested in the mining and transportation of iron ore in the Lake Superior district alone. There would not have been a dollar of that invested if it had not been for the Lakes; the Lakes make it possible to develop a class of traffic which the railways could not touch. It leaves for the railways the higher class of freight and the passenger traffic. I have sometimes wondered whether the railway men in our country have profited by the lesson which the government in Hungary has furnished by the adoption of the zone system in passenger traffic. After the Government took possession of the railways they marked out certain zones of territory within which certain passenger rates should prevail. The average reduction of rates below those which had been charged under the private ownership of those railways was 82 per cent. What was the result of that reduction? In seven months the traffic increased one hundred and sixty-nine per cent; the receipts increased 18 per cent, and as the expenses did not increase at all those profits went to dividends. With all due respect to the honourable railroad men of the continent of America, I do not believe that they yet know the tremendous increase in traffic, and consequent increase in net revenue to themselves that comes from diminished cost of transportation. If you can force this matter on their attention by decreasing the cost of transportation on raw materials like iron ore, lumber and so on, they will find that even without decreasing their rates they will have increased traffic. You will have helped them and helped the country. It is a well known fact that density of traffic enables the companies to decrease their charges, and where you have millions of people to draw on, as, for instance, between New York and Philadelphia, you can make your passenger rate so much per mile and have a profit where you could not cover expenses in a sparsely settled country such as, for instance, the Saskatchewan. You cannot move Manitoba or Assiniboia any nearer to the sea-board, but when you have opened the way for an ocean ship to go up to Lake Superior you have, for all practical purposes, put those great regions a thousand miles nearer the Markets of the World. Not mileage, but cost of transportation is the true commercial measure of distance.

For the prosperity of your own people, for the development of your resources, for making conditions which will bring millions of population into your fertile lands of the North-west, for the benefit of your railways, improve the waterways. I now come to the question which the Honourable Gentleman (Mr. Bernier) gave me: I have considered it and I fully believe that the time will come when Lake Superior and the Mississippi River will be connected with the 5,000 miles of navigation, with your great Lake Winnipeg, second only to the other great lakes that we have been considering, your Saskatchewan and the Lake of the Woods and all that wonderful waterway in the North-west, over almost every mile of which I have had the pleasure of travelling in canoe and steamboat. And my confidence has been vastly increased by the one final thing which I will mention except to respond to any question which any of you gentlemen may ask. There has been of late an invention which will do as much for inland navigation as the Locomotive did for land transportation. It was about the time that Columbus was discovering America that the canal lock was invented, and there have been few improvements made in it since. There have been some. In England and at Fontinettes in France, and one or two other places, there are what they called balanced hydraulic lifts. The one at Fontinettes is to overcome a height of fifty-three feet eight inches. That is over near the line between Belgium and France. Where formerly they had five locks and took three-quarters of an hour or more to make the passage from top to bottom or bottom to top, they now have this one balanced hydraulic lock, and they make the total change—hauling in, changing level, and hauling out—in fifteen minutes. The actual change in position is made in seven minutes. That is a grand improvement and reduces the cost very materially. But the invention to which I wish to refer is the Pneumatic lock.

Hon. Mr. DEBOUCHEVILLE—Are they not trying the same plan on the Erie Canal?

Mr. THOMPSON.—No, it is the Pneumatic lock which I am about to describe. Every one has seen the gasometers in which the gas companies store their gas. Suppose we take two immense gasometers and on top of each build a tank to hold water. Of course in this case our gasometers will be built with square corners and our tanks will have gates at each end for the entrance and exit of vessels. Underneath you put a tube connecting one with the other and there is the whole invention. The marvel of it is that no one thought of it before, because the pneumatic caisson has been used in bridge building for years. One gasometer of course is up and the other down. You run in your vessel at the top or at the bottom as the case may be, or one at each end if you choose; you let in a few inches of water in the top one for the purpose of turning the balance, and open the valve, and the excess of water in one causes it to descend slowly and the other to move slowly up. That is the whole process. Mr. Dutton, the inventor, tells me that he has no doubt he can make a change of one hundred and fifty feet in fifteen minutes. That can be done too so that the cost of the two locks, instead of a great flight of magnificent locks that would be needed by the common method of lockage, will be much less. The main thing is the saving of time, for time is money nowadays in transportation as in everything else. Instead of taking nearly twenty-six hours, as it does now, to pass a vessel through the Welland Canal, Mr. Dutton declares that we can make a canal which will let a boat pass through with just as much safety from Lake Erie down to Lake Ontario, around that magnificent cataract, in two hours time and at one-third of the cost of locking through the ordinary locks. We have a difference in elevation between Lake Superior and Lake of the Woods of about eight hundred feet in all to overcome. Under the ordinary system of locks that would be very expensive. Under the new system, which seeks to mass the lockage all in one place instead of distributing it over a considerable length of canal for the conservation of the water supply, there would be both cheapness and speed, the lockage being concentrated in a few miles by this invention of Mr. Dutton's, which, as the gentleman has just now said, is being tried now on the Erie Canal at Lockport a few miles from Tonawanda. If that experiment should prove successful there, as I have no doubt it will, it will be applied to the whole length of the Erie Canal attaining the minimum of expense

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with the maximum of efficiency. We will yet bring all the waters of the whole Canadian North-west in connection with the Lakes and through the Lakes with the sea. Here are two small points that I will mention: the crucial point in all Ship canals is the supply of water on the summit level. In the first place when you get to your magnificent locks at the Sault you cannot let a fisherman's boat through without emptying the whole lock of water. Of course there you have the entire body of Lake Superior to draw from. But suppose you were running a vessel through a canal where the water is scarce, the lockmaster would hate to empty a large lock of water for the purpose of passing a small vessel through, but under this system the only water that is wasted is the few inches of water that is let in to overcome the friction. On all canals the traffic conveyed from the less settled part to the densely settled parts of the country is composed of raw materials, so you have a greater tonnage in weight down hill, although the tonnage the other way is of greater value, but in weight the traffic would be three times as much going down hill as the traffic going up hill. That is clearly shown by the Statistics of the traffic from the upper lakes. Now what would be the result under this new system? For every ton that would go up Westward there would be three tons coming down Eastward. Now suppose a vessel enters the upper lock chamber, and there is none to come up. Say it displaces 5,000 tons of water. Now, except for the few inches of water put in to overcome the friction, one lock chamber has taken up 5,000 tons of water more than the other took down, so the ordinary working of the system will be to carry water up to the summit level, and the whole bugaboo of scarcity of water disappears. I am not a mere visionary when I say, that if I live out my days I hope to be able to go not only from my home in the city of Duluth to London in a palace car *via* the Klondike, but in a palace steamer by the Ottawa River, and that we can bring down wheat from all that country, water borne, and the coal which is one hundred and forty-nine feet thick, not perhaps all in one layer, in the Crow's Nest Pass. I saw millions and millions of acres of coal up there running from low grade lignite to the best anthracite, and that will yet be carried in all directions by water transportation. Of course you will have your great Railways, you people who belong to the great British branch of our race know ten times as much about building good roads as we know in the United States—you will have your railway transportation, your waterways, and your wagon ways developed to the highest point, and then you will find prosperity and your power will go beyond the highest dreams of the present time. And the millions will come in there, and for all of them there will be prosperity, and with all the nations of the earth peace.

Hon. Sir MACKENZIE BOWELL.—It has been stated—it is not necessary to mention the name—that you could not find water enough. But I thought that Mr. Thompson answered that point effectively.

Mr. THOMPSON.—With that new system of lockage you get all the water you require. I was asked if I had been over the route in regard to the water supply. I have not been over it in an engineering sense of studying the water supply, but personally I am willing to base my own judgment—until displaced by something better—upon that of Mr. Wellington. He was one of our noted engineers. He had studied this route and he said to me: "The water supply is ample: the other conditions are phenomenal. The finest place upon the globe for a deep ship canal is the Ottawa River route."

Mr. McLEOD STEWART.—I have had a letter from Mr. Wellington to that effect.

The Committee then adjourned.

THE SENATE,
OTTAWA, 3rd May, 1898.

COMMITTEE met this day.

The Honourable Mr. CLEMOW, Chairman.

MAJOR GENERAL GASCOIGNE called and examined.

Mr. STEWART—Will you explain the Military advantages of this route?

MAJOR GENERAL GASCOIGNE—I may state broadly, from a strategic point of view, I look upon this scheme as the most desirable possible. Of course, I should qualify my statements in this respect, that a great deal depends upon the depth of the water that you propose to make.

The CHAIRMAN—The depth will be fourteen feet.

MAJOR GENERAL GASCOIGNE—I was going to ask for fourteen feet. If you make it fourteen feet deep, I can only say that it will be of the utmost value, from a strategic point of view, to the country. I know the Imperial authorities look at it in that light also.

The CHAIRMAN—Have you ever been over that route?

MAJOR GENERAL GASCOIGNE—No.

The CHAIRMAN—But you know the general lie of the country?

MAJOR GENERAL GASCOIGNE—It is, of course, a thing we have looked at very closely both at home and here, from a strategic point of view. Parts of the country I have been over myself, but it is quite sufficient to look at the map to judge of the enormous value of this route, from a military point of view.

The CHAIRMAN—What depth of water would it require for the purpose of transporting your armaments through?

MAJOR GENERAL GASCOIGNE—Fourteen feet is what I should ask for. Fourteen feet would do me. I could do with less, but I should be very sorry to have less. Of course a Torpedo boat does not require the same depth of water, but, at the same time, to get the full value of the work, from a strategic point of view, fourteen feet is the least I should ask for.

The CHAIRMAN—What is the length of your vessels?

MAJOR GENERAL GASCOIGNE—I cannot tell you the full length, but the locks would have to be of considerable length. I am speaking from memory, but I think they should be not less than 120 feet.

The CHAIRMAN—Three hundred feet is the length proposed, and they are to be forty-five feet wide.

MAJOR GENERAL GASCOIGNE—That is excellent; nothing could be better. I feel perfectly sure that you would never regret the construction of such a canal. It would be of vast importance.

The CHAIRMAN—You recollect that this Rideau Canal was built a great many years ago, with that object in view, by the Imperial authorities.

MAJOR GENERAL GASCOIGNE—Yes.

The CHAIRMAN—And if it was necessary then, do you consider it is equally necessary now?

MAJOR GENERAL GASCOIGNE—Much more necessary now, from many points of view which I think it would not be prudent for me to state here publicly, if you will just take what I have said from a strategic point of view. I cannot speak too highly of the value of this projected canal. I think it would be wise for me not to go into details, because I do not know how far my statements might be repeated abroad.

Hon. Mr. POWER—You may take it for granted that they would be stated as widely as possible.

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Hon. Sir MACKENZIE BOWELL—And exaggerated.

MAJOR GENERAL GASCOIGNE—I should like to confine my statements to the vast importance of the project, as I look at it.

Mr. STEWART—Sir John Michel, who commanded Her Majesty's forces here in 1866, and Admiral Hope, Commander of the Squadron, went over this route the whole way by canoes and other ways, and when they came back they reported at a meeting held in Montreal that this canal was not only a commercial but a great military necessity for Canada. Are you of the same opinion?

MAJOR GENERAL GASCOIGNE—I am.

The CHAIRMAN—Do you know the opinion of the military authorities in England?

MAJOR GENERAL GASCOIGNE—I do. It would be looked upon with the utmost pleasure at home if this scheme were carried out.

Hon. Mr. POWER—I take it that it is chiefly from the Naval point of view. Since that time of which Mr. Stewart speaks, 1866, two railways have been built connecting the Ottawa with Lake Huron and of course for the purpose of transporting troops, for instance, the canal would not be nearly as useful or valuable. It is valuable now chiefly as a means of getting ships through.

The CHAIRMAN—And munitions of war.

Hon. Mr. POWER—They could be carried through by train. You would not think that it is very necessary to have this canal for the purpose of moving troops east or west?

MAJOR GENERAL GASCOIGNE—Of course it would be a most admirable thing even from that point of view.

Hon. Mr. POWER—But considering the fact that there are two railways running from Ottawa to Lake Huron, do you think the canal would be largely used for transporting troops in case there was any difficulty and it became necessary to move troops?

MAJOR GENERAL GASCOIGNE—It was not the movement of troops that I had in my mind chiefly.

The CHAIRMAN—But it would serve a purpose in that respect?

MAJOR GENERAL GASCOIGNE—Most unquestionably it would serve the purpose, but there are greater purposes than that which I have in mind.

The CHAIRMAN—I suppose you could not have a route more remote from the frontier for transportation than this Ottawa route?

MAJOR GENERAL GASCOIGNE—Certainly not, and it is just for that purpose that I consider it important.

Mr. MARCUS SMITH, M. Inst., C.E., called and examined.

The CHAIRMAN—Mr. Smith, you might tell us in a narrative form what you know about this canal.

Mr. SMITH—I am acquainted with this from the very commencement of the surveys in 1858 and 1860. Mr. Walter Shanly, the Engineer, commenced the surveys of this work in 1858, and they were completed by Mr. T. C. Clarke in 1860. I know both these gentlemen very well, and I know many of the assistants, as they have been working with me on other work; and I have seen most of the plans, soundings, profiles and so on deposited in the government office, and they are very complete. They are quite enough to make an estimate both as to the practicability of the work and the cost of construction.

That is the principal thing that I had to do with, just to ascertain that. I had tracings made, and went over the whole work. I found the first difficulty at Lake Nipissing. Lake Nipissing is about eighteen or twenty feet below the summit level of Trout Lake and the other Lakes on the Mattawa River. It was proposed by Mr. Clarke, who completed the surveys, to raise Lake Nipissing some ten or twelve feet and lower the other Lakes to meet it. I found that that cannot be done now. The Canadian Pacific Railway has been constructed alongside of Lake Nipissing at quite a low

level, and the town of North Bay has been built: so that to raise the Lake now would flood a great many miles of that railway. Therefore that difficulty had to be provided for. The small rivers coming into the Mattawa River—the small feeders, are quite inadequate to supply a sufficient quantity of water for working this canal. Therefore there was no other way of getting it through, except finding how high Lake Nipissing could be raised without interfering with railway property and other property. I examined it some time ago; I found that the Lake could not be raised very much; in fact I propose now, from the calculations I have made, to keep the Lake up to the winter level. The Lake varies in level. In the fall of the year it is very low. The highest water is six or seven feet more than the lower level. I propose to keep the high level by damming the outlet of the Lake, and this can be done without interfering with any property, as nature has provided for it; I would not go beyond what nature does in raising the level of the Lake.

Hon. Sir MACKENZIE BOWELL—How would that affect the freshets in the Spring?

Mr. MARCUS SMITH—We have sluices, but there are more means than one to be taken with reference to the Spring freshets. Amongst the plans I found a profile of the canal from Lake Nipissing through to Trout Lake, a distance of about five miles, down to the Mattawa. From that profile I laid down the high water level of Lake Nipissing and I estimated the quantities from that, made a calculation right through so as to find the cost and added a considerable amount to the cost—added a million or a million and a half dollars to the cost of the work. This will make Lake Nipissing the summit level of the waterway, extending now over some fifty miles of water at the same level, all supplied from Lake Nipissing which is a Lake of some sixty miles in length and of very considerable depth in some places, so that we can regulate the level of the Lake by an outlet at both ends, both southward and eastward into the Mattawa River which goes into the Ottawa River. There is a great fall from the head waters of the Mattawa before it reaches the Ottawa, and I have lowered the line about eighteen feet and I can do it at Trout Lake; it is so deep that by lowering that, there is still plenty of water for navigation. In fact, Trout Lake is very deep, as Mr. Shanly gives soundings of 200 feet in some places without finding bottom.

Hon. Mr. SCOTT—What would be the depth of the cut between Nipissing and Trout Lake?

Mr. MARCUS SMITH—It varies very much. I think the highest cut is about thirty-two feet between Lake Nipissing and Trout Lake.

Hon. Mr. SCOTT—No physical difficulty?

Mr. MARCUS SMITH—Nothing except the cost of excavating and I have estimated all that by means of the surveys which have been made. They are so complete that I have been able to make a very reliable estimate from them.

Hon. Mr. SCOTT—Would there be a fall from Nipissing to Trout Lake, or would that be made level?

Mr. MARCUS SMITH—Trout Lake is lowered to the level of Lake Nipissing and the summit level will extend a considerable distance eastward of Trout Lake. Turtle Lake, which is the next lake to Trout Lake, is only two feet different in the level. I would lower the level of Trout Lake and the Lake adjoining it, Turtle Lake, so that they would be of the same level as Lake Nipissing. Then the summit level, when altered, would be 648 feet above the level of the sea, and when you get to the mouth of the Mattawa on the Ottawa River it has got down to 501—there is about 150 feet fall; consequently we have locks after we pass Trout Lake; we have to lock downwards towards the Ottawa River.

Now in making the calculations of work to be done and the estimate, I may say that Mr. Clark's quantities were got out for a depth of twelve feet of canal, and the depth on the lock sill of ten feet, and a width of not less than 100 feet at the bottom of the canal. My calculations have been made out for those dimensions, but lately it is proposed, instead of ten feet on the sill of the lock, to have fourteen feet, and that will necessitate the depth of the canal being at least fifteen feet or sixteen feet. Using the other calculations as a basis, I have been able to estimate the extra cost of

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that so far as it affects the same works, but it will incur other works, probably the depth of rivers will have to be dredged in some places—that I cannot tell without some further surveys.

Hon. Mr. SCOTT.—Will the increase in depth to fourteen feet leave a sufficiency of water between Trout Lake, Nipissing and Turtle Lakes?

Mr. MARCUS SMITH.—Yes.

Hon. Mr. SCOTT.—Between the old system of locks as originally contemplated and this new kind that is being proposed there is a saving in water.

Mr. MARCUS SMITH.—It is only applicable where there is scarcity of water and where there is a very rapid fall; we have no necessity to do that at all. The inclination of the river is so gradual, it is only some ten or fifteen or twenty miles that we have to put a lock—one lock generally suffices at the same place. We propose to reduce the number of locks, as proposed by Mr. Clarke, and have them deeper. The average depth of the locks now on this survey is about eleven feet. We propose to make them as high as twenty feet, where it will be a saving. Where the nature of the fall is such that we want more than ten or twelve feet we will make all in one lock instead of two; we will be able to reduce the number of locks in that way. But there is no part of the line where there is any necessity for using what is called the pneumatic principle, lifting by compressed air. That can be done where there is scarcity of water and where there is a very rapid fall; for instance, at the locks at Ottawa here this might have been carried out all on the same level as it is at Sappers' Bridge, and would have been one drop to the river; but it was found rather an expensive process, this pneumatic work. There is a lot of machinery required. You have to have machinery for compressing the air, and machinery for working it. The way we are doing now is the simplest, always to use the water directly, simply by damming it and letting it fall into a basin; and there is no necessity in this case to use any other process. It is the cheapest process you could use; the only thing is you might gain time by reducing the number of locks and making them deeper, and time is a very great object in the cost of transportation. Now, with regard to the estimated cost of the work, I had to make it in two separate parts; there is the first from Ottawa to the Georgian Bay, which is entirely new work, and we have the measurements for that: the other part is from Ottawa to Montreal, which is Government canals. The Lachine canal, of course, requires no alteration. The intermediate canals between Lachine and Ottawa would have to be enlarged. There is only a depth of nine feet of water at present, and the length of lock 200 feet, and that I cannot make an estimate of without some survey.

Hon. Sir MACKENZIE BOWELL.—What is the depth of the water in the Ottawa? Is it fourteen feet all the way?

Mr. MARCUS SMITH.—I think there is only one place in the Ottawa, in going through these calculations, that we need to make any dredging at all for twelve feet, but there may be some more for fourteen feet, and that is the reason I cannot give a very close estimate of a fourteen foot canal. I can give an approximate estimate.

Hon. Sir MACKENZIE BOWELL.—Is it rock?

Mr. MARCUS SMITH.—I want a survey to find out. What is wanted now is a small sum of twenty or twenty-five thousand dollars to make a survey to find out whether there would be any extra work to do on account of altering the canal to fourteen feet. The canal would have to be fifteen and a half feet deep. They have plans in the government, plans that show the soundings of the rivers all through, but we want to find what the bottom is, whether it is earth or rock, to make an estimate of the cost of removing it. Of course if it is rock it will be very expensive work dredging and blasting. The cost I have estimated of the canal as originally proposed for a twelve foot depth of water in the canal and for 100 feet wide in the bottom and a length of lock 250 feet, ten feet on the sills, the whole from Ottawa to Georgian Bay, I have estimated that this could be done for about \$15,000,000, and I made a very liberal estimate.

Hon. Sir MACKENZIE BOWELL.—Is there no means devised to obviate the necessity of making the canal a foot deeper than the sill?

Mr. MARCUS SMITH—That is a question of navigation. The skippers would tell you they want one or two feet below the bottom of their keel.

Hon. Sir MACKENZIE BOWELL—I am speaking of the lock. You say that in order to have fourteen feet at the top of the mitre sill you must have the canal itself a foot deeper.

Mr. MARCUS SMITH—Not inside of the lock—outside the locks.

Hon. Sir MACKENZIE BOWELL—Yes. Has no invention or means been devised by which that could be avoided by making the sill on a level with the bottom of the canal by deepening where the swing would take place?

Mr. MARCUS SMITH—We could make the canal and the lock the same depth, but these skippers want two feet of water under their keel.

Hon. Sir MACKENZIE BOWELL—But if the sill was on a level with the bottom of the canal, then they would have the same quantity of water in passing into the lock as they would have in navigating the canal?

Mr. MARCUS SMITH—They would not require so much in the lock, that is all; their making the lock ten feet deep and the canal twelve feet deep is a saving; the canal is made two feet deeper.

As I was saying, the cost of that for ten feet on the sill and twelve feet canal from Ottawa to Georgian Bay I have estimated at \$15,000,000, and I have checked that by Mr. Clarke's quantities; and I cannot alter the quantities, but where there was a curvature I have allowed more, because ships cannot go round a corner the same as a railway, as they are likely to go at a tangent—I have made a liberal estimate for that. The cost of enlarging the locks between Ottawa and Lachine I cannot say, because I have no data at all; but I have put down a million or a million and a half of dollars for altering the locks. They would have to be lengthened and deepened at Grenville and Carillon, and there are several locks.

Hon. Sir MACKENZIE BOWELL—What is the approximate cost over the fifteen millions of making it two feet deeper?

Mr. SMITH—I am coming to that in a moment. The difference between Mr. Shanly's estimate and Mr. Clarke's estimate is accounted for by the fact that Mr. Clarke's estimate was simply for the waterway; but there are harbours, piers, wharves, lighting, and all these things to be done just now. I have added all those in. I have put down a Million dollars for elevators, and I have put in a good sum for other things. There are lockkeeper's houses, and electricity, working the locks by electricity, and lighting the whole canal by electricity, and all those things together could be done for under Twenty Million dollars for the ten feet. I have gone over, as far as I had the data for making the calculation of the difference between the ten feet and the fourteen feet, and the difference varied considerably, according to the cuttings, from fifteen to forty per cent difference; but on the whole I think I would be very safe in saying that Five millions more would do the work; the work could be done for that much more. Of course the extra cost would only be in the canal and the locks themselves. There is all the lighting and elevators, and there would be no difference between the fourteen and ten feet in that respect. You would want more surveys to examine the rivers to find what the bottom is and what dredging would be required. I have no doubt there would be more dredging required for a fourteen foot canal than for a twelve foot canal, and some of that may be rock. It is sure to be rock in all the upper waters above the Ottawa. But there are only two parts on the Ottawa that require dredging for the twelve feet. Now, with regard to the depth, I do not know whether you want anything more on the Engineering question. That is my principal work; the question of practicability and cost is what I have been mainly working at. Of course there are other places besides cutting down the divide between Lake Nipissing and the Ottawa. At Mattawa they will have to change the locks there. They will have to be lowered partly. I have made the lock above it instead of below it and at Ottawa there will be considerable expense here in addition to what there would have been forty years ago. There are railways built and roads and everything and we will have a great many more bridges to make and that can only be ascertained by some extra surveys. Besides the actual engineering question, I have been in cor-

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respondence with people who are making works in other parts of the country and there is a great discussion now going on between what is called the deeper waterways—that is ships coming from the seas right up—that is a canal twenty-seven feet and a canal fourteen feet deep. This is not properly a ship canal. It will have to be worked by barges and steam tugs, and the opinion now is getting very much in favour of working that way. It is contended by many forwarders and shipbuilders that work can be done cheaper that way than by the very large vessels that have been built on the Lakes this year. The reason is that it takes a great deal of water for the large vessels to run in. They want a great deal of water to run in in order to make it in a shorter time. But when they come to be intercepted in their passage by locks and all that, they waste time, and their expenses are going on all the time, and it is found that navigation by the lesser craft, the barges, is much cheaper.

Hon. Sir MACKENZIE BOWELL—Including transshipment?

Mr. MARCUS SMITH—I have made an allowance for transshipment at the foot of the French River at Georgian Bay. But I think now all the way from Lake Superior we could do without transshipment at all.

Hon. Mr. SCOTT—I think now they have found that the steam barge towed by a tug is a success.

Mr. MARCUS SMITH—Yes.

Hon. Mr. SCOTT—There is nothing so cheap as that mode, because there is no coal to burn and no hands to pay. It is like a moving store-house.

Mr. MARCUS SMITH—I have been in correspondence with a Company who are making surveys for building a canal from Lake Erie by the Ohio River, called the Lake Erie and Ohio Ship Canal, and I have here some information about it. I will read a portion of it with reference to the whaleback vessels and the canal:—

From a correspondence with Mr. Alexander McDougall, the inventor of the whaleback steamer and manager of the American Steel Barge Company, we quote the following statements relating to this subject:—

“There are thirty-five whalebacks in the lake country now which were built by this company. About one-half of them are 262 feet long, thirty-six feet beam and twenty-two feet depth of hold; their turrets, one at each end, are elevated above this twenty-two feet, sixteen feet. The other half of the boats are from 300 to 340 feet long. The first class are intended to be of the size to accommodate the new Canadian canals which are now being built at a cost of about \$60,000,000.

“We think our type of vessel draws less water (consorts, when loaded, drawing three and a half feet, and can load to eighteen feet) and cost of transportation by them is cheaper than any other class of vessel already in use. A steamer towing two consorts makes the round trip from Duluth to Ashtabula in about twelve days with a cargo of about 6,500 tons in the three. My idea of your canal system from the lakes to Pittsburg, is that it would not be necessary to have them larger than the Canadian canals, which are of uniform size—270 feet long, forty-five feet wide and fourteen feet depth. In the future, a great many vessels will be adapted for this trade, and the difference in cost on their fourteen feet draught and that of their eighteen feet draught aimed at by our deep lake channels will be very slight, when steamers and barges are fitted specially for this purpose. I think a steamer and two consorts that will fill locks of the size you have adopted, can be made to carry very nearly as cheaply as anything that will ever be built for short runs like the lake, river and canal systems; this, besides, being of the general size adopted by the Canadian system, and some vessels will do in either trade.

“The steam whaleback that we have built—320 feet long, forty-two feet beam, carrying about 2,200 gross tons on fourteen feet, consorts of the same class without power except for pumping, steam windlasses, etc.—would carry about 2,500 gross tons of fourteen feet. The same beam and depth might apply to vessels up to 340 feet long. The same depth of hold and turrets and that portion above water would be about the same in vessels of the 340-foot class, as in those of the 262-foot class. Then without cargo, the consorts, to the top of their houses, would be about thirty-five feet above water, while the steamers would be, to the top of the smoke-stack,

about fifty-five feet above water, and the masts, to carry lights on the steamers, would necessarily have to be sixty feet above water."

It will thus be seen that for all classes of whaleback steamers they can pass under the height for fixed bridges, namely, forty-five feet, by hinging their smokestacks and arranging their topmasts for lowering to that elevation.

Cost of construction and operation of vessels of the Whaleback type.

Upon this subject Mr. McDougall says: "In regard to the cost and operating expenses of steamers and consorts 262 feet long, thirty-six feet beam and twenty-two feet depth of hold, such vessels would carry, on fourteen feet, a steamer 2,000 net tons (of 2,000 pounds) and the consorts or barges about 2,300 net tons each on fourteen feet draught, and would cost about \$42 per ton of their carrying capacity, with sufficient power in the steamer to tow two consorts loaded eight miles an hour. It would cost to operate them in the lake trade about \$42,000 per year, including all the operating expenses, insurance, repairs and management, but not the cost of handling the cargo. The custom in the lake country is, ore cargoes the ship pays for trimming two and a half cents; unloading fifteen cents. Most all other cargoes except coal are paid for at these prices. Coal is always free to the vessel at both ends. Iron ore is classed as gross tons, 2,240 pounds, while nearly all other freights are based upon 2,000 pounds. The figures and cost given you here would apply to smaller boats nearly in proportion either for a twelve foot draught or less if the boats were designed for that special size.

"Taking as a basis our smaller classes of whalebacks 264 feet long it would cost about the same to operate steamers or consorts up to 340 feet; and I think it would cost no more to carry cargoes by lake and canal with a much smaller vessel than 264 feet long, if specially made of a standard size, and adapted for the canal and lake trade. We are to-day building in our yard four large ships of the whaleback type, of the following dimensions: one 404 feet, two 380 feet and one 360 feet long; but I do not expect to get any better results from them than the last steamer we turned out, which has to her credit the best record ever known, and she is only 320 feet long. Where vessels are delayed or slowed on account of canal or other causes, their first high cost interferes with their cheap operating and net profits; and I am of opinion that a smaller vessel than the regular lake carrier can be used for lake and canal trade more profitably than the large steamer of modern construction for lake trade.

"The great newspaper criticism of the large lake steamship and its advantages over the smaller vessel has been overdrawn. I think they have reached the highest point in size and possibly too large on some of them for such a short run (less than 1,000 miles), and I am of the opinion that steamers and barges first mentioned here, or even smaller, will show better net results on low rates of transportation than the very expensive large steamers with their high valuation, recently built for the lake trade; and that a vessel adapted for even a twelve feet draught can be made a very profitable vessel for the lake trade, and particularly so should they become a standard size and built on modern ideas, and when fitted and intended for canal and lake trade."

That meets exactly the conditions of our canal, and the coasting trade is very largely done in barges.

Hon. Mr. POWER—What draught are those smaller sized vessels he speaks of there?

Mr. MARCUS SMITH—They are ten feet draught, and the other which he calls the canal system is the fourteen feet draught, and I think it would be better for the sake of the difference of five million dollars or more to make this canal fourteen feet, and we would have all the canals of the Dominion of the same type; and the same sort of vessels would do for either.

Hon. Mr. BOULTON—You think there is water enough for a fourteen foot canal?

Mr. MARCUS SMITH—Oh, yes, plenty of water.

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Hon. Mr. POWER—Your vessel would come from Chicago, Duluth, Port Arthur, or Fort William and could go down to Montreal without breaking bulk.

Mr. MARCUS SMITH—Oh, yes. I do not know at what points they can commence with tugs and barges. They certainly can do so at Sault Ste. Marie, because by Sault Ste Marie and Georgian Bay they are partially sheltered all the way, but on Lake Superior I am not so sure what they could do.

Hon. Mr. POWER—They go down from Duluth by the Sault Ste. Marie Canal. The only point I wanted to get at was that there would be no transshipment involved between Port Arthur or Duluth or Chicago and Montreal or Quebec.

Mr. MARCUS SMITH—I think not. You can go right through with the fourteen foot vessels, and the whale-back type is made to stand that, and I think by loading at Duluth or Port Arthur and coming through to Montreal or Quebec that it will be done at probably at one-third the cost that any railway system could do it. They can tranship goods at one-third per cent of what the railway companies charge.

Hon. Mr. BOULTON—What do you estimate the fourteen foot canal can be built for?

Mr. MARCUS SMITH—Twenty-five million dollars. For the ten foot I am sure of twenty million, but there are some surveys to be made in order to make a close estimate.

Hon. Sir MACKENZIE BOWELL—That includes elevators, wharfs and terminal facilities?

Mr. MARCUS SMITH—Yes, everything connected with it.

Hon. Mr. BOULTON—And what amount of power would be generated for the enterprise?

Mr. MARCUS SMITH—In the aggregate you have as much power, and it is better distributed; but besides the power I have estimated from opening and operating the canal, a great deal of that could be disposed of to advantage. But I have estimated for twenty horse power in opening and shutting canals, and I have taken a fall of twenty feet. That includes the lighting and everything.

The CHAIRMAN—Have you made calculations of the amount of electrical power that can be had from that work?

Mr. MARCUS SMITH—It is estimated they can have more than they have from Niagara. We have plenty of power.

The CHAIRMAN—Could not electrical power be employed as a motive power for these vessels?

Mr. MARCUS SMITH—Yes. You could not have it with the trolley system, of course; you would have to carry the motive power. No doubt it could be done, and no doubt it will be done, and the water power will generate electricity.

Hon. Sir MACKENZIE BOWELL—In some of the earlier reports, if I remember correctly—it was Shanly's, I think—it was stated they could not obtain water sufficient.

Mr. MARCUS SMITH—That is, without cutting down the divide.

Hon. Sir MACKENZIE BOWELL—Oh, yes; that difficulty has been overcome now.

Mr. MARCUS SMITH—Yes. That would cost one million and a half. Then speaking of the original system of raising the lake fourteen or fifteen feet I doubt if it is practicable, and if it were practicable I doubt if they could maintain it. I think probably the evaporation would be more than the supply for the lake.

Hon. Mr. DE BOUCHERVILLE—But as it is there is a portion of the water goes through French River?

Mr. MARCUS SMITH—Yes.

Hon. Mr. DE BOUCHERVILLE—When you start the canal you will have a dam at the head of French River.

Mr. MARCUS SMITH—Besides what we use for the canal, for the boats and navigation, the fall, the outlet, there is a volume of water going all the time out of French River. We want water below as well as above.

Hon. Mr. DE BOUCHERVILLE—But as it is now a large quantity of water goes through French River.

Mr. MARCUS SMITH—Oh, yes.

Hon. Mr. SCOTT—That is the outlet of Lake Nipissing.

Mr. MARCUS SMITH—Nipissing is about sixty-five feet higher than the Georgian Bay and we would have three or four locks on French River.

Hon. Mr. DE BOUCHERVILLE—You would regulate the flow of the water in French River.

Mr. MARCUS SMITH—Yes, we would maintain the Lake on a certain level, but when there is a flood there is an overflow.

Hon. Sir MACKENZIE BOWELL—What is the distance from Lake Nipissing to the Georgian Bay via French River?

Mr. MARCUS SMITH—It is about fifty miles.

Hon. Mr. DE BOUCHERVILLE—How many dams would you require on French River?

Mr. MARCUS SMITH—The French River is remarkably favourable for navigation. I have been up and down it frequently, and I could not observe any current in it at all. It is a series of Lakes with falls between them.

Hon. Mr. DE BOUCHERVILLE—It is very picturesque, I believe.

Mr. MARCUS SMITH—It is, but there is nothing but rock all the way. You ask the number of locks on the French River. There are four, and the rise is about sixty-five feet.

The CHAIRMAN—What is the estimated cost of constructing a canal fourteen feet in depth?

Mr. MARCUS SMITH—For fourteen feet of navigation there may be contingencies that could only be ascertained by means of a survey, but I roughly approximate the cost when I say \$25,000,000. It would not take much to examine the nature of the material to be dredged, &c.

Hon. Mr. POWER—What is the depth of the canals between Ottawa and the St. Lawrence River now?

Mr. MARCUS SMITH—Nine feet and the locks are only 200 feet long.

Hon. Mr. POWER—Should we not recommend in the first instance the deepening of these canals?

Hon. Mr. DE BOUCHERVILLE—That would not be needed unless we had the rest of the canal.

Hon. Mr. POWER—It would be useful for shipments from Ottawa. This City is becoming a great railway centre, and the enlargement of the canal would help shipments from here to the coast.

The CHAIRMAN—The canals will have to be enlarged and the river in some places deepened.

Hon. Sir MACKENZIE BOWELL—With a fourteen foot canal could you not load a vessel here and ship direct to Liverpool?

Mr. MARCUS SMITH—I do not know that sea-going vessels would be able to come up to Ottawa.

Hon. Mr. PROWSE—There are plenty of them that draw less than fourteen feet.

Mr. MARCUS SMITH—With regard to the question of enlarging the canals between here and Montreal, I did not make an estimate, besides I do not know under what circumstances they are to be enlarged.

The Committee adjourned.

Georgian Bay Canal.

THE SENATE,
OTTAWA 12th May, 1898.

The COMMITTEE met this day.

The Hon. Mr. Clemow, Chairman.

Mr. JAMES MELDRUM.—I am a Member of the Institution of Civil Engineers of Great Britain, and Head of the Foreign Department of S. Pearson & Son, Limited, who, I think, are the largest Contractors of public works in the world.

We have been approached by Mr. McLeod Stewart as to whether we will undertake the construction of the Georgian Bay Canal, and my answer has been that provided the financial position is satisfactorily settled we are willing to undertake the construction of the works on a basis to be arranged with the Company, and to give these works the skill and attention which have proved satisfactory to other Governments. To establish our position as to our ability to carry out these works, I propose to give you briefly a list of some important works which we have recently constructed or are now constructing. We have recently completed the Blackwall Tunnel for the London County Council at a cost of about one million sterling, for which service the President of our Company has been created a Baronet. We have just completed the drainage of the valley of the city of Mexico by canal 25 miles long, and in places 90 feet deep, which has changed the whole area from a swamp into dry land, at a cost of about \$10,000,000. At present we are constructing for the Admiralty of Great Britain, Dover Harbour at a cost of about three millions sterling, which will convey to you that we are on the Admiralty list, which is the highest honour that a Contractor can get. We are constructing Vera Cruz Harbour for the Mexican Government. We have railway and dock contracts in England amounting, exclusive of the Dover Harbour contract, to three or four millions sterling. We have just completed an arrangement with the Mexican Government by which we take over from them the Tehuantepec Railway from the Pacific to the Atlantic. We propose to build large harbours at each end and divert the whole trade of the Pacific to the Atlantic to a new route. More within your own knowledge, we built and are part owners of the Halifax Graving Dock.

The CHAIRMAN.—What did that cost?

Mr. MELDRUM.—I could not at this moment say.

Hon. Mr. POWER.—It is a good work.

Mr. MELDRUM.—I believe it is the only satisfactory Graving Dock on the East coast of America. Besides what I have mentioned we are at present in negotiation with the Egyptian, Chilian, Argentine and Uruguayan Governments for other large works, amounting in all to about fifteen millions sterling. We have works in hand to over ten millions sterling, and are negotiating for fifteen millions more. As to the scheme before us, I can only say that I have read over the various descriptions of the works which have been prepared by the distinguished Engineers engaged on the survey, and from these I see no engineering difficulty to prevent their execution. As to the Commercial aspect, I think it would be presumptuous of me to offer any ideas at all to your Committee. You are in a far better position than I to form any idea as to the commercial aspect. Our idea is this: that if the Canadian Government, the Provinces and, probably, also the Home Government gave a certain guarantee on the proposed capital that we could undertake to assist in raising the capital in London, and in forming a Company there, and ourselves execute the whole work. It seems to me undoubted that you are the best people to appreciate the advantage of such a canal: and that therefore, if you are prepared to back your opinion in cash in the nature of a subsidy or guarantee, we are prepared to execute the works. I have attempted to give you an outline to show you that we have back-bone enough to carry through such a scheme. As to the advantages of canals, some years ago I had occasion to report to one of the London

Banks on a railway in Holland and there I found, what is generally known, that for low grade traffic which does not require any great speed, railways have no possible chance with a canal. Only a few of the through lines in Holland pay, where they compete against canals. I think I said I had not been over this route, I had been delayed in arriving here, and therefore am not in a position to criticise or give any opinion on the route or on the engineering details. Mr. McLeod Stewart has asked me whether for such a scheme if the Government propose to guarantee the interest on the capital, it would be possible to arrange that interest should commence not on the beginning of the works, but on the opening of canal. On that point I have only to say that it is often done in Great Britain: it could be arranged that the interest on the bonds could be paid by the contractors during construction and, of course, added to the cost of the contract, so that the guarantee of the Government would only become effective when the canal was open.

The CHAIRMAN.—Have you any idea of what length of time it would take to build the canal?

Mr. MELDRUM.—I have not formed any opinion at present. I might mention that we are offered by the British Government ten years to do the Dover Works. We propose to do them in seven. But at Dover we have only three points at which we can attack the works. In the case of this canal, we could attack them at probably over 100 points, so that I think three or four years would be ample for the construction.

The CHAIRMAN.—Have you made any calculation of what the proposed cost would be?

Mr. MELDRUM.—I am not in a position to criticise the report of the Engineers who have been before you. I notice that one Engineer estimates the works at \$25,000,000, another at \$17,000,000. I am now getting from Mr. McLeod Stewart certain data as to the cost of works in this country, from which I hope at an early day to be able to calculate which of these estimates is the correct one.

Hon. Mr. POWER.—I do not think, Mr. Chairman, that the two estimates were made at the same time or based on exactly the same condition of things.

The CHAIRMAN.—No, I think not. (To Mr. Meldrum)—Have you seen Mr. Clarke's?

Mr. MELDRUM.—I met Mr. Clarke in New York, and discussed the whole scheme with him. This morning I met Mr. Marcus Smith and discussed some of his figures.

Hon. Sir MACKENZIE BOWELL.—It was Mr. Marcus Smith who gave the estimate of \$25,000,000—that was the full completion, and with other completions too.

Mr. MELDRUM.—That I believe includes the completion of the canal down to Montreal.

The CHAIRMAN.—Yes.

Hon. Sir MACKENZIE BOWELL.—How long a period do you ask the Government to guarantee the interest?

Mr. MELDRUM.—My own belief, from the documents put before me, is that if you gave a guarantee you would never be called on to pay it; if Mr. McLeod Stewart's figures are in any way reliable there would be no necessity for a guarantee at all. It is only a safeguard for raising the capital.

Hon. Sir MACKENZIE BOWELL.—But still you would want a guarantee in order to assist you in raising the capital, and for how long a period would that be?

Mr. MELDRUM.—For as long as the canal required it.

Hon. Sir MACKENZIE BOWELL.—As long as the issue of the bonds, you mean?

Mr. MELDRUM.—I mean so long as the canal was not paying a sufficient net revenue.

Hon. Sir MACKENZIE BOWELL.—That would mean a perpetual guarantee.

Mr. MELDRUM.—A perpetual guarantee: it would not be effective I hope, after the first year.

Hon. Sir MACKENZIE BOWELL.—The reason I ask that question is that Governments have guaranteed the interest upon bonds for a certain number of years.

Mr. MELDRUM.—That is so; we have the same condition elsewhere.

Georgian Bay Canal.

Hon. Mr. POWER.—Suppose the Government guaranteed the interest for say 25 years, would that be satisfactory?

Mr. MELDRUM.—Quite.

The CHAIRMAN.—Or even, 20 years.

Mr. MELDRUM.—20 would be quite satisfactory.

The CHAIRMAN.—That is the limit we named before: and I understood it was only to be paid six years after the canal was commenced.

Mr. MELDRUM.—That could be arranged.

Hon. Sir MACKENZIE BOWELL.—I see very little difference in that, because according to this gentleman's statement the contractors would pay the interest on the bonds or the interest on the money loaned, until the canal is completed, after which the interest they have paid is added to the cost of the canal.

Hon. Mr. POWER.—But Mr. Meldrum's statement is a guarantee that the work will be completed promptly; that is the important feature about it.

The CHAIRMAN.—I understood this guarantee was to commence six years after the completion of the canal.

Mr. MELDRUM.—No; commence on the completion of the canal.

Hon. Sir MACKENZIE BOWELL.—That is very reasonable.

The CHAIRMAN.—Altogether you view the project as one which ought to engage the attention of the authorities?

Mr. MELDRUM.—Most decidedly. My own opinion is that it wants to be strongly pressed on the Government here in order to get them to give their support in one form or other, and with that support the matter can be carried through immediately.

The CHAIRMAN.—I suppose we would be justified in reporting to the Senate that your proposition to your Company would be of the nature you have indicated here?

Mr. MELDRUM.—Certainly. I think it is fully understood that the canal Company shall have the right to own and work their own barges during the life of the canal itself, for commercial purposes.

Hon. Sir MACKENZIE BOWELL.—If the Company had the right during the life of the canal to use their own barges that would be free of tolls?

Mr. MELDRUM.—No, like other people they would have to pay tolls. The canal company has to keep up its canal out of its own earnings, and whatever way you take it all comes to the same thing.

Hon. Sir MACKENZIE BOWELL.—The use of the canal for the purpose of constructing and repairing and doing things of that kind would be fair, but when they would have the use of the canal free of toll for commercial purposes, to do the whole commercial business of the canal between the waters of Lake Huron and Montreal, would they give the credit to their earnings—if they were to have the free use they certainly would not.

Mr. MELDRUM.—They are bound under clause two of article 23 of the contract to charge themselves, because that is a clause against preferential rates, so that they would be bound to charge themselves the same rates as any others.

Hon. Sir MACKENZIE BOWELL.—But would you give the indebtedness of the Company credit for the amount you would earn, in order to reduce the liabilities of those who guarantee the bonds.

Mr. MELDRUM.—You would be bound to debit the Company with the same rates that you charge to other people.

Hon. Sir MACKENZIE BOWELL.—Would that be considered as an earning of the canal, to go and be placed against interest or capital?

Mr. MELDRUM.—Undoubtedly so. As to that matter of preferential rates there is a clause there which prevents preferential rates. I have discussed the same point with the Mexican Government, and there is only one remark I would like to make on it. We put it to the Ministers in Mexico whether preferential rates would prevent your giving a special rate to a man who had a large amount of cargo. You could not expect a man having 100 tons to get the same rates as a man having 10,000 tons. You could give 10,000 tons a preferential rate. Would that be prohibited? The Government answered no, it would not be prohibited; but if any other person

wants a rate for 10,000 tons you must carry that cargo for the same rate as you have carried the same cargo for other people. You must place every one on the same footing.

Hon. Sir MACKENZIE BOWELL.—That is the principle of the Customs Act.

Mr. MELDRUM.—You may give special rates, but you must apply to every one equally.

The CHAIRMAN.—Did you give any attention to the electrical advantages?

Mr. MELDRUM.—I have not received from Mr. McLeod Stewart a statement of the power that can be obtained or the power—that may be marketable.

ORMOND HIGMAN, Chief Dominion Electrician, appeared before the Committee and was examined as follows:—

Mr. STEWART.—You have been going over this route for the last 25 years. Will you explain before this Committee about the advantages from an electrical standpoint.

Mr. HIGMAN.—Well, I have only been over a portion of the route, the portion between Mattawa and Ottawa. I have gone pretty thoroughly over that portion of it. In a letter to yourself some two or three years ago I stated that I thought the water for electrical purposes on the Ottawa was equal to that of Niagara. I would like to amend that statement now by saying that I think it infinitely superior. While at Niagara the power is concentrated at the one point, and could only be used within a radius of thirty or forty miles, the Ottawa affords power all along the 400 miles at very convenient distances. We expect in the near future—I suppose I might venture the statement that within ten years electricity will be used entirely on our long distance railways; that is for passenger traffic. The Canadian Pacific runs parallel and close to the proposed canal the whole distance from Lake Nipissing to Montreal, and that part could undoubtedly be used for the purposes of railway traffic and it could also be used for propelling barges along the canal. At the Chats Rapids, where there is an unlimited amount of power. It seems to me electric power could be used for the smelting of iron. That I think has been proven now to be feasible, and the country all along the route is full of iron, and this electrical power could be used in place of fuel for the smelting of iron. I of course made no calculation as to the amount of horse power, the quantity of electrical power that could be gotten out of these different rapids, but it is enormous. We have some evidence of it close at the door here, two of the rapids are being used only partially, a very small fraction in fact of the power is being used at Ottawa and Deschenes, and that condition of things exists all along the route.

The CHAIRMAN.—There is no doubt about it, every few miles from Montreal it could be utilized.

Mr. HIGMAN.—Yes, it occurs at such convenient intervals that a generating station will stretch out twenty or thirty miles in each direction, and then it meets the power from the other stations, and so you get a continuous current right along the whole route, and it could be used as I say for railway purposes; no doubt about that, and the manufacture of calcium carbide for Acetylene gas, and a great many things. Of course there is an endless variety of uses to which it could be put.

The CHAIRMAN.—That only extends to the Mattawa. That is all you know about.

Mr. HIGMAN.—Yes, that is all; I know the country between Ottawa and Mattawa very thoroughly and there can be no doubt at all as to the magnificent water powers that exist along the route.

Hon. Sir MACKENZIE BOWELL.—How far is it from Mattawa to Lake Nipissing?

Mr. HIGMAN.—I do not know.

Mr. MARCUS SMITH.—I do not remember. I think it is about 40 or 50 miles.

Mr. HIGMAN.—There is no doubt that if a Company owning the franchise build this canal—if one were to present them with a water power equal to the Nia-

Georgian Bay Canal.

gara they would think it was a very fine thing, but the Ottawa condition of things is far superior.

Hon. Sir MACKENZIE BOWELL.—Mr. Smith, in his calculation and estimate of the cost of construction of the canal took into consideration the use of electricity along the whole route.

The CHAIRMAN.—I suppose that electricity could be employed during the construction to advantage.

Mr. HIGMAN.—Oh, yes.

Hon. Sir MACKENZIE BOWELL.—It could be used for excavation.

The CHAIRMAN.—It would save a good deal of manual labour.

HENRY K. WICKSTEED appeared before the committee and was examined as follows:—

Mr. STEWART.—You are a Civil Engineer by profession?

Mr. WICKSTEED.—Yes.

Mr. STEWART.—And you have been over the whole of this route almost?

Mr. WICKSTEED.—The greater part of it.

Mr. STEWART.—Will you explain to this Committee the advantages and practicability and feasibility of this scheme.

Mr. WICKSTEED.—I do not know that I can add much more to my written testimony and Mr. T. C. Clark's report. I can endorse all that was said in those reports.

The CHAIRMAN.—You have seen nothing since to change your opinion?

Mr. WICKSTEED.—No, I think rather the other way. I have been impressed with the feasibility of it.

Hon. Sir MACKENZIE BOWELL.—Your opinion has already been given in that report.

Mr. WICKSTEED.—Yes, I have been quoted several times and I sent you a written answer to Mr. McLeod Stewart's question.

Mr. STEWART.—You answered those questions?

Mr. WICKSTEED.—Yes.

The CHAIRMAN.—Did you treat on the electrical part of it?

Mr. WICKSTEED.—Incidentally. I am not an expert in electrical work. I did not enlarge on that.

The CHAIRMAN.—What is your opinion as to the expediency and feasibility of making it a fourteen foot canal?

Mr. WICKSTEED.—As to the feasibility I think there is no question whatever.

The CHAIRMAN.—When were you over the route last?

Mr. WICKSTEED.—I was over the greater part of it last winter with Mr. Stewart.

The CHAIRMAN.—Is this report of yours predicated on that?

Mr. WICKSTEED.—It is since that time.

The CHAIRMAN.—A report was made by Mr. Clark and Mr. Shanly a great many years ago. Had you anything to do with that?

Mr. WICKSTEED.—No, I had nothing to do with that. I have seen Mr. Clark since, and I have had his report, and I think I mastered it pretty thoroughly.

Hon. Mr. PROWSE.—Is there a possibility of making a twenty foot canal.

Mr. WICKSTEED.—A twenty foot canal was my first proposition. I am the father of that proposition. I always leaned towards the twenty foot canal. The testimony of Major Symons, who has been employed by the Deep Water Commission to inquire into the proper scheme of navigation for the New York state canals and that sort of thing, seemed to favour a lighter draught. He seemed to think a fourteen foot canal would be as economical as a twenty foot, on account of this new scheme of hauling barges behind a tug.

Hon. Mr. PROWSE.—Would it not necessitate transshipment? If you had a twenty foot canal the large ships could go right through without transshipment?

Mr. WICKSTEED.—That was my first idea, but there was objections to that. They say that the crews at sea are not the proper crews to have in inland water.

The CHAIRMAN.—The cost of a ship is very much larger in proportion to the cost of steam barges.

Hon. Mr. PROWSE.—What difference would that make? You would not want the steam barges at all.

Mr. WICKSTEED.—In the case of the steam barges they are never at rest; when they get to their destination and unload they are immediately taken back.

Hon. Mr. PROWSE.—I understand it is giving a good deal of employment and traffic to the people along the route.

Mr. WICKSTEED.—Yes.

Hon. Mr. PROWSE.—There is no more expensive port to unload at than Montreal; all shipowners will tell you that.

Mr. WICKSTEED.—I think the canal would be carried down to Montreal by the Back River about four miles behind Montreal.

Hon. Sir MACKENZIE BOWELL.—Is that not called Black River?

Mr. WICKSTEED.—No, it is Back River.

Hon. Sir MACKENZIE BOWELL.—But you would have to canal that?

Mr. WICKSTEED.—Yes, there are only two rapids on it.

The CHAIRMAN.—Is there plenty of water except the two rapids.

Mr. WICKSTEED.—Yes, plenty of water excepting the two rapids. I think that is what it would come to, and that would make another harbour behind Montreal fully equal or rather larger than Montreal harbour itself.

The CHAIRMAN.—I suppose by incorporating what you said before we would have your statement?

Mr. WICKSTEED.—I do not think I can add anything to it. It was written only a few days ago.

The Committee adjourned.

Georgian Bay Canal.

LIST OF QUESTIONS.

LIST OF QUESTIONS SENT TO VARIOUS PERSONS TO ELICIT INFORMATION RESPECTING THE PROPOSED WATERWAY BETWEEN THE WATERS OF THE ST. LAWRENCE AND LAKE HURON.

1. Is it your opinion that the construction of this canal will benefit the Commerce of the Dominion generally?
2. How would the construction of this canal affect the North-west and Manitoba?
3. What would be the trade which would be done through it and how would it affect the Provinces of Ontario and Quebec?
4. What would be the effect of the construction of this canal on the trade of the Cities of Montreal and Quebec?
5. To what extent would the opening of this waterway be beneficial in developing local resources?
6. What effect would the working of the canal have on the traffic of the Canadian Pacific and Arnprior and Parry Sound Railways, and on the extension of railway construction in Northern Ontario?
7. How would its construction affect the lumber and pulp wood industries?
8. What effect would it have on development of mining and smelting industries in the Ottawa Valley, and especially of iron mining?
9. What effect would the opening of this waterway have on the cost of transportation of grain and produce from the Great Lakes to the Atlantic Seaboard and New England States?
10. How will cost of construction of the canals compare with cost in 1860?
11. What will be the length of the season of navigation? and how will it compare with that at Sault Ste. Marie and Montreal?
12. What advantages has the route considered as a means of military defence?
13. Any information of importance as to the feasibility, financial prospects, or results of the undertaking not included in the foregoing questions.

ANSWERS TO THE FOREGOING QUESTIONS' GIVEN BY THE FOLLOWING PARTIES, AMONG OTHERS, AND THEIR REPLIES ARE HERETO ATTACHED.

SIR WM. VAN HORNE, K.C.M.G., President of the Canadian Pacific Railway Company.

WALTER SHANLY, Esq., C.E.

WM. WHITE, Esq., Pembroke.

R. W. SHEPHERD, Esq., Managing Director Ottawa River Navigation Company.

L. P. SNYDER, Esq., Manager Traders' Bank, North Bay.

GEO. G. DUSTAN, Esq., Dartmouth, N.S.

R. ADAMS DAVEY, C.E., and

H. K. WICKSTEED, C.E., of Cobourg.

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1. Yes.
 2. Anything tending to lessen the cost of transportation between Manitoba and the North-west, and the Seaboard, must unquestionably have a beneficial effect.
 3. Its trade would chiefly be in grain, forest products, minerals and other coarse freights. The water powers it would afford should result in the establishment of important industries along its course in Ontario and Quebec.
 4. It should greatly increase the trade of Montreal and Quebec and other Canadian seaports.
 5. By the utilization of the water powers it would afford, and by the cheapness of transportation.
 6. So far as the Canadian Pacific is concerned it should create more traffic than it would take away. I cannot speak concerning the other railway mentioned.
 7. It should result in the utilization of all kinds of forest products, some of which are not now available because of the cost of carriage.
 8. It should have a most favourable effect on the development of the mineral resources in the Ottawa Valley and beyond.
 9. It should result in a reduction of the cost of transportation to some extent; I am unable to make an estimate.
 10. It should be much less because of improved methods and appliances.
 11. I should think about the same as at Sault Ste. Marie.
 12. I am not a military man.

WM. VAN HORNE.

31st March, 1898.

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1. I believe that it would do so.
 2. The construction of the canal could not but affect the North-west beneficially in cheapening transportation, especially in affording cheap transportation to the waterpowers along the route. The Ottawa Valley might become the greatest flour-milling country in the world.
 3. The trade would, of course, chiefly be in cereals. The effect on both Provinces would be beneficial, as stimulating trade generally.
 4. Grain from Lakes Michigan and Superior could be laid down in Montreal at a lower rate, and in Quebec at no higher rate, than the lowest rates ever reached between the Lakes and New York.
 5. It could not be otherwise than beneficial in developing local resources, but to attempt to estimate to what extent would be mere guess-work.
 6. Whatever benefits the country generally will not harm the railways. The New York Central Railway alongside the free Erie Canal increases its traffic and its

Georgian Bay Canal.

earnings year by year, and will still do so when the canal has been improved (a work now in progress) to 9 feet draft.

7. Very beneficially, certainly.

8. The successful development of such industries is mainly dependent on cheap transportation. That, the projected navigation would supply.

9. No very marked effect unless a corresponding waterway was opened from Lake St. Louis direct to Lake Champlain.

10. The cost of the whole undertaking would not be less now than the highest official estimate on record.

11. As between the Lakes, generally, and Montreal, the "season" would be some ten days shorter by way of the Ottawa than by way of the Welland Canal.

12. A valuable auxiliary provided the "flag" also holds the naval supremacy of the Lakes.

13. 1st—*Feasibility*. Quite feasible for a 9-foot navigation.

2nd—*Financial Prospects*. Direct money returns, or profits, on outlay not to be looked for. It must be a free highway beyond such toll as may be necessary for the proper maintenance of the works.

3rd—*Results of the Undertaking*. These only to be considered as to their effect upon the commerce of the country. The answers here made to most of the queries incline to the belief that the effect and results of the projected line of navigation would be for the general advantage of Canada.

W. SHANLY.

26th March, 1893.

1. Most decidedly.

2. It would shorten the route between head of Lake Superior and Montreal materially, and give perfectly safe navigation from mouth of French River to Montreal.

3. It might not do much for Ontario, except the northern part of it. But it would, in my opinion, make another New York of Montreal.

4. Impossible to over-estimate the value of this canal to these cities.

5. I think it would develop the Ottawa Valley immensely, find a market for the hardwood and pulp-woods which are now practically useless owing to high freight rates.

6. Don't think it would materially affect these roads as I am satisfied the increased population that would result from the construction of the canal would furnish these roads with all the traffic they could handle.

8. Have already answered this, but may explain more fully that with increased facilities for shipping large quantities of maple, birch, ash and other hardwood that is not now cut at all (and of which there is an almost inexhaustible supply) would be cut and shipped.

8. Must benefit iron mining especially. I know of one of the best and largest iron deposits within 40 miles of this Town, and half a mile from Ottawa River, that is now perfectly useless, owing to high freight rates, that must become immensely valuable if canal is built.

9. It seems beyond a doubt that the cost would be greatly reduced.

10. Cannot say. Should think, with modern explosives, and the advance made in all works of this kind, the cost, now, should be much less.

11. Six or seven months—about the same as the Soo and Montreal.

WM. WHITE.

1. Yes, undoubtedly.

2. It would add immensely to the means of transporting grain and greatly lessen the cost of its carriage by shortening the distance from the West to Montreal and Quebec, and generally improve the transportation trade.

3. Grain, lumber, pulp-wood and manufactured goods would find a market more readily from the west. The North-eastern portion of Ontario and the Province of Quebec would derive great advantages.

4. It would tend to improve the trade of Montreal and Quebec. This waterway would be a great opponent to the Erie Canal system, and would, no doubt, attract a large portion of the grain trade which now goes by New York.

5. The construction of this water way would open up the country and be the means of establishing villages and towns *en route*. The numerous water powers along the line of route would be the means whereby unlimited electric power could be developed.

6. The construction of this waterway would develop and settle the North-eastern portion of Ontario, which would greatly benefit the railways already constructed.

7. Most advantageously, by giving great opportunity for erecting Mills at numerous points.

8. It would have a good effect in developing mining and smelting industries and affording cheap means of transport to low class freight of that kind.

10. The cost of construction, as compared with cost in 1860, should be much less, because the machinery and appliances for constructing such work now, are vastly improved, and the work ought to be effected not only at less cost, but also much more expeditiously.

11. The length of the season of navigation should average seven months—from the 25th April to 25th November.

12. The route would be of great advantage for military and defence, as a means of passing gun-boats quickly through the heart of Canada, from the Sea to the Great Lakes.

R. W. SHEPHERD,

Man. Dir. Ottawa River Navigation Co.

1. I certainly do. From what I have been able to learn, fully eighty per cent of the grain from the Western States reaches the seaboard by the Erie Canal, a much longer route than the one referred to above. Montreal is nearer Europe than New York, and still *via* the Ottawa Valley Montreal is 340 miles nearer Chicago than *via* the St. Lawrence route. I am of the opinion that a much larger share of the grain trade from the west would be secured by the opening up of the northern waterway, which is at once feasible, and, from a national standpoint, possessing many advantages over the St. Lawrence.

2. The North-west Provinces would be given a much shorter all-water route to Fort William than the one now used, and which would necessarily cheapen transportation for freight westward, besides giving them a shorter route to the sea for their products. Besides the advantage of a shorter haul from Fort William, much less time in proportion to the distance, is occupied in reaching Montreal, owing to the long stretches of inland waterways in almost their natural state, which would not be affected at all by the speed of steamers passing through them, whereas the same speed in coursing through some of the canals on the other and existing routes would cause havoc to the banks. It has been said that a steamer leaving Chicago by the northern route would reach Liverpool from Chicago in the time occupied in reaching New York by the Erie Canal.

3. The country through which the canal would pass is filled with mineral, lumber, hardwoods of various kinds, many of which are to-day being exported to the British Isles from Maine, for industrial purposes, notably partly manufactured material for the large thread and paper factories in Great Britain. Spruce wood and poplar, for pulp manufacture, exists through the length and breadth of the country to be tapped by the canal system, which can, of course, be handled to much greater advantage by water than by rail. The canal would pass through a country in which all kinds of farm produce can be raised as cheaply, and of as good quality, as in any other country of like latitude, really excelling the most fertile States of the

Georgian Bay Canal.

American Union. A large part of this country is as yet practically undeveloped, owing to lack of transportation facilities. The trade to be drawn through the canal could not but very materially help Ontario and Quebec.

4. If the canal were completed, there is no doubt the cities of Montreal and Quebec would profit greatly thereby. The grain transmitted through the canal from the west would be transhipped to Ocean steamers at Ports on the St. Lawrence, which could not be done without increasing the trade at those points, and the consequent increase in material wealth. The boats would not go back to the west empty but carry in them all kinds of merchandise for those living in the west.

5. Many parts of the territory adjacent to the route of the proposed canal contain immense possibilities for opening up natural deposits of mineral. Forests abound on every hand; long stretches of farm lands requiring only an outlet in order to be settled upon and cultivated, and splendid water powers capable of producing thousands of horse-power, lying there simply useless, owing to their being off the regular line of traffic and trade. The power to be developed at the Chaudière Rapids in the French River must be immense. A never-ceasing supply of water from Lake Nipissing, with a drop of some 27 feet at the Rapids, should produce enough power to keep in operation a large number of plants, which would have an outlet through the canal.

6. This question is hard for me to answer, involving as it does such large interests. The Ottawa, Arnprior & Parry Sound Company has now secured a fleet of five steamers to run between United States ports and Parry Sound, and will, no doubt, capture some of the trade that has gone formerly through other channels. The canal being a direct waterway from the west to Montreal with but few locks, and a very few miles of canal all told, should be able to give a better rate than *via* the Parry Sound route. If it were not possible to get all the grain down to Montreal in Canal barges from the west before the close of navigation, elevators might be built at North Bay and be filled with grain brought in by larger lake boats, which would be able to find a safe and easy entrance to North Bay *via* the French River and Lake Nipissing. North Bay being much nearer to Montreal than any other lake point on its* line, receiving grain by boat from the west, would be able to get it to Montreal at rates that would compete with existing routes.

7. The construction of the canal would at once advance the lumber and pulp wood industries. Owing to the large bulk of both, in comparison with its value, freight rates have to be, of necessity, much higher than boat rates, owing to the great amount of rolling stock that has to be carried by rail, that is to say, in shipping either by rail the bulk of the freight compared with its value causes very high rates to be charged, while in shipping by water there is no waste room and it can be carried much cheaper on that account. This district through which the canal would pass is heavily wooded, and a large export trade ought to be done in both the products named, by water.

8. Ore can always be handled to better advantage by water than by rail, and therefore the opening up of a water route so much shorter, and with so few natural obstacles in the way of its completion, should give a very material stimulus to the mining and smelting industries of the Ottawa Valley and also of the regions west, which abound in minerals of all kinds.

9. I fancy the rates for transportation of grain from the west to the Atlantic seaboard are now as low as are practicable by the existing routes, and in order to cheapen the cost of getting grain to the Atlantic from the West is to shorten the distance to ocean ports. The northern route, proposed to be utilized in the construction of the canal is at once the shortest and least dangerous route owing to the whole course from the mouth of the French River to Montreal being inland, with the possible exception of Lake Nipissing, on which the waters are sometimes rough, but nothing like what prevails on the large Lakes. Being a safe route and hundreds of miles shorter, the cost of getting grain to the seaboard should be greatly lessened, and will naturally either compel United States routes to do business at a loss or divert the trade this way.

*The Canadian Pacific Railway.

10. The cost of construction should be far less now than in the year 1860. While there was no railway communication in 1860 in the district through which the canal was surveyed, there is now communication by rail with almost every important point, if not all, on the route. Supplies can be brought in anywhere between Montreal and North Bay by rail, within but a few miles of the route, and for the French River Section can be brought in by boat up the French, or across Lake Nipissing from North Bay. The cost of machinery and building material and the facilities for proceeding with such a work are such now that fully 20 per cent deduction ought to be made from estimated cost in 1860.

11. Lake Nipissing is open for navigation just as early as at Sault Ste. Marie or Montreal, in fact, I am of the opinion that we may be a little in advance of both. There having been no statistics kept here, it is hard to give a correct answer, but generally the ice is breaking up and away by the early part of April. After the 15th all is clear. The rivers and other lakes on the route in the neighbourhood of North Bay, are free at the same time. Ice forms about the first of December.

12. No better route could be chosen as a means of military defence.

13. By damming one of the outlets into the French River the waters of Lake Nipissing could be kept at a certain height, fully five feet above the ordinary high water level, without affecting vested interests, except in a very few cases, which would be remedied by the building of dykes at little cost.

Trout Lake could be lowered, on the same principle, by about five feet, making the total drop between the two of, say, fifteen feet. There is a natural channel between the two lakes, almost level, and as far as I have been able to learn, there is no obstacle standing in the way of the feasibility of the scheme, as far as the country surrounding North Bay is concerned.

L. P. SNYDER,

Manager Traders Bank.

NORTH BAY, March 18, 1898.

Mr. Dustan's answers to questions 1, 2, 4 and 12 as requested in your annexed list of questions:

1. By promoting settlement and developing her natural resources it cannot but add immensely to the volume of Canada's trade, both domestic and foreign.

2. The permanent prosperity of the Dominion depends not so much on its gold fields as on the development of the natural products of the great North-west grain-growing and cattle raising area. Ministers of the Crown have expressed their intention of devoting themselves to this object. No better means and no more important factor towards obtaining it can be found than improving the conditions of carriage of these products to their markets, and there can be no fear of overdoing this. A very small reduction in the cost of transportation of wheat will soon increase the production enormously. The time is not far distant when existing routes will be altogether insufficient for carrying the traffic even under present conditions. The Ottawa waterway will not merely share existing traffic, but will create new traffic to an extent that can hardly be over-estimated, and will in itself prove the best colonization measure that could be devised in the interest of the North-west. It will give the people of the North-west a safe, direct and sheltered water route—almost an air line from the Sault to Montreal—greatly reducing both cost and risk of carriage. The St. Lawrence route will always be exposed to severe competition on Lake Erie. By the Ottawa route the traffic will be taken from the Sault and the mouth of Lake Michigan entirely through Canadian waters, and every dollar spent on transportation will remain in Canada. By lessening the cost per bushel of transportation of wheat, it will proportionately increase the profits of farmers in the North-west, and will thus directly and in a large degree aid the material wealth, prosperity and settlement of the North-west.

4. This waterway would be the means of carrying immense quantities of grain to Montreal, which without it will find their way to New York. One of the most serious drawbacks of Montreal as a port is the shortness of the grain shipping season. The opening of the Ottawa route, on which the season will be practically the

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same as that at Montreal, will more than double the capacity and opportunity for handling grain at the time when most needed, and must stimulate proportionately the shipping trade of Montreal.

12. Its approaches in both directions are readily defensible. It is far from the frontier and safe from attack and will afford a base of supplies and operations, as well as a means of communication with the Great Lakes, and of shelter for vessels employed in lake commerce.

Very respectfully submitted by,
GEORGE GORDON DUSTAN.

DARTMOUTH, NOVA SCOTIA,
6th April, 1898.

1. There can be no doubt on this point, as it would make available the natural resources of the Ottawa valley, which must otherwise to a large extent remain dormant. This would bring in a large population and start many industries and create a demand for many commodities from other parts of the Dominion. It would also form another great and cheap avenue for commerce, which would be of great advantage to the whole of Canada and to an important part of the United States.

2. It would form a shorter, safer and cheaper route to and from the seaboard than any of the present waterways, and the competition between the carriers by the various routes would be beneficial to the farmers, ranchers, &c., of these parts, whose prosperity depends so largely on the freight rates.

3. Grain would be the largest item, but the following would be very considerable: raw products of the forest, manufactured products of the forest, such as sawn lumber, pulp, &c., mineral products, such as iron, copper, nickel, phosphates, &c., also coal, heavy merchandise for the West and for the locality, farm products from the locality, &c. It would benefit both Provinces.

4. It would do more than anything up to the present time to make Montreal what she should be, one of the largest shipping ports on this Continent, and possibly eventually the largest. It would also benefit Quebec.

5. Most of the products of this locality are of great bulk and weight in proportion to their value, and depend on cheap transportation to make their being worked remunerative. It would also make the immense water powers of the Ottawa available for manufacturing purposes.

6. It would render possible the development of many resources of the locality, which cannot be done by railways, and from which the latter would derive great benefit.

7. It would give great impetus to these industries, and make them more remunerative. This district possesses unrivalled opportunities for the development of the pulp industry. It would also furnish cheap transportation for lumber going East and West.

8. It would render possible the development of these resources which are known to exist in abundance in the Valley, especially as the water powers can be utilized in the treatment of the ores by electricity, &c.

9. It would lower the rates, but to what extent depends largely on the draught of the canal, &c., also on the toll charged for going through. When this canal is built, there is little doubt but that it will be immediately extended to the Hudson, which would largely increase the traffic through both the Montreal-Ottawa and Georgian Bay Canal and those of the St. Lawrence, and Canada must of necessity derive some advantage from this.

10. There would probably be little difference for the same draught of canal—10 or 12 feet.

11. The season of Navigation at the east end would be the same as at Montreal. In the centre and west end about the same as at Sault Ste. Marie.

12. It would form the only means of water communication with the Upper Lakes and could easily be kept open in case of trouble with the United States, and it might possibly be the means of giving us the command of these waters which would be invaluable to the Dominion.

13. About three years ago I went carefully over Messrs. Walter Shanly and T. C. Clark's reports, estimates, &c., and have traversed a considerable portion of the route, and consider that there are no serious engineering difficulties to be contended with, and that the cost of construction will be found wonderfully small for so important an undertaking, and worthy of the fullest consideration by the Honourable Members of the Senate Committee.

R. ADAMS DAVY.

1. Yes, think it must inevitably do so by giving Montreal a chance to compete successfully with New York as the emporium for the carrying trade of the northern half of the continent.

2. It would give them a shorter and cheaper outlet to the sea and enable Canadian wheat to compete with that of Argentine, India and Southern Europe in markets of the Old World in price as well as quality.

3. The trade done through it would be in the end all the heavier and bulkier exports and imports of the Central, Western, North-western and South-western States of the Union and of Manitoba and the Territories. This would tend to build up Montreal and through Montreal the adjacent Provinces. Independently of this the Ottawa Valley itself is known to be very rich in minerals, lumber and wood pulp material, but these products are too bulky and heavy in proportion to their value to be transported by railway to any great extent. The Ottawa navigation and the numerous branches opening from it would provide a cheaper mode of carriage which would stimulate these industries to an incalculable extent.

4. I have already stated that I believe Montreal and Quebec would soon outstrip New York as the depots for the trade of the Continent. The St. Lawrence and the Great Lakes are the natural outlet to the east, but the great bend southward from Sault St. Marie to Toledo, and the barrier to navigation at Niagara, and the rapids and shoals between Prescott and Montreal have discouraged its being used below Lake Erie, and thence the shortest route to the sea is *via* New York. The re-opening of the old outlet of Lake Huron down the Ottawa Valley would completely change the conditions. A paper by Mr. T. C. Clarke on "The decaying commerce of New York" in Engineering News of 31st March, will be interesting and instructing from this point of view.

5. I have in answer to Question 3 touched upon the local resources of the Ottawa Valley. It is difficult to say to what extent a reduction of freight rates by one-half or two-thirds would affect industries to which railway rates are practically prohibitive. Further than this the navigation works would of themselves render enormous water power now running to waste, available so much so that the whole Ottawa Valley could be supplied with light and electrical power at such rates as would completely discount the use of steam, and make it the most favoured district for manufacturing industry in the world.

6. Anything which affects the general prosperity of a district, and stimulates commercial activity within is a help to the railways in that district. The traffic of the canal would be such as the railways could not carry in any case, and the competition, if any, would be with the American lines terminating in New York and Boston rather than with the Canadian.

The prosperity of the New York Central paralleled for its entire length by the Erie Canal is a case in point.

The Canadian Pacific is in a sense in competition with the St. Lawrence waterway between Fort William and Montreal, but how much traffic would the Canadian Pacific Railway get if this waterway were closed? Would its existence be possible in a commercial sense without it? And how much grain would be grown for export in Manitoba were there no other outlet. The canal will directly and indirectly support an enormous industrial population, which will give business and prosperity to the railways.

7. In this connection I think the word "affect" is hardly appropriate, and that the canal can hardly be spoken of as "affecting" what it would naturally create. The lumber industry has of course existed for nearly a half century, but only as

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regards the finer grades, the coarser, of which pulp may be said to be one form are unable commercially speaking to pay the cost of transport under existing circumstances, and the spruce, tamarack, cedar, Norway pine, balsam, ash, birch and poplar of the Ottawa Valley remain practically untouched.

8. The answer to this would be almost the same. That cheap carriage of coal, ore, limestone, &c., and cheap power for electrolytic purposes are conditions without which these industries cannot exist.

9. The paper of Mr. T. C. Clarke, elsewhere referred to, and which is compiled from the opinions and statistics of the most able authorities extant, is a better and more exhaustive answer to this question than I should be justified in giving at the present time. He estimates the cost of carriage of a bushel of grain by the Ottawa navigation and its extension through Lake Champlain to the Hudson from Chicago to New York at 2.07 cents. By the Lake steamers to Buffalo and Erie Canal thence to New York, the cost is put at 5.31 cents. Comment is hardly necessary.

10. Cost of construction of similar works has been reduced by more than one-half, as for instance rock was estimated at \$4 per cubic yard, and could now be handled for \$1.50 or less. In addition to this newer and more modern methods of construction would be substituted, in many cases resulting in a further saving in construction or maintenance, or both.

11. There is in my opinion no reason why the route should not be available for the same range of dates as that at Sault Ste. Marie, which is virtually the same as the opening and closing at Montreal.

13. So much has been thought out, written and said about the possibilities of this navigation scheme that it is impossible to answer this question at once fully and concisely. The feasibility has been repeatedly reported on by the most distinguished men in the Profession, Walter Shanley, T. C. Clark, Marcus Smith, A. M. Wellington and others. One of the most remarkable points in this connection is that the almost universal presence of hard, solid rock at the salient points, which, in the 60's was looked upon as a drawback, and a source of almost insuperable difficulty, has come to be regarded as one of the happiest conditions. Lock chambers become little more than rock excavations, instead of the great masses of concrete, masonry and puddle seen on other canals. The frowning walls of rock which shut in the Valley of the Upper Ottawa and Mattawa are exactly what we should choose as the material and the foundation and abutments of the dams and controlling works giving miles, not of canal, but of deep slackwater navigation through artificial lakes. And the fact of the existence of the Canadian Pacific Railway and the towns of North Bay, though urged by opponents as an insuperable barrier to the construction of the canal on the original lines involving the raising of the level of Lake Nippissing, has led to further examination and the resultant discovery that this elevation of the water, so far from being necessary, is inadvisable, and that by retaining the present highwater level we increase the cost very little, decrease the amount of lockage, and completely set at rest any question of the sufficiency of water supply. The railway and the towns become agents which greatly facilitate instead of hindering the construction. On the French River the way in which nature has provided lock-sites, storage, reservoirs, and waste-channels and harbours is more than remarkable.

As to finance there seems no doubt as to the possibilities of the canal being profitable to the promoters, if built by private enterprise alone, but in view of the vast military and political interests involved, it becomes a very grave question whether the State is justified in allowing the work to be constructed altogether by private, and it may be largely by alien, capital. One far-seeing and highly educated man in writing to me from Toledo, uses the expression, "Canada holds the gateway of continental commerce." The editor of *Engineering News* speaks of the canal as being on a route provided by nature through Canadian territory for the carriage of American commerce.

Without quoting others these quotations are very significant. I have myself compiled a map showing that two millions of square miles, mostly south of the line and west of Chicago is largely dependent on it. Would not the control of such a waterway, when built, be an absolute necessity for the Dominion and Imperial

Governments? And would it not be a closer tie between the two Nations on this continent, with the difference from other similar questions which have arisen before, that in this case instead of the Dominion being in any degree dependent upon the United States, a large portion of the latter would soon become dependent almost for its existence upon the goodwill of the Canadian Government. The canal closed to their grain immediately causes the latter to drop in value from two to five cents per bushel, enough to make all the difference between the profit and loss. The same canal which carries the grain out is capable of carrying apparatus of war in. And it would almost seem that it is not too much to look forward to a closer political bond between Canada and the North-western States, not in the form of Annexation of the former, but rather the voluntary union of the latter with Canada under a central Government upon the banks of the great waterway itself, which has from our earliest history been so paramount a factor in the settlement, exploration, commerce and political division, not only of Canada, but of the major part of the Continent.

HENRY K. WICKSTEED,

Sec. Can. Soc., C. E.

REPORT UPON THE WATER POWER ATTAINABLE FROM THE OTTAWA RIVER WHEN THE MONTREAL, OTTAWA AND GEORGIAN BAY CANAL IS BUILT, BY ANDREW BELL, C.E., OF ALMONTE.

There is probably no river on this Continent from which such a large available amount of power can be obtained as from the Ottawa. The falls and rapids which are spread over the distance, from Mattawa eastward, of 300 miles, with a fall in that distance of over 500 feet, are distributed in such manner that it is possible to make use of a large percentage of the power.

The flow of water, although subject to considerable variation between high and low water, is more regular than most rivers on this Continent, on account of the large number of Lakes on it and its tributaries, and because the Upper waters, that is above Lake Temiscamingue, are on elevated northern country where the spring floods are let loose two or three weeks later than in the lower parts of the river.

The volume of the river shows little, if any, apparent diminution from its confluence with the St. Lawrence for 300 miles upwards to Mattawa.

The flow, as measured by me at Carillon, but with only crude appliances, from 1872 to 1882, was ascertained to be, highest water, 12,000,000 cubic feet per minute, and lowest 1,500,000 per minute. That lowest is the extreme. Average low water would range from 1,800,000 to 2,000,000 cubic feet per minute.

In constructing the Montreal-Ottawa and Georgian Bay Canal, a large number of dams must be built to raise the water in most of the reaches, and to concentrate or localize the water as required at locks, and generally to control the river as needed for canal purposes, &c. These dams must have the effect of regulating, as well as increasing, the discharge during low water, as they will retain a portion of the spring floods for use during the low stages of the river. Besides it may be advisable, and perhaps necessary, in order to keep up to the required height some of the reaches, to put storage dams on many of the tributaries. It is safe to say that this regulating and storage will be done to such an extent that 2,500,000 cubic feet per minute can be depended upon as the lowest discharge at any time of the year. This would give (in round numbers) 4,000 horse power per foot fall, or about 2,000,000 horse power from Mattawa eastward on the main stream, not taking into account the power (estimated at about a quarter of the foregoing, which could be obtained from the tributaries near to, and before they fall into, the Ottawa—and not including the immense extra power which might be developed for three months or more from high water, or even an average stage between high and low.

As to what proportion of the two million horse power can be made available for industrial purposes, it is somewhat difficult to say. A large quantity will

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unavoidably be lost by leakage. Some should be allowed at all seasons to run over the crests of the dams to preserve them, some may be in such a geographical position as not to be easily brought wholly into use, and some will be required to operate the canal. However, it is probable that from 40 to 50 per cent of it may in time be made to do effective work, say at least 800,000 horse power.

The possibilities of such an immense, easily available, power can hardly be over-estimated, and besides that there is as well what can be utilized during part year from high water.

ANDREW BELL,
M. Am. Soc. C. E., Consulting Engineer.

SUPPLEMENTARY REPORT BY MR. T. C. CLARKE.

McLEOD STEWART, Esq.,
Montreal, Ottawa & Georgian Bay Canal Company, Ottawa, Canada.

DEAR SIR,—I have the honour to submit the following Report, bringing down to the present date the matters treated upon in my report of 1860.

Great changes have taken place since that Report demonstrated the feasibility of improving the Ottawa and French Rivers into one of the greatest channels of commerce. What was then only a scientific discussion has now become a matter of great importance to two nations.

Including together the present exports from the basin of the Great Lakes, both in the United States and Canada, there is enough traffic in sight to warrant a large expenditure in opening a new route, if the conditions are such that the cost of transportation between the Lakes and the Ocean can be diminished. Canada alone does not at present furnish enough traffic. The Ottawa route must be treated as an international one.

Two remarkable changes have taken place during the last ten years, which have each resulted in greatly lessening the cost of water transportation; one, upon the Lakes, and the other between the North Atlantic ports of the United States.

The construction of the locks at the outlet of Lake Superior has developed a traffic vast in size, and differing from all others in the world, in that it enables vessels to get full cargoes in both directions during the whole season of open navigation.

The United States lake ports will all be deepened to 20 feet very soon. Steamers now carry cargo of 6,000 tons of grain and iron ore eastward to South Chicago, Cleveland and Buffalo, and take back cargoes of coal to upper Lake ports. It is a well known axiom that the larger the vessel the cheaper it can handle the freight. These 6,000 ton steamers have carried grain from Chicago to Buffalo for $1\frac{3}{10}$ cts. per bushel, which is less than one-half of one mill per ton-mile. Hence there has arisen a popular demand for ship canals of 20 or even 25 feet deep, from the lakes to the ocean. Even if such canals were built and could be used free of tolls, no such economy of transportation by large steamers could take place as in the open lakes.

The rate of speed of thirteen miles an hour would be reduced to five, as in the Suez canal. Canal traffic would not give full cargoes in both directions, and more detention in port would be necessary than at Cleveland or Duluth where whole cargoes of 6,000 tons of coal or ore have been handled by machinery in less than one day. The large steamer is a very expensive machine, and if she were not able to make as many trips per season as she now does, much of her economy would be lost.

It does not now seem possible, except at a prohibitory cost, to deepen the Ottawa navigation to 20 feet, and fortunately it is not necessary.

The second change, which has resulted in lessening the cost of transportation between Atlantic ports, suggests the true method of improving the Ottawa.

Some ten years since all coal was carried between the shipping ports of Philadelphia and New York to other Atlantic ports, chiefly those of New England, in single collier steamers, at a cost of \$1.50 to \$1.75 per ton.

Now it is carried in tows of three or four large barges drawing from 16 to 18 feet of water, towed by a single powerful tug boat. This tug does not wait in port for coal to be loaded or unloaded, but each tug has many barges, and she picks up her tow of full or empty barges without detention, as a locomotive does cars. In this way many trips are made per season. The distance between Philadelphia and Boston and return is about 800 miles, and coal is now carried for an average of 75 cents per ton, which is nine-tenths of a mill per ton-mile.

This economy of transportation has increased the coal traffic to some twenty-five millions of tons annually, which is as great as the tonnage annually passing through the Detroit River. The use of these tows of barges is fast increasing upon the upper lakes.

All these facts have been clearly set forth by Major T. W. Symons, United States Engineer Corps, in his admirable and exhaustive report to the United States Congress in 1897. He shows that if the Erie Canal were deepened to 11 feet and grain were carried in tows of barges of 1,500 tons capacity, it could be carried from Chicago to New York, including reasonable transshipment charges at Buffalo from large steamers into canal boats, for less than steamers of 20 feet draft could carry it through the Erie Canal if that could possibly be deepened to over 20 feet, and steamers run continuously from Chicago to New York. In both cases tolls are not taken into account.

The estimated cost of the 11 foot canal is fifty million dollars, and of the 20 foot 200 millions.

The great value of the Ottawa navigation is this: Out of the 975 miles between Chicago and Montreal 591 miles is an inland or perfectly protected navigation, leaving but 384 miles of open lake. In open lake a speed of $4\frac{1}{2}$ miles an hour can be made by tows of barges. In the protected portion an average speed of ten miles an hour can be made. The cost of insurance by this route would be much less than by any other.

By the Welland and St. Lawrence route, there are 991 miles of open lake navigation, and but 297 of inland or protected navigation. The depth of the Welland and St. Lawrence Canals would limit the draft of barges to $13\frac{1}{2}$ feet, which is too shallow for navigation in lakes such as Erie, subject to sudden violent storms. The rates of insurance would be greater, and the longer time required, owing to greater length, and slower movement through the unprotected parts, would more than make up for the 22 days of longer open navigation by the Welland route.

I recommend that the scale of the Ottawa navigation be fixed as follows:— Locks 300 feet long x 45 feet wide x 14 feet deep, capable of passing steel barges 280 feet long, 42 foot beam and carrying 3,100 tons net on $13\frac{1}{2}$ feet draft water.

The excavated channels should be fifteen feet deep and have five times the area of the vessel, with sufficient room for two vessels to pass each other, which would give a width of 160 feet on the bottom and 170 feet at low water level.

The cost of carrying grain from one of the lake ports, say Chicago, to Montreal by the Ottawa route, would be as follows:—

CAPACITY.

A tow would consist of three steel barges, each 280 x 42 x 20 feet, moulded depth, carrying, on $13\frac{1}{2}$ feet draft, 3,100 net tons. These would be towed by a powerful tug steamer capable of towing the barges at the rate of four and one-half miles per hour in open lake, and ten miles per hour through the sheltered lakes and rivers of the Ottawa navigation. The tug steamer would be capable of carrying a cargo of 1,200 tons, making a total capacity of 10,500 tons.

TIME.

Open lake—
Chicago to a point near the mouth of St. Mary's river—380 miles at $4\frac{1}{2}$ miles per hour..... 72.2 hours.

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Inland lakes and rivers—

St. Mary's River to French River, 160 miles
Ottawa navigation.....401 "

Canals..... 561 " at 10..... 56.1 hours.
29.3 miles at 2.9..... 10. hours.

Lockages $1\frac{1}{2}$ minutes per foot

for each vessel $1\frac{1}{2} \times 4 = 6 \times 682 \text{ ft.}$ 68.2 hours.
60 min.

Total.. 206.5 hours.

206.5 x 2 = 413 hours.

In port 91 hours.

504 hours, or 21 days round trip.

The open season of navigation on this route, is limited by the closing of Lake Nipissing and gives an open season of 213 days, or ten round trips.

cost.

1 tug.....	\$125,000	
4 barges (1 extra) at \$75,00.....	300,000	
	<u>\$425,000</u>	interest and depreciation at 5
		per cent..... \$21,250
Insurance on hulls, 2 per cent.....		8,500
" on cargo.....		
Going East 10 x 10,500.....	105,000	Tons.
" West $\frac{1}{3}$	35,000	"
	<u>140,000</u>	Tons at \$20.
		\$2,800,000 at
		25c. per 100..... 7,600
Expenses of tug—full subsistence, wages and		
small repairs, \$100 per day for 213 days.....		21,300
4 barges at \$7.50 per day—30 x 213.....		6,390
Profits 10 per cent....		6,440
		<u>\$70,880</u>

which divided by 140,000 Tons gives as the cost about 50c. per ton, or $1\frac{1}{2}$ cts. per bushel.

It is absolutely essential to the success of this project that there should be ample elevator facilities at the port of Montreal, so that Ocean steamers should suffer no detention. With such an elevator of the capacity of one million bushels as lately has been built by the Great Northern Railway at Buffalo, the whole cost of elevating and storage should not exceed three quarters of a cent, making the total cost per bushel $2\frac{1}{2}$ cents, which is far below the cost by any existing route, or than can be obtained on the Welland and St. Lawrence route when the canals are completed.

This extremely low cost is based on the assumption of full cargoes going east, and one-third full going west. The larger the amount of business done, the more nearly will this be realized, and the financial success of the scheme would be enhanced, if the Ottawa navigation could be extended upon the same scale, through Lake Champlain to New York, the feasibility of which the United States Deep Water Ways Commission are now, it is believed, investigating. By this route the distance from Chicago to New York, would be about 1,353 miles, of which 380 miles would be open lakes, 847 miles inland navigation, and 126 miles of canals.

By similar calculations to those above given, eight trips could be made in an open season of 235 days, and the cost would be 2 cents per bushel, to which should be added the present elevator and other charges at the port of New York, which are very high, amounting to $1\frac{1}{2}$ cents per bushel, or a total of $3\frac{1}{2}$ cents per bushel. Major Symons estimates that when the Erie Canal is deepened to 9 feet and the locks lengthened, wheat can be carried from Chicago to New York for 3.67 cents to which add New York, terminal charge 1.50 cents a total of 5.17 cents; showing the superiority of the Ottawa route.

The cost of interest, maintenance and repairs, lock tending, electric lighting, etc., on the Ottawa route, would be borne by moderate tolls and leases of water power, described hereafter.

As compared with the estimated cost of the Ottawa navigation in 1860, there will be an increase of quantities and a diminution of cost in item prices.

The increase of the size of the locks from 250 x 45 x 12 to 300 x 45 x 14, will increase quantities. Also the enlargement of the prism of the excavated canal from 146 x 13 to 160 x 15, will increase quantities.

The locks at Grenville and Carillon will have to be enlarged. The Lachine locks will also have to be lengthened unless it is decided not to use the present crowded Lachine Canal, and improve one of the branches of the Ottawa north of the Island of Montreal.

Another increase of cost is due to the fact that Lake Nipissing cannot now be raised by damming its outlets, as was proposed in 1860.

The country around the summit lakes is now well settled and has many cultivated farms. The town of North Bay, which would have to be moved back to prevent overflow, has some 2,500 inhabitants. Thirty miles of the Canadian Pacific Railway would have to be moved or raised.

The level of Lake Nipissing must still be maintained from French River to the Mattawan, 57 miles. This means lowering the level of Trout and Turtle Lakes to coincide with that of Nipissing, which can be done. This is the only way in which sufficient water for lockages can be obtained. The total lockage will be reduced from 715 to 682 feet.

The amount of excavation will be increased, but it is believed that the extra cost of this will not exceed what would have to be paid for damages if Lake Nipissing were raised.

The plan of 1860, which raised existing levels by dams on the French and Mattawan Rivers and on the Ottawa as far east as Chats Lake, can still be followed, as the shores are steep and rocky, and but little land will be overflowed. There are a few places where sites of locks and dams may have to be changed, but not at an increased cost.

In 1860 the whole Upper Ottawa was a wilderness. All materials and supplies above Deep River must then have been transported partly by teams and partly in bateaux towed by horses, or poled by men. Now, the Canadian Pacific Railway can deliver materials, supplies and men all along the route, and at far less cost.

Several locks of low lift can now be concentrated into one, as in accordance with the best modern practice. This will reduce cost.

I am in favour of locating the locks so that a duplicate lock can be built hereafter alongside of the one first to be built.

I now advise constructing the locks of concrete (made from the stone near by) and Portland cement. The lock walls can be protected by waling pieces of steel and oak, thus saving much costly cut stone masonry.

The most important item of economy comes from the fact that the cost of the rock excavation, which is the largest item of cost, can be greatly reduced by the improvements which have been made during the past few years in the use of power drills, high explosives, and better kinds of machinery for handling materials.

The air compressors and other machinery can in many cases be driven by electric power derived from the river. The latest price paid for rock excavation on the Chicago Drainage Canal was 59 cents per cubic yard, while the average price estimated for the Ottawa improvements in 1860 was generally from \$1.50 to \$2.00 per yard.

Georgian Bay Canal.

I am not now prepared to revise the figures of cost made in 1860, as this cannot be done without further examinations and surveys which will take several months to properly carry out.

There are several very important economies in construction that can now be made available, which could not in 1860.

It is proper to point out that the most important change in the situation since 1860 has come from the development of electrical transmission of power. The dams which were designed by me in 1860 were then, and are now, absolutely necessary to give sufficient depth for navigation. These dams will also be the means of developing and controlling water power for electric appliances.

I can state unreservedly that I know of no other place in any manufacturing country, Niagara Falls not excepted, where there is such an amount of water power as this scheme can make available, both for manufacturing purposes and possibly for moving vessels rapidly through the locks.

It is proposed to construct 20 dams on the Ottawa with an average of 20 feet fall each. The low water discharge of the Ottawa never falls below 1,500,000 cubic feet per minute, of which one third should be allowed to run over the crests of the dams to prevent decay, leaving 1,000,000 cubic feet per minute to run through flumes and do effective work. By the usual formula

$$\begin{array}{r} \text{Dams cu. ft. per min. fall.} \\ 20 \times 1,000,000 \times 62\frac{1}{2} \text{ lbs.} \times 20 \quad \text{we have } 566,360 \text{ horse power.} \\ \hline 44,000. \end{array}$$

Adding that available on the Mattawan and French Rivers there will probably be, at a minimum, not less than 700,000 horse power.

The average discharge of the weirs would give not less than four time this amount.

All this can be made available, by the comparatively small expenditure necessary for flumes and the foundations of penstocks and turbines. The cost of the installation of electric plant would vary greatly with the situation.

All of which is respectfully submitted by,

THOMAS C. CLARKE,
Consulting Engineer Montreal,
Ottawa and Georgian Bay Navigation.
Member Institution of Civil Engineers
and of the American Society of
Civil Engineers.

NEW YORK, 16th February, 1898.

EXTRACTS FROM PROSPECTUS OF THE MONTREAL, OTTAWA AND GEORGIAN BAY CANAL COMPANY GIVING DISTANCES.

The opening up of the Ottawa route would complete a direct and unbroken navigation along the continuation of such line for 2,000 miles into the heart of the Western continent, and would thus form an important link in the greatest of international waterways.

2. Owing to its directness this route effects a saving in distance between western lake ports and ocean navigation of almost 450 miles over the Erie, and 375 over the St. Lawrence. Thus from Chicago to Montreal is

Via the St. Lawrence.....	1,348 miles
" Ottawa.....	980 "
	378 "

While from Chicago to

New York via the Erie route	1,415 miles
Montreal via the Ottawa.....	980 "
	<u>435 "</u>

It is 575 miles from the entrance of Lake Michigan to Buffalo (which port of transshipment is 495 miles from an ocean port), while the total distance from the same point of departure to the head of ocean navigation at Montreal via the Ottawa is only 635 miles. In other words, a vessel leaving Chicago would reach the Atlantic market at Montreal in fifty or sixty miles more than it now takes her to reach Buffalo.

The distances between Chicago and Liverpool by the several routes are as follows:—

1. Via Erie Canal,

Chicago to Buffalo.....	920 miles.
Erie Canal to Albany.....	350 "
Hudson River to New York.....	145 "
New York to Liverpool.....	3,080 "
	<u>4,495 "</u>

2. Via the St. Lawrence,

Chicago to Montreal.....	1,348 miles.
Montreal to Liverpool.....	2,800 "
	<u>4,148 "</u>

3. Via the Ottawa,

Chicago to Montreal.....	980 miles.
Montreal to Liverpool.....	2,800 "
	<u>3,780 "</u>

or over 700 miles less via the Ottawa route than by way of the Erie.

3. Less canalling is required on the Ottawa route than on any other. According to the plan submitted by Mr. T. C. Clarke, C.E., only 29 miles of canal are necessary on this route as against 71 on the St. Lawrence and 351 on the Erie. Estimating one mile of canal navigation as equivalent in point of expense and delay involved to three miles of open river and lake navigation, the routes will compare as follows:—

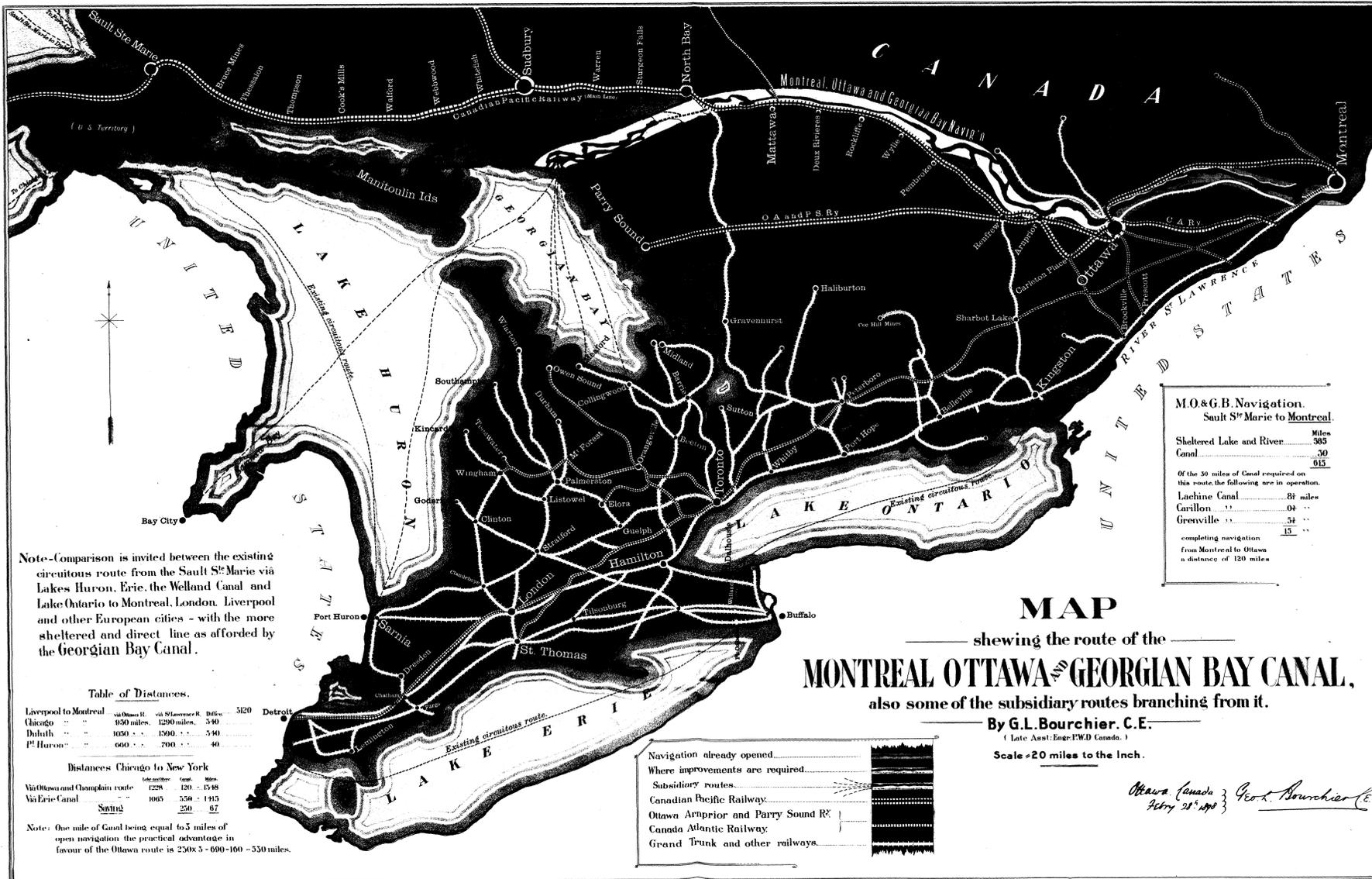
From Chicago to Atlantic tide water, via

1. Ottawa route, 980 miles (951+(29×3)= 87) equivalent to 1,038	}	miles of open river and lake navigation.
2. St. Lawrence 1,348 " (1,277+(71×3)= 213) " 1,490		
3. Erie, 1,415 " (1,064+(351×3)=1,053) " 2,117		

4 Calculating the average rate of travel at four miles per hour for canal and twelve miles for open river and lake, the time consumed on the several trips will be (allowing for lockage at the rate of 1½ minutes per foot).

1. Via Erie to New York,

	Miles.	Hrs.	Mins.
Lake and River.....	1,064	88	40
Canal.....	351 (655 ft. lockage)	104	05
		<u>192</u>	<u>45</u>
Total.....		192	45



Note-Comparison is invited between the existing circuitous route from the Sault Ste Marie via Lakes Huron, Erie, the Welland Canal and Lake Ontario to Montreal, London, Liverpool and other European cities - with the more sheltered and direct line as afforded by the Georgian Bay Canal.

Table of Distances.

Liverpool to Montreal	via Ottawa R.	via St. Lawrence R.	Dist.	5120	Detroit
Chicago	930 miles.	1290 miles.	340		
Duluth	1030	1590	540		
Pt. Huron	600	700	40		

Distances Chicago to New York

Via Ottawa and Champlain route	1228	120	1548
Via Erie Canal	1065	558	1415
Summed	2293	250	2543

Note: One mile of Canal being equal to 5 miles of open navigation the practical advantage in favour of the Ottawa route is 250x5 = 600-100 = 550 miles.

M.O.G.B. Navigation.
Sault Ste Marie to Montreal.

Sheltered Lake and River	Miles	385
Canal	50	615

Of the 30 miles of Canal required on this route the following are in operation:

Lachine Canal	24 miles
Carillon	04
Grenville	02
completing navigation from Montreal to Ottawa	18
a distance of 120 miles	

MAP
shewing the route of the
MONTREAL OTTAWA AND GEORGIAN BAY CANAL,
also some of the subsidiary routes branching from it.

By G.L. Bouchier, C.E.
(Late Asst. Engr. P.W.D. Canada.)
Scale - 20 miles to the Inch.

Navigation already opened	
Where improvements are required	
Subsidiary routes	
Canadian Pacific Railway	
Ottawa Arnprior and Parry Sound R.R.	
Canada Atlantic Railway	
Grand Trunk and other railways	

Ottawa (Canada) } G.L. Bouchier, C.E.
Feb'y 21st 1892 }

Georgian Bay Canal.

2. Via St. Lawrence to Montreal,

	Miles.	Hrs.	Mins.
Lake and River.....	1,277	106	25
Canal.....	71 (553 ft. lockage)	31	35
Total.....		138	...

Via Ottawa to Montreal,

	Miles.	Hrs.	Mins.
Lake and River.....	951	79	15
Canal.....	29 (666 ft. lockage)	23	55
Total.....		103	10

showing a saving of nearly four days over the Erie route, and one and one-half days over the St. Lawrence.

APPENDIX No. 5

1898

THE SENATE OF CANADA

Special Committee upon Opening up Direct Communication
between the Railway System of Canada and the
Navigable Waters of the Yukon

Routes to the Yukon.

ORDER OF REFERENCE.

EXTRACT FROM THE MINUTES OF PROCEEDINGS OF THE SENATE.

MONDAY, 4th April, 1898.

The Honourable Sir John Carling moved, seconded by the Honourable Mr. MacInnes,

That a Special Committee be appointed to inquire into the feasibility and probable cost of opening up direct communication between the Railway System of Canada and the navigable waters of the Yukon, and also as to the advantages which would flow therefrom to the trade of Canada; and that such Committee be composed of the Honourable Messieurs Boulton, Bellerose, Cox, Drummond, Fiset, Loughheed, McCallum, Macdonald (Victoria), Macdonald (P.E.I.), MacInnes, Ogilvy, Perley, Primrose, Reid, Wood, and the mover, with power to send for persons, papers and records.

The question of concurrence being put thereon, the same was resolved in the affirmative, and

Ordered, accordingly.

EXTRACT from the Second Report of the Committee by the Senate, Thursday, the 28th April, 1898.

Your Committee recommend that they be authorized to employ such persons as the Committee may deem necessary for the purposes of the said investigation, and to have leave to report from time to time.

EXTRACT FROM THE MINUTES OF THE FIRST MEETING OF THE COMMITTEE.

COMMITTEE ROOM No. 8,
TUESDAY, April 5th, 1898.

Committee met this day at 12 o'clock noon.

Present:—The Honourable Sir John Carling, K.C.M.G., the Honourable Messieurs Boulton, McCallum, Macdonald (Victoria), Macdonald (P.E.I.), Perley, Primrose, Reid and Wood.

The Committee being called to order by the Clerk.

The Honourable Mr. McCallum moved, seconded by the Honourable Mr. Perley,

That the Honourable Sir John Carling be appointed Chairman of the Committee, and the same was resolved in the affirmative.

The Honourable Sir John Carling having stated that business arrangements would not permit of his being able to attend the meetings of the Committee, as well as he would desire to do, he asked to be relieved and moved, seconded by the Honourable Mr. Primrose,

That the Honourable Mr. Boulton be appointed Chairman.

The said motion being put by the Clerk, the same was resolved in the affirmative, and,

The Honourable Mr. Boulton took the Chair.

Attest.

ALEX. SOUTTER,
Clerk of Committee.

Routes to the Yukon.

REPORT.

THE SENATE,
COMMITTEE ROOM No. 2,
WEDNESDAY, 18th May, 1898.

The Special Committee of the Senate appointed to inquire into the feasibility and probable cost of opening up direct communication between the railway system of Canada and the navigable waters of the Yukon, and also as to the advantages which would flow therefrom to the trade of Canada, with power to send for persons, papers and records, and who were further given power to employ such persons as they might deem necessary for the purposes of the said investigation and with leave to report from time to time, have the honour to make their Third Report, as follows:—

Your Committee beg leave to report that they have summoned and taken the evidence of the following gentlemen who are by their professional knowledge or by virtue of their residence, capable of giving practical and reliable information of the facts which Your Committee was desirous of obtaining, namely:

The Honourable Senator Reid, of Quesnelle, Cariboo, British Columbia.

Bishop Grouard, who since 1862 has resided in the Mackenzie Basin as missionary.

Mr. Oliver, of Edmonton, Member for Alberta, in the House of Commons.

Mr. Bostock, of Kamloops, Member from British Columbia.

Mr. Marcus Smith, M. Inst. C.E., engaged in surveys in 1879 and 1880.

Dr. Dawson, Chief of the Geological Service.

Mr. Henry McLeod, Civil Engineer.

Mr. St. Cyr, of the Surveyors' Branch of the public service, engaged in 1898 in exploratory work on Teslin Lake and the Tuya to the east.

Mr. Jennings, who was engaged in Canadian Pacific Railway surveys, and last year from Teslin Lake to the Stikine.

Mr. McConnell, of the Geological Service.

Mr. P. C. Pambrum, who was born at Lesser Slave Lake and has spent his life in that country.

Dr. Wills, late of the Mounted Police Force, and Lt.-Col. Lake, Quartermaster General.

There are several routes to the Yukon from the east side of the mountains. One is from Edmonton, north to the valleys of the Nelson, Liard and Pelly Rivers. The next is by way of Pine River Pass, fifty miles south of Fort St. John, on the Peace River, to Fort Macleod. The other is by way of the Yellow Head Pass to the same point, Fort Macleod, near the headwaters of the Parsnip River in the Omenica

district. There are three ways of reaching the Peace River. The one is by Athabasca Landing, thence west to Lesser Slave Lake. The other is direct to Lesser Slave Lake, and so on to Dunvegan and Fort St. John. The other is by way of Dirt Lake on the Saskatchewan, a point about seventy miles west of Edmonton, north-westerly to Fort St. John. From Edmonton to the junction of the Baptiste River with the Athabasca River would be a route common to a junction with Yellow Head Pass and Fort St. John or Pine River Pass. It is estimated that about four hundred and sixty-five miles of railway constructed would by way of Baptiste River mouth, north-west to the Peace River and south-west to Tête Jaune Cache, on the Fraser River, forty miles west of the Yellow Head Pass, make available a very large stretch of navigable waters on these two rivers. Either a pack trail or a wagon road can be obtained from Fort St. John, west of Dunvegan, north to Fort Nelson, thence down the valley of the Nelson to its junction with the Liard; up the Liard to the height of land which divides its headwaters from the headwaters of the Pelly, which river empties into the Yukon at Fort Selkirk. The distance from Edmonton to Fort Selkirk by this route, from scaling the map and adding ten per cent for curvature, is estimated by Dr. Dawson and Mr. Jennings to be 1,290 miles.

This pack trail would enable drovers to take in cattle and horses. Cattle wintered in the Peace River Valley could be driven in early and delivered in good condition at a reasonable price. The country passed through is well supplied with feed.

The richest gold deposits lie on the west side of the mountains. Cariboo, Omenica, Dease Lake and the Klondike have all established a character for themselves. At the Liard head there seems to be a gap, and the eastern range of mountains from that point seems to have been bodily lifted more to the east, leaving a divide at the headwaters of the Pelly and Liard. This divide appears to be a rich gold bearing country.

The evidence further goes to show that the whole of that region is covered with a low grade of pay gravel which only requires the economy supplied by railway communication to convert it into a large profitable field for enterprise and trade. Quartz mining has yet to be developed by the same means. A railway projected through the Pine River Pass or the Yellow Head Pass, proceeding north-westerly across to a port on the Pacific Ocean, following in a general line Sir Sanford Fleming's survey for the Canadian Pacific Railway in 1879 and 1880, would develop the principal mining districts, and a branch north from that line to Fort Selkirk and Dawson City, could be made common to an approach from a Pacific port and from the east. A more thorough exploratory survey seems desirable before establishing any point. Your Committee are of opinion that the Teslin Lake route is too far to the west for the most profitable through route from either east or west, and believe that a route by way of the Black River or Dease River might be found to be better.

The evidence of some of our most experienced men go to show that the projection of a railway upon Sir Sandford Fleming's surveys in the seventies, when he was the chief engineer of the Government railways, will lead up to and project through the mountains a second transcontinental railway developing a large, valuable agricultural area and mining region of the utmost value to the trade and transportation of Canada. Those who know the country well are fully aware that the further north you go to a certain line, north of the Saskatchewan River, the richer the soil, and the better the sample of wheat.

Your Committee are of opinion that the trade to an ocean port will so greatly supplement the local intervening trade in the mining regions, that a transcontinental railway by way of Edmonton will be beyond a doubt self-sustaining and profitable for the trade of Canada.

Moreover, Your Committee were influenced by their desire to bring the agricultural area of the western prairies into as close proximity to the Mining Industries as possible.

The evidence further goes to show that there is no practical difficulty in pushing railways anywhere through the mountains at a cost of \$20,000 per mile cash basis. That the projection of this route might first start from Edmonton. That a route from Edmonton or Ashcroft to Fort Selkirk are about equidistant, but to the

Routes to the Yukon.

Ashcroft route would have to be added 450 miles between Calgary and Ashcroft on the Canadian Pacific Railway as a trade route from eastern Canada and 200 miles from Vancouver to Ashcroft.

That a transcontinental line, would throw arms to the south and north to connect important points.

That a route by way of Vancouver, the Ocean, and Teslin Lake to Dawson City is 2,211 miles with four transshipments, or to Fort Selkirk 2,036 miles, as against 1,290 from Edmonton and no transshipment. To give the cities of Vancouver and Victoria, and the Canadian Pacific Railway an opportunity to compete on anything like even terms, with a route from the east by way of Edmonton, the shortest line of railway from the coast to Fort Selkirk is essential. According to published reports that route is from Pyramid harbour direct to Fort Selkirk by the Dalton trails, the distance being only 295 miles, or 245 miles to a point on the Yukon below the Rink Rapids, fifty miles from Fort Selkirk, thus making the railway service from Calgary about 1,000 miles and the ocean service 1,000 miles with two transshipments as against 1,290 miles of through railway from Edmonton to Fort Selkirk by an interior route. This would seem to indicate that for the immediate requirements of our North-west mining country at the lowest railway mileage at present available by any route, friendly arrangements should be made with the United States for the removal of any troublesome restrictions to traffic passing into the interior of the country through United States territory or a United States port. That any immediate link from the Stikine north should be so located that it will form the best connection for a joint railway coming from the south-east and south-west and constructed of the standard gauge of four feet eight and a half inches.

That no restriction should be put upon the development of the route from Pyramid harbour or Lynn Canal. A roadway from Battleford to Cold Lake thence to Fort McMurray, thence to Peace River, passes through a good agricultural country from Mr. P. C. Pambrum's evidence. The distance between Battleford by way of Fort McMurray and the Peace River by that route being only 812 miles. A route from Prince Albert to the same point, Fort McMurray, which possesses great advantages for the prospector is furnished by the Board of Trade of Prince Albert, which evidence Your Committee draws attention to. It sets forth that ninety miles of wagon road will open up almost unbroken navigation to Fort McMurray and the Liard on the Mackenzie.

The consensus of all the evidence is very favourable to the whole country traversed by the routes from Prince Albert westward, either north or south of the Saskatchewan to the Peace River. Mr. Pambrum told the Committee that he grew on thirteen acres last year at Battleford, 533 bushels of wheat, oats and barley, but there was little cultivation for want of a railway. The same witness said in 1841, the year he was stationed at Fort Liard for the Hudson Bay Company, he eat bread made from wheat grown at that northern point. The reports all show that feed is luxuriant on the Nelson and the Liard route to Fort Selkirk. That an abundance of timber, fish, game, minerals, etc., and all the elements of successful agriculture exist up to and beyond Peace River.

Your Committee commends to your attention the desirability of projecting an interior route at once, which will open up, and make possible the development of large mining interests which beyond any doubt exist between Edmonton and the eastern boundary of Alaska and bring the rich agricultural regions of our prairie country into the closest proximity to those industries.

We append a table of distances furnished by Mr. Jennings, the engineer employed by the Government to explore the route from the Stikine River to Teslin Lake, and a man of large experience in the location and construction of railways in the Rocky Mountains. We also place great reliance upon the evidence of Dr. Dawson of the Geological Survey Department and Mr. Marcus Smith, officers whose official and professional knowledge are of great advantage in forming an initial idea of the large interests which await Canadian enterprise, and the difficulties that have to be encountered in their promotion.

TABLE OF DISTANCES GIVEN BY DR. DAWSON.

ROUTE 1.—

From Edmonton, east of the Rocky Mountains to Liard River and thence to Old Fort Selkirk.

	Miles.
Edmonton to Old Fort Assiniboine, Athabasca River.....	75
Old Fort Assiniboine to west end of Lesser Slave Lake.....	135
Lesser Slave Lake to Peace River at mouth of Smoky River (Peace River Landing).....	65
Mouth of Smoky River to Fort St. John.....	145
<i>(Note.—A saving of about 50 miles in distance might probably be made by going in a nearly direct line from Old Fort Assiniboine to Fort St. John.)</i>	
Fort St. John to Liard River near mouth of Nelson River.	310
Liard River near mouth of Nelson River to mouth of Dease River.....	195
Mouth of Dease River to mouth of Finlayson River.....	130
Mouth of Finlayson River to Pelly Banks... ..	50
Pelly Banks to Hoole Cañon.....	35
Hoole Cañon to Old Fort Selkirk.....	200
Total	1,340
Or, deducting 50 miles, as above.....	1,290

ROUTE 2.—

From Edmonton to Yellow Head Pass, thence by Upper Fraser River to Giscombe Portage, thence by Finlay and Black Rivers to mouth of Dease River, joining route 1 there.

	Miles.
Edmonton to Yellow Head Pass....	240
Yellow Head Pass to Giscombe Portage.....	205
Giscombe Portage to mouth of Finlay.....	150
Mouth of Finlay to mouth of Dease (about).	370
Add distance as by route 1, from mouth of Dease to old Fort Selkirk.....	415
Total.....	1,380

ROUTE 3.—

From Ashcroft Station, Canadian Pacific Railway to old Fort Selkirk, Yukon District, following the western line of valleys in British Columbia.

NOTE.—Other stations on the Canadian Pacific Railway, such as Savona or Kamloops, might be adopted as starting points without much difference in the through distance.

	Miles.
Ashcroft to Quesnel (distance by wagon-road 230 miles)....	185
Quesnel to Fort Fraser.....	115
Fort Fraser to Hazelton (Forks of Skeena).....	165
Hazelton to Telegraph Creek (Stikine).....	255
Telegraph Creek to head of Teslin Lake.....	145
Head of Teslin Lake to mouth of Teslin River.....	165
Mouth of Teslin River to old Fort Selkirk.	140
Total.....	1,170

Routes to the Yukon.

MR. MARCUS SMITH'S TABLE OF DISTANCES

Between Prince Albert and the Coast.

	Miles.
Prince Albert to Athabasca Landing by a route north of the Saskatchewan.....	335
Thence to Smoky River	210
“ to Pine River Pass.....	160
“ to Parsnip River.....	105
“ to Pack River near Fort McLeod	8
“ to Forks of Skeena.	230
“ to Glenora on Stikine... ..	300
<hr/>	
Prince Albert to Telegraph Creek.....	1,348
From Forks of Skeena down Skeena valley to Port Simpson.	176
Prince Albert to the Coast by the most northerly route.....	1,224

Between Edmonton and Forks of Skeena.

	Miles.
Edmonton to Yellowhead Pass....	267
Thence down the left bank of the Fraser River above Fort George, near the great bend of the River.....	228
Thence to crossing near Fort McLeod.....	82
Thence following that line to the Forks of the Skeena.....	230
<hr/>	
	807
Forks of Skeena to Port Simpson	176
<hr/>	
Edmonton to Coast... ..	983

TABLE OF DISTANCES GIVEN BY MR. JENNINGS, C.E., FOR THE COAST ROUTE.

	Miles.
Calgary to Vancouver (rail).....	650
Vancouver to Wrangel (ocean).....	700
Wrangel to Glenora (river)	135
Glenora to Teslin Lake (rail)	165
Teslin Lake to mouth of Hootalinqua.....	200
Mouth of the Hootalinqua or Teslin River to Dawson.....	361
<hr/>	
	2,211
Ocean, lake and river transport.....	1396
Railway transport from Calgary.....	815
<hr/>	
	2,211
Telegraph Creek, south to Port Simpson.....	450
“ “ Observatory Inlet.....	300
Railway transport from Calgary <i>via</i> Port Simpson and Teslin Lake to Dawson.....	1,831
Railway transport from Observatory Inlet <i>via</i> Port Simpson and Teslin Lake to Dawson.....	1,681
Ocean transport, Vancouver to Port Simpson,	500
“ “ Observatory Inlet.....	575
From Pyramid Harbour or Lynn Canal <i>via</i> Dalton Trail to five miles below Five Finger Rapids.....	245
Five Finger Rapids to Fort Selkirk.....	57
<hr/>	
	302

Your Committee believe that a perusal of the evidence will justify the conclusion which they now have the honour of presenting to the Senate.

Your Committee recommend that in addition to the usual number required for the ordinary distribution, fifteen hundred copies in English and five hundred copies in French of the Report and evidence be printed for general distribution.

All which is respectfully submitted.

C. A. BOULTON,
Chairman.

Routes to the Yukon

MINUTES OF EVIDENCE.

OTTAWA, April 5th, 1898.

The Committee met this day.

The Honourable Mr. Boulton, Chairman.

Hon. JAMES REID.—As I understand the object of the Committee is to get what information we can as to the most feasible route into the Yukon country that can be opened at the earliest date possible.

Hon. Mr. McCALLUM.—The shortest route we should like to get, if possible.

Hon. Mr. REID.—From what point?

Hon. Mr. BELLEROSE.—Any point on the Canadian Pacific Railway.

Hon. Mr. REID.—The Ashcroft route is preferable, in all its bearings, to any route that I know of.

Hon. Mr. PERLEY.—Ashcroft is a junction on the Canadian Pacific Railway.

Hon. Mr. REID.—It is one of the stations on the Canadian Pacific Railway.

Hon. Mr. PERLEY.—How far is that from the Coast?

Hon. Mr. REID.—Two hundred and four miles from Vancouver.

Hon. Mr. BELLEROSE.—That is between the two ranges of mountains?

Hon. Mr. REID.—Yes. For a distance of two hundred and twenty miles from Ashcroft to the mouth of the Quesnelle there is an excellent wagon road, one of the finest roads in any country. Stage coaches run twice a week in summer time and make the trip in three days.

Hon. Mr. PERLEY.—Is there any water route?

Hon. Mr. REID.—We can take the water route, but this is an all land route. From Quesnelle mouth up to Telegraph Creek there is a pack trail in existence now on the old telegraph line built in 1864-65. That has been kept up more or less ever since. During the time of the Cassiar Gold excitement, that occurred near Telegraph Creek, pack trains were sent over that route with supplies, cattle were driven over there for the use of the miners, and it has been more or less travelled ever since. At Hazelton, on the Skeena, pack trains have been going there for the last few years, every year taking supplies into the Omenica country for the use of the miners and for the Hudson Bay Company's posts throughout that district. From Quesnelle northward, until you get up to Telegraph Creek, there is excellent feed for any number of horses or cattle that may come along. Hay grows there five or six feet tall in summer time, any amount of it, and that can be cut and stored ready for winter, which cannot be said of a great deal of the grazing country where the grass is but short, and what might be called cattle ranges. In that respect the government of British Columbia are still improving the trail. The government of British Columbia have voted money to put men to work as soon as the season opens to improve the trail all the way up to Glenora and to bridge the smaller streams and put ferries on the larger streams, so that without a cent of expense to the Dominion Government we have a road up to Telegraph Creek opened.

The CHAIRMAN.—You have a trail that has been travelled to that point?

Hon. Mr. REID.—Yes, and a great many people are now ready to go up by that route as soon as the season opens. Parties going up that way, if they do not think it worth while to go through to Dawson City, can branch off either to the right or to the left, and they are in a mineral country all the way. They can do prospecting if they want to, with likely as good success as they could by going into the frozen north.

The CHAIRMAN.—How far north have you been on that trail?

Hon. Mr. REID.—I have been but a short distance north. I may suggest in connection with this that there is a man down here connected with the Geological Survey who has been over all that route and knows more about it and about the country

than any one who is available here—that is Mr. McConnell. He has been all through that country and can give you valuable information and I would suggest that you call him as a witness. If it is desired to open up a route by way of Edmonton, I contend that it is not advisable to go down the Peace River, which will never be an available route for that purpose. I have had no personal experience of it, but I know from others that it would not suit as a route to the Yukon. If instead of going down to the Peace River east of the Rocky Mountains, you could extend a line through the Yellowhead Pass to the headwaters of the Fraser, and come down to Fort George on the Fraser, you would unite with the Ashcroft route, and both lines are common up to Dawson. Not only that, but you are getting the advantage of all that mineral country, Cariboo, Omenica, and all through as far as you can go. I take it that as far as the North-west is concerned, they have more land available now than they know what to do with, and they do not want any more opened up for the present. Peace River is all good enough in itself, but it is not required for the present time. If the North-west had a market for their produce at the mines, I take it that is what you require in the North-west. On the other route you miss everything until you get to Belly River and the Yukon country.

The CHAIRMAN.—Allow me to interrupt. What kind of a country is it for a railway? Is it mountainous?

Hon. Mr. REID.—No, between the valleys of the Coast Range and the Selkirks from the Rocky Mountains, there are no mountains to go into at all; you are going up through the valley.

Hon. Mr. PERLEY.—On what river?

Hon. Mr. MCCALLUM.—On the land.

Hon. Mr. REID.—There is a river that is navigable. Now I come to another part about navigation, by going from Ashcroft, 160 miles you strike the Fraser River. It is navigable—there is a steamboat on there now—up to beyond Quesnelle mouth, and a little improvement in three or four points would give uninterrupted navigation from the point that is called Soda Creek on the Fraser river to the head of North Tatlah Lake, a distance of 450 miles, and then you are within at least 200 miles of Telegraph Creek from the head of the lake. On the other hand if you came through from Edmonton and struck the Tête Jaune Cache, there is also steamboat navigation from that point down through the Fraser, up through Stuart Lake, a distance of about 500 miles; so that you get into the very heart of the mining country by either water or overland.

The CHAIRMAN.—That navigation is in existence now.

Hon. Mr. REID.—It is in existence and not used, with the exception of the lower part from Soda Creek up to Quesnelle and a short distance above, for the simple reason that there is nothing to utilize it.

Hon. Mr. BELLEROSE.—Could you tell me the shortest distance between the Skeena River and the Fraser River?

Hon. Mr. REID.—The shortest distance between those two points would be this I am telling you, from Quesnelle mouth up through this valley.

Hon. Mr. BELLEROSE.—From Quesnelle to Skeena River, what would be the distance.

Hon. Mr. REID.—That would be 300 miles. You mean Hazleton?

Hon. Mr. BELLEROSE.—Yes.

Hon. Mr. REID.—There is steamboat navigation up to Hazleton.

The CHAIRMAN.—On the Skeena.

Hon. Mr. REID.—Yes, so that the road along there to the right and left of these places can be tapped by several rivers; you tap it at Telegraph Creek on the Stikine and you can tap it at Hazleton on the Skeena about the same time of the season, the navigation season.

Hon. Mr. MCCALLUM.—The objection to water stretches is that you cannot use them in winter.

Hon. Mr. REID.—But you can get a road through there.

Hon. Mr. MCCALLUM.—It could be used winter and summer the same as the Cariboo would?

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Hon. Mr. REID.—Yes, and the advantage is you can grow hay all along, on the side all the way.

Hon. Mr. McCALLUM.—You can feed the cattle right along.

Hon. Mr. REID.—Yes, it has been tested in several places in the valley there, and you can grow barley and oats. Some years they have frost the same as we have down our way, but you raise everything you want in that respect.

The CHAIRMAN.—There is no fruit up there.

Hon. Mr. REID.—Small fruit; no apples or anything of that sort.

The CHAIRMAN.—It is some distance north of where Lord Aberdeen is?

Hon. Mr. REID.—Oh, yes, 500 miles. This is all north of the Canadian Pacific Railway.

Hon. Mr. BELLEROSE.—Can you tell us the distance between Calgary and Ashcroft?

Hon. Mr. PERLEY.—Four hundred and fifty miles.

Hon. Mr. REID.—It is in that book you have in your hand I think.

The CHAIRMAN.—How far is it to the Peace River from Quesnelle?

Hon. Mr. REID.—That is across country.

The CHAIRMAN.—Yes.

Hon. Mr. REID.—It is very difficult to say what Peace River is.

The CHAIRMAN.—The head waters of the Peace River.

Hon. Mr. REID.—It is seven miles from the Fraser River where we can go with a steamer to the water running into the Peace River, just seven miles of a portage, and there is a good wagon road over that now. I have sent boats over there many times, it is not navigable for steamers until you get down through the lakes over the smaller rivers.

The CHAIRMAN.—The Fraser River is navigable up to a point where seven miles of wagon road will transfer you to navigation on the Peace River.

Hon. Mr. REID.—Yes, for small boats.

The CHAIRMAN.—Not for steamboats.

Hon. Mr. REID.—No.

Hon. Mr. PERLEY.—You have sent stuff across there?

Hon. Mr. REID.—Yes.

Hon. Mr. PERLEY.—How much does a bag of flour cost at that point?

Hon. Mr. REID.—That depends what it costs in the first place.

Hon. Mr. PERLEY.—Say a dollar and a half in the first place.

Hon. Mr. PRIMROSE.—That is 100 pounds of flour.

Hon. Mr. REID.—The price at Quesnelle is \$55 a thousand. It is not in barrels there. It is all by the thousand or hundred. It is five dollars and a half a hundred. It would take two cents to take it to the portage, the way we used to take it by small boat. If we had a steamer we could take it for a cent or less according to the quantity.

Hon. Mr. BELLEROSE.—How many feet of water would there be for a small boat? Do you know the number of feet of water in those rivers?

Hon. Mr. REID.—Yes, that has no reference to a steamer. Some of these small boats will dip as much as a steamer, probably be down two feet in the water or more; still with the crookedness of the stream you could take a small boat when you could not take a steamer. When we were going up with our furs in the fall of the year, when the water was low, there was hardly sufficient water in some of them to float the boats over the riffles, and we used to jam them up into the channel, and let them wait there, and that backed the water, and it rose up, and in that way we could go up, and in going down it was the same way. In some of the rivers there is not much water in the dry season; but after you get down to the lower end of Parrnip River, then it is possible for light draft steamers to go up. In connection with the navigation of the Peace River, from the Rocky Mountain portage up to the Finley branch of the Peace River—and this water at the head of Tatlah Lake will go within forty miles of it—it is navigable for steamers with almost any ordinary draft. That is, up to the Finley branch of the Peace River.

The CHAIRMAN.—It is navigable for steamers up to that point.

Hon. Mr. REID.—Yes, and the Finley branch itself for a certain distance.

Hon. Mr. McCALLUM.—You refer to light draft steamers.

Hon. Mr. REID.—Yes, loaded, they should not draw over three feet of water.

Hon. Mr. McCALLUM.—Stern wheel steamers?

Hon. Mr. REID.—Yes.

The CHAIRMAN.—So that if there was a railroad running to the Peace River, then navigation could be transferred to the Fraser River or vice versa. Supposing a railway was built to the Peace River landing, you have navigation all the way up to the Finley branch?

Hon. Mr. REID.—No; there is twelve miles of a place you could not put a steamer on. It passes through the rock.

The CHAIRMAN.—Is that Fort St. John?

Hon. Mr. REID.—No, it is higher up, some miles further up. Of course, it is more than that distance by the river, but we cut across a point, twelve miles of a portage to go to the Peace River on the eastern side of the Rocky Mountains. Then it is navigable from that down to the lake, with the exception of Vermillion Rapids.

Hon. Mr. McCALLUM.—What is the distance from Dawson City to Ashcroft?

Hon. Mr. BELLEROSE.—Fourteen hundred and fifty-seven miles.

Hon. Mr. McCALLUM.—I mean as the crow flies.

Hon. Mr. REID.—It is pretty nearly straight.

The CHAIRMAN.—Those are the figures given to us by Mr. Ogilvie and some others.

Hon. Mr. REID.—They are about as correct as you can get.

The CHAIRMAN.—Quesnelle, where you live, is on the route that the Government surveyed for the Canadian Pacific Railway?

Hon. Mr. REID.—Yes, they went up to Quesnelle with their line and crossed the river there, and then by stage.

The CHAIRMAN.—How far would you be from Edmonton? Three or four hundred miles?

Hon. Mr. REID.—It is probably four hundred and fifty miles.

The CHAIRMAN.—Just about the same distance as it is on the main line of the Canadian Pacific Railway?

Hon. Mr. REID.—I do not think it is as far. It is shorter I think.

The CHAIRMAN.—Here is Calgary, 2,264 miles.

Hon. Mr. REID.—Yes.

The CHAIRMAN.—And on to Ashcroft, how far?

Hon. Mr. REID.—Two thousand seven hundred and two.

Hon. Mr. BELLEROSE.—It is seven hundred miles between Vancouver and Calgary and some two hundred odd between Vancouver and Ashcroft.

The CHAIRMAN.—About the mining in the Omenica District, which way does the gold come out, or the trade go in?

Hon. Mr. REID.—It is going in by way of Quesnelle.

Hon. Mr. McCALLUM.—They take the gold in the pockets generally.

Hon. Mr. REID.—For the last five years I have sent goods in there. I have sent in a saw-mill and a whole hydraulic plant.

Hon. Mr. PRIMROSE.—Do you charge \$500 a thousand?

Hon. Mr. REID.—I think it is worse than that. I had to pay what they charged me.

The CHAIRMAN.—How many men are there engaged up there?

Hon. Mr. REID.—I should judge about 700.

The CHAIRMAN.—What companies are operating there?

Hon. Mr. REID.—There is the 43rd Mining Company, the greater number of the shareholders are in this city, and three other companies.

The CHAIRMAN.—Is the Gooderham & Worts Company up there?

Hon. Mr. REID.—No. They may have gone there lately. There is an English company which has bought out two of the other companies and they are sending in a larger number of men this year to develop their mines and three or four other companies are preparing to go in there. There is an American Company that has

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taken up some dredging leases. They propose to put dredges on the Nation River and the rivers leading into the Peace River, and on the Parsnip they propose to put in five dredges this year. I do not know whether they will get them in or not, but that is their scheme, and taking it all through, there must be over three or four hundred people intending to go in there, to mine this year.

The CHAIRMAN.—Is this progress just relating to the boom which is going on, or has it been steady?

Hon. Mr. REID.—No, it is on its own account. The boom has nothing to do with it. They have been in there three years working.

Hon. Mr. McCALLUM.—If there were improvements made to get access into that country, you could supply them with provisions from the North-west and obtain a good deal of trade?

Hon. Mr. REID.—Yes. I have a flour mill and all that sort of thing, and it would knock it colder than a wedge. But that does not matter. We want flour and beef, although we have good beef there, and I think we could get away with it all. It is a good market, and it opens up the whole mineral belt from one end to the other.

The CHAIRMAN.—Is there any mining between Quesnelle and the Canadian Pacific Railway?

Hon. Mr. REID.—It depends on the direction you take.

The CHAIRMAN.—On the Ashcroft route?

Hon. Mr. REID.—Yes, if you go south of my place, at Quesnelle, there is the Quesnelle River on which there is a great extent of mining, one of the largest hydraulic mines in the world is at the head of that river, the Cariboo River. Some of the Canadian Pacific Railway people are shareholders in that, and further on is the Horsefly, and quite a number of companies are in there now, working and spending a lot of money.

The CHAIRMAN.—That is south-west?

Hon. Mr. REID.—Yes, and it is nearly all mineral country to Ashcroft. You get out of Ashcroft 36 miles and you find holes in the mountain, tapping ledges, and as you go on you find gold mines to the right and left. You go to the left going up stream, and there is a very large extent of very rich quartz mining going on there now.

The CHAIRMAN.—A railway going in west from Edmonton on the old Canadian Pacific Railway survey—that would be almost as useful in fact, quite as useful would it not?

Hon. Mr. REID.—I think it is a shorter route. Say the objective point is Dawson, then any route you can project from Edmonton, and not only that, but you take the whole of these mineral belts all the way through.

The CHAIRMAN.—That is, to go to Edmonton on the old Canadian Pacific Railway survey and then work up north.

Hon. Mr. REID.—Yes, and by building over the Yellowhead Pass. Tête Jaune Cache is supposed to be the head of navigation and you can go down the river and up to the head of Tatlah Lake by water and then coming from my place, Quesnelle, if you want to take goods in that way, you go up the river from Fort George.

Hon. Mr. BELLEROSE.—Are there any arable lands on that route?

Hon. Mr. REID.—Yes, arable lands all the way.

Hon. Mr. BELLEROSE.—What lands are there?

Hon. Mr. REID.—Well, it is the valley of the Fraser.

Hon. Mr. BELLEROSE.—How many square miles?

Hon. Mr. REID.—I can only give you approximately. It extends from Ashcroft to Quesnelle, a distance of 220 miles in length and in that valley there is probably about two miles on an average, but then there are other valleys, grazing lands 200 miles north and south of it so that I could hardly give you an approximate area.

The CHAIRMAN.—It is a narrow valley.

Hon. Mr. REID.—Yes, it is full of valleys. You could get out of one into another and it is a rolling country in between those two ranges of mountains; you cannot say there is a mountain at all, it is rolling, and if you pass over a rough piece of ground, then you get into another valley.

Hon. Mr. BELLEROSE.—Yes, but they might not be arable.

Hon. Mr. REID.—Yes, they are all arable, every one of them. Take what is known as the Chilcotten country, and there must be an extent there of 200 miles by 150, and it is all good grazing country and arable. Crops have been raised all throughout that country.

The CHAIRMAN.—I saw in the Bank of Montreal a big cone of gold, it was \$80,000 worth; do you know whether that came out north of you?

Hon. Mr. REID.—That came out on the Quesnelle River; that was one of the washups of the last summer.

Hon. Mr. BELLEROSE.—Would all that route from Ashcroft to Teslin Lake be mountainous or a rather flat road?

Hon. Mr. REID.—It is flat; there are no mountains at all. We are inside of two ranges of mountains, in the valley between. The Fraser River runs north and south cutting through the mountains. When you get up to Ashcroft you are through the range of mountains and are in the valley between; then you go up north-west in the trend of the valley.

The CHAIRMAN.—That valley extends all the way up to Telegraph Creek?

Hon. Mr. REID.—All the way up to the Klondike.

The CHAIRMAN.—It seems that the Hootalinqua and the lakes and rivers are inclosed by high rocky banks.

Hon. Mr. REID.—That may be, but the valley is between. I don't pretend to say that there are any arable lands when you get up there. They are in the line of this road. There is a stream running in there; it is never of any great elevation; when roads follow the streams, that is the best indication of low grade for a railway.

Committee adjourned.

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OTTAWA, 25th April, 1898.

The Committee met this day.

The Honourable Mr. BOULTON, Chairman.

HIS GRACE BISHOP GROUARD.—I went first to this Athabasca country in 1862, as Catholic missionary for the Indians and a few French half-breeds. I have remained there all my life since then, and I have lately been made bishop over these missions which I helped to establish during these years. At first I was there as a young priest, but when our own bishop died about seven years ago I was appointed bishop, and I am now bishop for all this country in the North-west of Canada, Alaska and the Mackenzie River district and this Yukon country—all this Canadian territory on the east side of the mountains. When I was consecrated bishop I made my headquarters near Port Chippewyan at the mouth of the Peace River, because it was more central for the Mackenzie River country, the Peace River country and Athabasca. I was a priest the first year at Lake Athabasca, and in 1863 I went to Providence, on the Great Slave Lake, on the bank of the Mackenzie River; that very same year I was sent down to Fort Simpson at the mouth of the Liard and up to Fort Nelson. That was my first visit in 1863, and every year following till 1872, I went up the same way to Fort Liard and up again to Fort Nelson. The navigation was by canoes and by what they called York boats, and they still use York boats to go up to Liard and Fort Nelson. The Liard is capable of navigation by steamboat. Above Fort Simpson there is a great rapid. The current is very strong for about four miles. The Hudson Bay Company takes up the York boats; they put half the cargo ashore below the rapid and take half the load up, returning for the other half, so that there is no portage. In the middle of July the water is pretty high, and there is no footing because there are steep banks on every side and we wait for the water to get lower in order to give us a footing on the left side going up. After that there is no trouble going up the Liard as far as Halkett for steamboat navigation and up the Nelson River there is no trouble with a stern wheel steamer. They could go to Fort Nelson and beyond Fort Nelson. I never spent a winter at Fort Halkett. I went through the mountains to visit the mountain Indians. There is nothing but mountains there and valleys. I crossed several of these mountains to go where the Indians were. It is very easy travelling. A railway could be built there, but of course, that is not the best route. I have travelled many times there, but I never went up to Fort Halkett. I stopped below it. There is a very strong current there and you have to make a portage. It is pretty hard to get to that landing. I never went on to the navigable waters of the Peace River. From Edmonton to Dunvegan there is a pack trail. They cut a road last fall, but I do not know whether they finished it. We take all our goods for the mission that way, and the Hudson Bay Company, the traders and the miners do the same. The rate of freight from Edmonton to Peace River is about five cents a pound. From Dunvegan to St. John the banks of the Peace River are very high. The valley is not very broad. There are some low flats there. Our missions have settled there and they raise very good crops in the valley. I have recently purchased a grist mill. The Indians and the half-breeds came to me and said, "We have some grain, but what can we do with it? You have to help us by getting a grist mill." That is what they told me. I purchased a grist mill with boiler and steam engine in order to help these poor men. I have one mill at Slave Lake

which is running at the present time, and the other is put up at the fork of Smoky River, on Peace River. There is another grist mill erected by a Hudson Bay man, Mackenzie, who came and settled there. We have the power, and we not only grind but we thresh. The banks of the Peace River are about 500 or 600 feet high. Of course, you would have to engineer a great deal to construct a railway across there, but it can be done. The banks spread before you reach the top, and it is rather broad. It would be necessary to build a bridge just at the level of the lands. There would be no difficulty in doing so. A bridge built across from table land to table land would not be longer than the bridge across the Ottawa above this city. The banks are perpendicular and in places the river expands and in other places it gets narrower. It would be quite practicable to construct a suspension bridge. The character of the land is good. It is capable of cultivation from Edmonton to Peace River and beyond Peace River to the Nelson River, but, of course, after you have passed these prairies the land is wooded. The Indians travel from St. John to Fort Nelson with horses. If you want to go in a straight line you could strike Fort Nelson. From Dunegan north-westerly to Fort Nelson there is a pack trail which for years the Indians have been accustomed to use with their horses to travel between Fort Nelson and the Peace River. There are no mountains worth speaking of. Of course you are going parallel with the mountains and not crossing them. It is far to the east of the mountains. The navigation of the Peace River is good. We go up to the foot of the mountains and there is a canyon there which it is impossible to pass. There is a portage of twelve miles. The traders come in from British Columbia by the Fraser and come down the mountains through the Parsnip River. The Findlay is another river which joins the Parsnip. The traders used to go up that way to Fort Macleod and by a portage into the Peace River. The Peace River is navigable, but a steamboat could not travel down to the mouth because a short distance below Vermillion there is a cascade. There is bad rocks and the river cuts through and causes a fall. That is the only obstruction to navigation, and that could be remedied if there was a channel opened as you have here in the Gatineau Valley. The agricultural resources of the country on account of its being on the east side of the mountains should be good. There is no climatic difficulty which prevents growth. Of course on the uplands it is not yet cultivated. There are woods and marshes in the vicinity. We tried to raise some plants, but met with little success at first on account of the frost. At Lesser Slave Lake the crops used to freeze at first, but after the land became cultivated the frost left it, and now we seldom have frozen wheat. During the past ten years there has been no frost on the land that has been cultivated at Lesser Slave Lake, although the first four years we were troubled with frost. We cultivated on the flat land near the river and we raised beautiful wheat, as ripe as you can get in Manitoba. That soil, of course, has never been touched since creation. It is hardened and has never been opened to the rays of the sun; there are some low flats where water remains and so it is not a good place to raise crops at present. It has never been worked. But if it were worked I feel sure the frost would disappear in the same way that it did at Lesser Slave Lake. From Edmonton to Athabasca it is nearly all prairie land, but beyond Athabasca you pass through a wooded country. It is poplar and spruce. These trees grow to a pretty good size. The Peace River is rich in wood. Between Lesser Slave Lake and Peace River you find fine prairies; when you have passed half way between Lesser Slave Lake and Peace River you come to a large prairie, and if you go a little west there is an immense prairie called the Grande Prairie. Between that place and Smoky River there is nothing but beautiful prairie and as you go up on each side of Peace River nothing but prairie on the uplands for three or four or five miles and then you get into the woods, and sometimes you find a prairie and sometimes a swamp. The country generally is fine. From Peace River to Nelson it is mostly timber with small prairies, but you cannot call it a prairie country. It is a forest country. You will find poplar and spruce and a little birch. We sometimes see spruce two and a half or three feet in diameter at the foot and the poplar grows to a large size. In that country everything grows well and there would be no difficulty with the expenditure of a moderate amount of money to make a good

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wagon trail as far as the Nelson River. Wagons could go up there very well and it would be a good road. I will tell you why that would help a good deal. There are lots of miners who are going to explore the Mackenzie rivers and they inquired what I thought. They wanted to go to the Klondike and the country is already occupied. But if there is gold on the west of the Rocky Mountains there is gold on the east side. It is not shown on the map, but the Rocky Mountains are just in the middle, and the Mackenzie is on the east side and the Yukon on the west side. The rivers running into the Yukon bear gold. People say, why should not the rivers on the east side bear gold as well? Lots of men are going to prospect those rivers and the Liard River. We will have lots of people passing there not only in summer but in winter also. The ordinary way is by the Athabasca River and crossing Great Slave Lake. We have rapids in the Athabasca River and rapids half way between Athabasca Lake and Great Slave Lake, and that Great Slave Lake is not open for navigation until the end of June. That is a great drawback. In the middle of April the Nelson River and the Liard open, and you can run down to the Mackenzie more than one month before you can cross Great Slave Lake. You can get into the country of the Mackenzie River, which will be occupied by a large number of prospectors, and you can get supplies in there quite easily. As to the mineral deposits in that region, I know very well that all along the Liard River gold has been found. There is a river called the Toad River which is not shown here. I know a Hudson Bay man who was engaged to put up a little station for the Company there. We went there and made a shanty, a log house, and built a mud chimney. He mudded his house, but was not looking for gold, and he was very much surprised in the winter when he made a fire, to find gold dropping from his chimney. It came from the mud. He is still there and he is now a clerk of the Hudson Bay Company. All along the Liard River there is gold as well as in Peace River. I have been there myself and have seen miners getting gold on the sandbar. Beyond Fort Halkett it would be easy travelling and no mountains. From Dunvegan to Fort Nelson, it is about ten days' travel with pack trails, and Fort Nelson to Fort Halkett, it would not be more than that. I never heard of people travelling with horses there, that is between Forts Nelson and Halkett. These Indians who have horses are in these prairies on Peace River, and the prairies are on the east side of the mountains. These mountains are sloping, and there are lots of prairies and they can feed their horses there. Nelson River flows into a wooded country, and the Indians do not keep horses there. They do not use them to go to Halkett. They use their canoes in the summer and their dogs in the winter. They have a pack trail from Nelson to Halkett. The winter before last, there was a young man at Fort Halkett who crossed by land to Fort Liard, and it took him six days. I never crossed that way, but if I were not here at the present time I would be there. I was here this winter and I started the 5th of February, and it took two months to go up with dogs and snowshoes. I came up here from Providence to Fort Resolution, and to Fort Smith on Slave Lake, and Chippewyan on Athabasca Lake, and to Fort McMurray and the Athabasca River, and we came from there by Lac la Biche to Edmonton. There would be no great engineering difficulties to contend with in building a railway—nothing, for instance, like we see on the Canadian Pacific Railway at Lake Superior. There is plenty of grass and plenty of hay. We have cattle at our missions. It takes about ten days to go to Dunvegan, and from there to Fort Nelson ten days, and from Nelson to Liard ten days. The Liard falls into the Mackenzie. Then from Halkett to the Pelly you might make a cart road. I never went beyond that, but I know canoes and boats are used to go up from Francis Lake and from there there is a portage. I know people who have gone through there. I know the man who first discovered the Pelly River—Robert Campbell—who called it Pelly from the name of Sir Pelly, the head of the Hudson Bay Company. He was at Fort Chippewyan when I was there first. He was the first one sent by the Hudson Bay Company. They had a post there and he had an interpreter named Francois Houle. They went up from Fort Halkett to Francis River and they came to Francis Lake, and Mr. Campbell gave it the name of Francis Lake after his interpreter. Then they came to the Pelly River. The river was the head of the

Hudson Bay Company. That was an old chief and an Hudson Bay man. There was a rapid also called by the name of this interpreter, Rapid Houle. There is a fine stream down the Pelley till you get to the Yukon, and the Yukon takes its name there. It was Robert Campbell who put up the Fort at Selkirk, but the Fort did not stand there because the Indians from the coast who used to trade with the people of the interior were very jealous of the Hudson Bay Company and came and pillaged the Fort and old Houle was obliged to run away. The company then gave up all these stations. The Pelley River is navigable all the way up except this rapid. You come to the rapids just at the head of the Pelley River. It is navigable for a stern-wheeler. She could go up easily—no difficulties at all. From my knowledge of the country there would be no difficulty in building a railway as far as I have been accustomed to travel, as far as the Nelson River—no difficulty at all—except that Peace River has high banks and Smoky River is the same. But they could manage to cross. Smoky River falls into the Peace River; the banks are as high as the Peace River but they could cross below Smoky River. The banks are 500 feet, at least, and in places 600 feet. The banks at Edmonton are also high, but not so high as at Peace River. I crossed Pine River but never went across the mountains. I hear it would be suitable for a railway. There would be no difficulty in making a pack road so that cattle and horses could be taken through there at an early date. The first party of surveyors opened a wagon road across that part. Not over five years ago there was an Englishman, the Duke of Somerset who went out there and engaged our people. They wanted me to write him. The last time I saw him was three years ago. They took him over the Pine River with horses and came back and they were satisfied with his treatment. They wanted me to write him after he reached England, they wanted to have news from England. The Pine River Pass is quite practicable because not long ago people passed over it. Coal is to be seen on the Athabasca and up the Peace River and all along Mackenzie River. That is a coal basin. I have a steamboat now of my own in which I travel through Great Slave Lake down to the Mackenzie River. We did not use coal, because there is lots of timber still. It is soft coal—bituminous. The traffic on the Athabasca River was very much embarrassed. There are eighty-five miles of consecutive rapids before you reach Fort McMurray. From the landing here up to the Grand Rapids it is very nice, but it is dangerous navigation over that eighty-five miles of rapids. You require good guides and people accustomed to handle the boat, otherwise there would be great danger of losing the boat and its occupants. There is another rapid at Fort Smith. The Hudson Bay's Company steamboat runs between Fort McMurray and Fort Smith, and they go over these eighty-five miles of rapids on flat boats. The company has a steamer below these rapids. It is a sea-going steamer. They have to run down the Mackenzie River, which is very deep; they have a screw steamer. At the end of September the ice gets round in the bays on lakes Athabasca and Great Slave Lake, but in the middle of October you can sometimes cross over safely. It is open from the first of July to the middle of October. I have been down the Mackenzie River to the mouth. You can go up the Peel River. There is a Hudson Bay Fort there. Every summer I remained in the country I made that trip. I have missionaries who pay the whalers a visit every summer. I have a mission of two priests, and one of them goes every summer to visit the Esquimaux, and he pays a visit to the whalers of Herschel Island. There are as many as seven steamers, and sometimes ten, whaling, but of late they did not find so many whales. Last summer I went there and saw the father, and he told me the whales had begun to disappear. They had been killed out a little too much, so the whales are not so numerous now. Perhaps there were five or six steamers last winter. About those whalers that were frozen out, I heard some whalers went out last fall and they were crushed in the ice. Part of the crew died and only a few escaped to bring the news that the steamer had been wrecked. I heard that down here. All through those lakes fish are very plentiful. That is what we depend upon for food at Lake Athabasca, Great Slave Lake, Great Bear Lake, and all along the Athabasca River. There are lots of fish coming up from the sea in summer. In winter we fish in the lakes. There are

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white fish ; there are no sturgeon to be found there, and salmon is not to be found. There is a kind of salmon which scientists call the Mackenzie salmon. We call it the Inconnu, the Unknown. Nobody ever saw the like of it. It is something like a salmon. The learned people who came from the States visited that country in order to gather specimens and plants, and they called that the Mackenzie salmon. The railroad touching the Liard would open steam communication on the Liard and on the Mackenzie without any obstruction. If a railway crossed the Liard it would open up navigation all the way on the Mackenzie without any obstruction long before it could be opened any other way, on account of the ice in the lakes. About the middle of April the Liard gets very open. On the Liard going down there is nothing to obstruct. The trouble is only in getting up, because it is so rapid at one point, but with a very strong power perhaps they could manage it, because we go up some rapids in Mackenzie River running seven miles an hour, and we get up those rapids with steam. It is not a fall, simply a rapid—a swift current. Bishop Clut is perhaps more acquainted with that country than I am. He went down the Porcupine and through that country. He never came by this road. I think if a road were built it would help the settlement of this part of the country and help the people. Mr. P. C. Pambrun, who is now at Battleford, was up in the Yukon country once and was nearly starving to death. He barely escaped. He is well acquainted with all that country. Just after the discovery of the Pelly River by Robert Campbell, he went up there to establish a Fort. Robert Campbell died two or three years ago. His son, Glen Campbell, has gone up there with a party. There was a man who died up there this winter, a Mr. Reid. He was a Hudson Bay man. We were travelling sometimes on the Mackenzie and on the Liard. He was up there and became a clerk, and he told me that in winter, the Fort being distressed, he started out on the Yukon alone in his own sleigh with some provisions, blankets, an axe, snow-shoes, and nothing else—not even a companion. He followed the Liard and came to Fort Simpson, which was the head-quarters of the Company. He was bringing news of the state of affairs in the Pelly River, and he went back again along that way in the same winter. At Fort Halkett he found some help. That was before I went in there, perhaps in 1858—forty years ago. If he were alive he would be the man to give you information, because he went further than I did. He went there without dogs or anything from Pelly River, which is the head of the Yukon. When you are there you are at the head waters of the Yukon, which is navigable then to the ocean through Alaska.

OTTAWA, 28th April, 1898.

Committee met this day.

The Honourable Mr. BOULTON, Chairman.

Mr. FRANK OLIVER, M.P., of Alberta, appeared before the Committee, and was examined by the committee as follows:—

The CHAIRMAN.—You wrote to me Mr. Oliver, about Mr. Pambrum?

Mr. OLIVER.—Yes.

The CHAIRMAN.—I communicated with him and he expressed his willingness to come down, but it would cost \$150 to bring him here, and the committee are just deliberating as to what steps they will take in that matter, and I asked the committee to wait until you came before us, to ascertain what you thought, as to the assistance Mr. Pambrum would be to the committee.

Mr. OLIVER.—Mr. Pambrum was the Hudson Bay officer in charge of the forts or trading posts which were situated, one on Francis Lake near the head of Liard River and the other on what they call the Pelly banks; that is, on each side of the divide between the waters of the Liard and the Yukon. He resided at Francis Lake but conducted a business at Pelly Banks and therefore had to pass back and forwards across this divide about fifty miles. He was there from five to ten years—I cannot say whether it was five or ten, but it was something like that. In reaching these posts, of course he had to travel the length of the Liard River to Fort Francis so that he necessarily must be very well acquainted with that part of the country. He is a man of good intelligence and education, and although now he is of considerable age, he is still possessed of his full faculties, and he could give a clear and intelligent account of what he saw and knew at the time he was there, and I would consider that if the committee desire to have the first hand in regard to that country, his information would be the most valuable of any that I know of—that is, supplementary of course, to the information supplied by Professor Dawson who made an examination and survey of the same country. Professor Dawson, of course, gives the measurements and heights and depths and so on of everything, and tells what he saw when he was there, but of course Mr. Pambrum was there year in and year out for a number of years, and back and forward, and therefore he would be able to give a great deal of information, supplemental to that supplied by Mr. Dawson, and of quite as great value in his way.

The CHAIRMAN.—That would be continuing the evidence given by Bishop Girouard, who only went as far as Fort Halkett on the Nelson. This evidence is in regard to the country between Fort Nelson and the mouth of the Pelley.

Mr. OLIVER.—Yes.

The CHAIRMAN.—Mr. Pambrum is awaiting a telegram to start whenever he is assured that his expenses will be paid.

Mr. OLIVER.—I would say he was certainly in a position to give information. Fort Simpson was the point from which the trade of the Pelly River was carried. This is the head fort of the Mackenzie River district. From that point trade was carried on up the Liard and down to Fort Selkirk, and it was at this point that Fort Selkirk was established. Mr. Pambrum was in charge of this post, and resided at the post of Francis Lake, but was also in charge of the post over on Pelly River and used to make inspection trips across several times from one point to the other

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and he had to come down the Liard to Fort Simpson and to go back, and sometimes he had to travel part by land, so that if it is desirable to get information in regard to the climate or condition or practicability of travel by land or water on the Liard River and the Pelly, why, certainly this man is thoroughly able to give the information.

Hon. Mr. DRUMMOND.—This is the Rocky Mountain range you are pointing to, and this is apparently the only pass through it.

Mr. OLIVER.—No, there are many passes, but the pass by the Liard River is the widest pass. It is the most complete break that occurs in the whole Rocky Mountain range according to Professor McConnell's report. He reports that the Rocky Mountain range, which extends from Mexico practically unbroken, with just narrow passes in it, right up to the Liard River, ends there at the Liard River, and commences again eighty miles further east on the north side of the Liard and continues on to the coast, so that while on the Peace River there is a complete break in the range, a complete cut in the range, at the Liard there is an absolute breaking off of the range, so that as a matter of fact on the Liard River according to Professor McConnell's report, there is no mountain range to cross. The mountains are not there, and that is the only place in the whole range where this occurs where there is a complete break in the range, one part ends and the other begins, so that there is eighty miles between, and that is why it would appear to me that by way of the Liard River is by all odds the best means of getting from the east side of the mountains to the west, with either wagon road, railroad, or any other road. That is why I have always advocated trying to reach the Liard River east of the mountains.

Hon. Mr. MACDONALD (B.C.)—What pass would you take to get there? The White River pass?

Mr. OLIVER.—No, I have always advocated keeping east of the mountains until you reach the Liard River, and then pass in to the west of the mountains on the Liard River.

Hon. Mr. DRUMMOND.—Where it crosses the mountains the Liard River must be ninety or one hundred miles further north than the Peace River?

Mr. OLIVER.—Oh, it is 300 miles north. It is about three hundred miles north of the Peace River.

Hon. Mr. DRUMMOND.—That is one degree, is it not, Mr. Oliver?

Mr. Oliver.—No, it is over three degrees.

Hon. Mr. PERLEY.—There is no cheap rate on that part of the railway.

Mr. OLIVER.—You can get to Regina as cheaply as you can to Vancouver—
\$25. If you can come to Regina for \$25, the railway fare to Saskatoon would be less than five dollars, and then you take the stage for ninety miles, which would cost probably ten dollars more.

Hon. Mr. WOOD.—One hundred and fifty dollars would not be excessive.

Mr. OLIVER.—No, it would cost \$150 anyway.

Hon. Sir JOHN CARLING.—He said he would come in for \$150 and pay his own expenses.

Mr. OLIVER.—He might do it.

The CHAIRMAN.—You know the object of the committee, Mr. Oliver; it is to ascertain the best means of connecting the railway communication of Canada with the Yukon region, and as you live at Edmonton and are acquainted with the country in that district, we would be very glad indeed to hear what evidence you would like to place before the committee.

Mr. OLIVER.—Railway communication you mean?

The CHAIRMAN.—No; to connect the Yukon trade with our railway system, either wagon train or railway or anything at all.

Mr. OLIVER.—Well, I would prefer to answer questions put by the members of the committee or the chairman of the committee, as I do not know just exactly what is required. I might waste a great deal of time telling the committee something they knew better than myself.

Hon. Mr. McCALLUM.—How long have you lived in that country?

Mr. OLIVER.—I have lived there twenty-two years.

Hon. Mr. McCALLUM.—You can give a description, and we can question you as you proceed.

Mr. OLIVER.—I would be glad if when I am speaking the members of the committee would break in on me whenever they desire information.

Hon. Mr. McCALLUM.—I can tell a good deal about the country as far as Edmonton myself. I saw Mr. Oliver there once not very long ago.

The CHAIRMAN.—Tell us what means of communication there are to the Pelly River.

Mr. OLIVER.—At the present time there are no means of communication directly from Edmonton to the Pelly River. The trade road that formerly existed, by which trade was first carried into the Yukon was by way of the Mackenzie River and Fort Simpson up to the Liard, as I mentioned.

Hon. Sir JOHN CARLING.—You say that there is no way of communication?

Mr. OLIVER.—I say there is no present route of travel or means of communication in use.

Hon. Sir JOHN CARLING.—I understand a road is being built and almost finished from Edmonton to Peace River, 250 miles.

Mr. OLIVER.—Yes.

Hon. Sir JOHN CARLING.—That is a wagon road.

Mr. OLIVER.—Yes, but of course from there on the road is not travelled. The first trade ever done in the Yukon country by white men went by way of the Mackenzie River from the east side of the mountains. That is as I pointed out from Fort Simpson up the Liard River and over to the Pelly. The first trade that was ever done in the Yukon was done on this route up the Liard and down the Pelly, and Fort Selkirk was established as the principal post for that trade from Fort Simpson; but there was never any direct travel from Edmonton over to the Liard, and since the coast routes have been opened up, or, in fact, before the coast routes into the interior were opened up, but when the coast trade was developed it drew the Indians away from Fort Selkirk to the coast to do their trading, and consequently the trade at Fort Selkirk became unprofitable and was abandoned; and that route of travel has been abandoned for a number of years, so I say now there is no existing route of travel into the Yukon from the Edmonton side in use, that is, to the Pelly River.

Hon. Sir JOHN CARLING.—Could you say how far up the Pelly River from Fort Selkirk it is navigable?

Mr. OLIVER.—According to Dr. Dawson's report it is navigable with only one short break right up to this portage, that is, to the point where the portage from the Francis Lake strikes the Pelly River.

Hon. Sir JOHN CARLING.—That is from Fort Selkirk?

Mr. OLIVER.—Yes, it is navigable all the way up there except a short distance about thirty miles below, which he called Houle's Cañon. The river is nearly 400 feet wide and seven feet deep at this point.

Hon. Sir JOHN CARLING.—What is the distance from Selkirk to that point?

Mr. OLIVER.—Between 250 and 300 miles.

Hon. Mr. McCALLUM.—Can you tell us the length of the rapids? You spoke of thirty miles.

Mr. OLIVER.—No, that is the good navigation. The rapid is about half a mile in length, but he mentions in his report—I do not know whether I can just turn it up at the moment or not—that the river is navigable for steamboats, from that rapid right down to the mouth.

Hon. Sir JOHN CARLING.—That is from Selkirk.

Mr. OLIVER.—From Selkirk on down. So that as a matter of fact when you reach the northern end of the portage from the waters of the Liard to the waters of the Pelly, you then have steamboat communication all through the Yukon district and another point is that there are no lakes on the Pelly River. Now the lakes in the northern country open very much later than the rivers do, so that, supposing this route were adopted, you would have navigation at least a month

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earlier on the waters of the Yukon than you would by way of the Teslin Lake or Chilkoot Pass route, because on these routes you pass through certain lakes which everybody knows do not open as early as the river; although it may not be an important matter I think it may be well to mention, that by this route you do not pass through any lakes; therefore you are not delayed by their late opening in the spring; so that as a steamboat proposition, the Pelly branch of the Yukon is the best branch for steamboat purposes.

Hon. Mr. WOOD.—That is better than the Hootalinqua River?

Mr. OLIVER.—Yes, that is unless you build your railroad or wagon road or whatever you have, to the foot of Teslin Lake. Perhaps then if the Hootalinqua River were as good a river for navigation as the Pelly—which it is not—then you would be on an equality as far as lakes are concerned; but at the present time, if you only build to the south end of Teslin Lake you have to wait for the late opening of Teslin Lake, and then you have the very inferior navigation of the Hootalinqua River, is compared with the Pelly River where there are no lakes, and no doubtful navigation, because the stream is much larger.

Hon. Mr. WOOD.—Does that report state the depth of water in the Pelly River?

Mr. OLIVER.—Yes, I think it does.

Hon. MACDONALD (P.E.I.)—How long is the Pelly River frozen over?

Mr. OLIVER.—I think Dr. Dawson gives it in this book, but it would be well perhaps for the committee to call Dr. Dawson, and of course, he can give much more information, I am only referring to his reports now.

Hon. Mr. McCALLUM.—You speak of calling Dr. Dawson and Mr. McConnell?

Mr. OLIVER.—Yes, it will be very desirable, I think. The Pelley River at the point reached here is 326 feet wide, with a current slightly exceeding two and a half miles an hour, and a middle depth of seven feet.

Hon. Mr. PERLEY.—Where is that?

Mr. OLIVER.—At the northern end of the portage from the Liard River: that is across the divide. That is the objective point I should consider on the Edmonton route to the Yukon.

Hon. Sir JOHN CARLING.—What would be the distance from there to Edmonton?

Mr. OLIVER.—From that point to Edmonton is just about 1,000 miles.

The CHAIRMAN.—That is Dr. Dawson's report you are quoting from?

Mr. OLIVER.—Yes; of course on that point Mr. Pambrum could give you much more information—as to when the river opened and when it closed, because, living there a number of years, and being an observant man, as I think he is, he would know.

The CHAIRMAN.—You are well acquainted with all the region up to the Peace River?

Mr. OLIVER.—Well, I am only acquainted with it by report.

The CHAIRMAN.—But you are brought into contact with men continually going and coming?

Mr. OLIVER.—Yes, in publishing my paper I have made it my business to study the country as thoroughly as I could, because our business lay in that direction.

The CHAIRMAN.—We would like to know something of the character of that country.

Mr. OLIVER.—From Edmonton to Peace River?

The CHAIRMAN.—Yes, and along the Peace River Valley.

Mr. OLIVER.—I cannot just find in this book that he mentions the date of opening of navigation on the Pelly. I think he does mention it, but he can tell you himself. This is what he says of the navigation of the Pelly:—

“With the exception of Granite Cañon, where warping might have to be resorted to at one place the river would be easily navigable for stern wheel steamers as far up as the mouth of the MacMillan and latter stream is also navigable for a considerable though unknown distance. Above the MacMillan I believe no serious difficulty would be met with, in taking a small stern wheel steamer of good power up to the mouth of Ross River and possibly as far as the foot of Houle Cañon. A

line might have to be carried ashore at a few of the stronger rapids, but the chief difficulty to be encountered would be from shoal water at low stages."

Further on he says:—

"Houle Cañon is, of course, quite impassable for a steamer of any kind, and the rapid met with seventeen miles east of it at the mouth of Houle River, might prove to be a difficult one to surmount by warping, its fall being estimated at about eight feet. About this point the river is again, however, an easily navigable one for small steamers to the furthest point seen by us and possibly as far as the lakes."

That is to say, there is plenty of water in the river for navigation at any point. There is no question about water except at the very low stages, and the only insurmountable difficulty is this one rapid thirty miles below the end of the bridge. That would make the total distance from Francis Lake to that rapid eighty miles. That would take you from Francis Lake on the Liard River to absolutely and actually the head of acknowledged steamboat navigation on the Pelly.

The CHAIRMAN.—That is from the head of navigation on the Liard River going east to the head of navigation on the Pelly going north.

Mr. OLIVER.—That would clear you of all obstructions, but fifty miles will take you to actual steamboat water. In regard to the country from Edmonton over to the Peace River, from Edmonton the settlement extends down as far as the Pembina River, which is a branch of the Athabasca, about sixty miles, and the country is a very gentle undulating country; it is not exactly flat, but it is not hilly. The soil is very deep and rich and very productive. It is not entirely a prairie and it is not entirely timber. It is partly timbered and partly prairie and it is a very desirable country for a settlement and many people are going in there, and the route is of course travelled in the ordinary way out as far as the Pembina River. It is a shallow stream and is generally favourable, but in high water it has to be ferried. The North-west Government has made arrangements for putting a ferry on the Pembina River on this trail.

Hon. Mr. PERLEY.—How large is the Pembina?

Mr. OLIVER.—I cannot give you the measurements. It is contained in some of these reports. It probably would be a couple of hundred feet wide, but it is a shallow river.

The CHAIRMAN.—Quite easily bridgable?

Mr. OLIVER.—No, it is not so easily bridgable, not on account of the volume of water, but on account of the width. It is what you call a fording river—a river that is easily fordable on account of its depth.

Hon. Mr. MACDONALD (B.C.)—What point is the North-west Government trying to reach by opening up this trail?

Mr. OLIVER.—The Peace River. They wish to make the Peace River accessible by team, which it is not at the present time.

Hon. Mr. McCALLUM.—Are the capabilities of that country affected by frost?

Mr. OLIVER.—Yes, sometimes.

Hon. Mr. McCALLUM.—A good deal, are they not?

Mr. OLIVER.—No, I cannot say a good deal.

Hon. Mr. McCALLUM.—More than at Edmonton?

Mr. OLIVER.—Of course, there are places there where the country resembles Ontario to a certain extent, and where there is a swampy tract of course that is frosted, but where it is high and rolling it is not frosty.

Hon. Mr. McCALLUM.—Are the crops very large, generally speaking?

Mr. OLIVER.—Yes, but of course if you are on flat land or near a swamp, the chances are they are going to be frozen. On the other hand, if you are on dry land the chances are they will ripen all right. I cannot say the country is frosty or not frosty. It is frosty or not frosty according to the character of the location.

Hon. Mr. McCALLUM.—It is a great country for grass?

Mr. OLIVER.—Yes, the grass grows luxuriantly. The prairie grass grows two or three feet high.

Hon. Sir JOHN CARLING.—All the way from Edmonton to the river?

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Mr. OLIVER.—Yes, the growth is very luxuriant, more so than any other part of the territory.

Hon. Sir JOHN CARLING.—The distance to the Peace River is 260 miles?

Mr. OLIVER.—Yes, but I am speaking of the road out to the Pembina, or the Pembina out to the Athabasca. The country is more hilly and more timbered, and consequently more broken. The soil is still rich and the growth is fine, but there is no settlement in there as yet. However, that is as far as a wagon road exists at the present time—to the Athabasca. From the Athabasca over to the Little Slave River, a distance of about 120 miles, the country is considerably more hilly. There is a low area in between, called the Deer Mountains. That country is almost entirely timbered from the Athabasca to the Slave River; it is almost entirely timbered.

Hon. Mr. MCCALLUM.—Do you know what kinds of timber?

Mr. OLIVER.—Yes, it is poplar, spruce and tamarack, and jack pine. The principal wood is the poplar and spruce, and a good deal of spruce, I am told.

Hon. Mr. WOOD.—Does the route go to the east or west of Little Slave Lake?

Mr. OLIVER.—It goes to the west; it passes the west end.

Hon. Mr. WOOD.—Little Slave River is to the east.

Mr. OLIVER.—Yes, but it does not touch Slave Lake.

Hon. Mr. WOOD.—I thought that was what you were speaking of.

Mr. OLIVER.—No, the Athabasca River. The trail is marked on the map.

Hon. Mr. WOOD.—I understood you to say it was 120 miles to the end, Mr. Oliver?

Mr. OLIVER.—It is, to the end of Little Slave Lake.

The CHAIRMAN.—That is what has been marked out for the wagon trail?

Mr. OLIVER.—Yes; there was a pack trail across there, and the North-west Government went to work last winter to cut that out into a wagon road, and have spent a good deal of money on it, and will have the work completed inside of a month.

Hon. Sir JOHN CARLING.—That is from Edmonton to the Peace River?

Mr. OLIVER.—Yes.

Hon. Mr. DRUMMOND.—Who is doing that?

Mr. OLIVER.—The North-west Government. That country is hilly and timbered, difficult to make a road through, and not very good for agriculture anyway. If it is of any value, it is chiefly valuable for its timber at the present time.

There is grass, however in swamps and openings, there is food for stock in driving or in travelling through there. Then from the west end of Lesser Slave Lake to Peace River eighty miles there is a wagon road opened by the Hudson Bay Company many years ago and has been in use by them ever since; so that when the North-west Government get their road finished there will be an open road from Edmonton to Peace River—260 miles. They reach the Peace River at the junction of the Smoky and the Peace. The way that goes at present into Peace River is by trail from Edmonton on to Athabasca Landing then up the Little Slave River through Little Slave Lake and then by wagon from the west end of Little Slave Lake up to the Peace River, over this little road I spoke about. While that is satisfactory enough for the Hudson Bay Company, or any business man doing business on a large scale who can afford to keep his own boats on these rivers, it is altogether unsatisfactory for the individual traveller or prospector who does not own a boat, and it was for that reason that the North-west Government desired to cut out this road so that a man could hitch up his team at Edmonton and drive to Peace River without depending on anybody else. Although people might still probably get their goods in cheaper by using the water route than by land, yet it does not allow the ordinary prospector and traveller to go in and pitch his own tent, so that is why the Peace River has been so long a sealed book, although every one knew it was a good country. The ordinary prospector could not get in and therefore did not get in, and the country has been kept back to that extent, but this work of the North-west Government will let the people get in and see what there is there of the country and make the most of it. That is the first stage of the road to Pelly River, so that in considering the cost or difficulty of opening a road from Edmonton to Pelly

River, instead of considering a thousand miles you consider only seven hundred and forty miles, because the first two hundred and sixty miles is already attended to. Along this Lesser Slave Lake in crossing from the Athabasca to Slave Lake, I mentioned a great deal of the country was hilly and valueless for agriculture, but when you get to the basin in which Slave Lake lies and this piece of country lying from Slave Lake to Peace River, that is rich with luxuriant growth.

The CHAIRMAN.—More or less prairie.

Mr. OLIVER.—It is still considerably timbered but more prairie than in this hilly country that lies in between. It is a good country.

Hon. Mr. WOOD.—Do you know how it is to the westward of that or on a line from Edmonton to Dunvegan—is it wooded there?

Mr. OLIVER.—Yes; there is another trail which goes more westerly than what I have been sketching to you, a pack trail, and that goes by way of Lake Ste. Anne and crosses the Athabasca at the mouth of the Macleod River, reaches Little Smoky River, crosses to Big Smoky, goes along the Grande Prairie and goes to Dunvegan. From Edmonton to the Lake Ste. Anne there is a settlement to the Pembina River, the country is good from the Pembina to Athabasca, but well timbered.

Hon. Mr. WOOD.—Level?

Mr. OLIVER.—Moderately level; not flat but not broken.

The CHAIRMAN.—Not mountainous?

Mr. OLIVER.—No, not at all. Then from the Athabasca to the Little Smoky it is very much the same, heavily timbered, moderately rolling. You see by taking that route you miss the Pass to the westward of those hills I spoke about between Athabasca and Slave Lake. You are passing through a fertile but heavily wooded country all the way to the Little Smoky River. Then from the Smoky River the timber gets lighter, much less from there to the Sturgeon Lake and on to the Big Smoky it still is light except in the valleys of the rivers. Then when you cross to Big Smoky you are on what is called the Grande Prairie—quite a large area—a prairie which lies south of Dunvegan and which practically continues to Dunvegan—a very fine country for grazing and possibly for farming if any one tried it. I think it is about sixty miles square.

Hon. Mr. POWER.—Have you ever been over this country yourself?

Mr. OLIVER.—No. I have been merely telling the committee what I have gathered from those who have travelled it. This trail I speak about I am very well posted on because a number of men went along that last summer and came back on it. However, there is a man right here in Ottawa—Henry Macleod, a surveyor who was employed by the Mackenzie government for the Canadian Pacific Railway, who came through the Peace River country and down almost by the trail I am mentioning so if you like you might call him and he would give you scientific information on the question.

The CHAIRMAN.—What amount of navigation would there be from where you strike the Peace River there to its mouth?

Mr. OLIVER.—The navigable stretch of Peace River from where you would enter at the junction of the Smoky and the Peace River would extend to the chutes below Vermillion, that is a distance I would think of about 400 miles and the navigation is very good, the river is very large and the current is not exceedingly swift.

The CHAIRMAN.—What mining operations are you brought into contact with at Edmonton?

Mr. OLIVER.—At Edmonton the mining is carried on on the Saskatchewan River. The gold is found as fine dust in the gravel bars in the river; I do not know what the rivers are like down here. I do not think they form bars the same as they do up there.

The CHAIRMAN.—It is like the sawdust in the Ottawa.

Mr. OLIVER.—It would work about the same as that. At high water the river carries a certain amount of floating material, and there is sand and eddy, in each eddy there is a deposit made, this deposit is built up from year to year; then as the river falls this deposit becomes bare and that is what we call a

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bar. It is in this bar that the gold is found, and is brought down from year to year by the high water and deposited on the bar.

Hon. MR. McCALLUM.—Comes from the mountains.

Mr. OLIVER.—No, nobody knows where it comes from, that is the mystery; that is what everybody would like to know. It comes every year and is deposited in the eddies on the bars every year. Then it is washed out from the gravel of the bars by the miners, principally by hand, using an apparatus which they call a grizzly and pick and shovel; the grizzly is simply a screen. The gravel goes into the dump box above; the water washes it then off the screen and the coarse gravel passes off on each side and these sand and gold go down into the sluice box and the gold is caught by the blanket as the water and sand gush over the blanket. These bars are gold producing on the Saskatchewan for a distance of about eighty miles above Edmonton and from 100 to 200 miles below. Besides the hand miners there have of late years been several men who have put in dredges and the dredge that seems to work the best is the scoop dredge. The ordinary dredge that is used for dredging in the rivers that raises the gravel without difficulty, and then they wash it on the scow that carries the dredge. While they have no difficulty in raising the gravel with this scoop dredge they have the greatest difficulty in separating the gold and so far I do not think they have been very successful.

If they could get the amount of gold out of the gravel that the hand miner gets, these dredges would be a fortune, but so far they have not been able to get that amount of gold.

Hon. MR. McCALLUM.—The gold is very fine there.

Mr. OLIVER.—Yes, in fact it would not be visible to the naked eye except for its glitter; that is why they call it a colour; you do not speak of grain of gold—you say colours of gold.

Hon. Sir JOHN CARLING.—You say the distance from Edmonton to Peace River is 260 miles of which you have a wagon road.

Mr. OLIVER.—Yes, or it would be provided for.

Hon. Sir JOHN CARLING.—How many miles of road would it require to reach the Pelly River—pack road or wagon road—using navigation?

Mr. OLIVER.—It depends on how much you wish to use of the navigation. For my part I would advocate that there should be a pack trail all the way through. The CHAIRMAN.—Independent of navigation?

Mr. OLIVER.—Yes, because the great desire on the part of the people of the territories to get an opening into the Yukon is that they may be able to drive cattle in there in order to secure a beef market, and of course, that way there would be some kind of land route all the way, and we could not take advantage of the navigation for cattle purposes and the same with many of the prospectors who are going in taking pack ponies—they want a trail upon which to travel.

Hon. Sir JOHN CARLING.—Have you made any calculation of what it would cost per mile to make a pack trail from that point on the Peace River to the Pelley River where it is navigable?

Mr. OLIVER.—No, but it would be merely a matter of cutting out the timber to the width of about six feet or a little more; I could not say what it would cost, it would depend, of course, a good deal on the cost of getting supplies or men up; it might be twenty or thirty dollars a mile, but it would not be more than that for merely cutting a pack trail.

Hon. Sir JOHN CARLING.—Would you not want scows for crossing the rivers bridges and so on?

Mr. OLIVER.—Yes, we would want many things if we could get them; but if the timber was cut out the width of six feet from the Peace River crossing to the Pelley River it would be possible to drive in cattle to the country so that we in the territories could get beef into the Yukon.

The CHAIRMAN.—At the lowest rate for delivery?

Mr. OLIVER.—Yes, any improvement that could be made on it would of course be very desirable, but if what I have said is done it would be very useful.

Hon. Mr. DRUMMOND.—Do you think it would be any use except you could have wheel traffic as well?

Mr. OLIVER.—I will deal with the wheel question again; I was replying to the Hon. Sir John Carling's question and I said we want a through pack trail for the purpose of driving cattle in afoot and letting pack ponies go in; we want that and it will be of great advantage.

The CHAIRMAN.—That trail will cost only twenty or thirty dollars a mile?

Mr. OLIVER.—Yes, and it would be of great advantage to the people of the territories if we could get that done so that cattle could be driven up and prospectors could drive in by packs—it would be worth very many thousands of dollars to the country.

Hon. Mr. POWER.—About how many miles a day would a drove of cattle travel?

Mr. OLIVER.—About fifteen miles a day.

Hon. Mr. McCALLUM.—From ten to twelve miles?

Mr. OLIVER.—Yes; if the road was bad you would not make that because you would have to drive slowly in order to keep them in condition. There are people now thinking of driving cattle in that way, but you cannot drive cattle through a difficult country and keep them in condition; and that is why we are asking so persistently for the opening of a trail. Although we say the country is practicable, still it is one thing to get through, and it is quite another thing to get a herd of cattle through in a condition fit for sale. So that really unless there is something done to make the driving of cattle through easy—and all that is necessary is the cutting out of the timber for about six or ten feet wide—unless that is done no matter how good the country is we cannot expect that our cattle will be delivered in the Yukon in a profitable condition; but we do claim that if that is done we can deliver cattle into the Yukon cheaply and in good condition.

Hon. Mr. DRUMMOND.—It would take about four months to drive cattle to the Yukon?

Mr. OLIVER.—Not to go to the Pelly River, and they could easily drive them down or slaughter them and send them down.

Hon. Mr. DRUMMOND.—It would take about three months to go at the least?

Mr. OLIVER.—Not at the least—at the most if the road was open—on that point I may say that I myself, for a number of years, drove from Winnipeg to Edmonton oxen and carts, a distance of a thousand miles with about one thousand pounds to the ox. It would take me about three months to make that trip of a thousand miles. Some would take about two months. The reason I took longer was because I wanted to have my cattle in a condition for beef when I got to Edmonton.

Hon. Mr. McCALLUM.—Fattening them at the same time?

Mr. OLIVER.—Not exactly fattening them, but they were not losing flesh; so when I got there, instead of wintering them I could sell them off for beef during the winter. I think that ought to settle the point as to the practicability of driving cattle a thousand miles to market.

Hon. Mr. COX.—It would be a better road from Winnipeg to Edmonton. Would not they have a good deal of difficulty along the route you mention on account of want of food?

Mr. OLIVER.—Not any serious difficulty for want of food; but there would be a difference, because in this case the cattle would be going light, but in the case I mention from Winnipeg to Edmonton they were hauling a thousand pounds apiece. There are men already who are thinking of making preparations to make an attempt to put cattle through without the road.

Hon. Mr. PERLEY.—You think that is practicable?

Mr. OLIVER.—I cannot come to any other conclusion from the knowledge which I have acquired.

Hon. Mr. McCALLUM.—You said that your oxen drew a thousand pounds apiece?

Mr. OLIVER.—Yes; that is a different country of course.

Hon. Mr. McCALLUM.—There is grass in that country?

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Mr. OLIVER.—Yes, there is grass all the way through. Not as much as there is from Winnipeg to Edmonton, as the country is partly timbered; but from the Government reports and any information I can gather from individuals who have gone through, I must conclude that there is food all the way.

Hon. Mr. McCALLUM.—Sufficient?

Mr. OLIVER.—Yes. Not, probably sufficient to allow cattle being driven like they are on the prairie, that is hauling their own loads, but sufficient for travelling through light. That would call for a cutting of seven hundred and forty miles of pack trail, from six to ten feet wide, through timber where timber existed, and the country is principally timbered.

Hon. Mr. McCALLUM.—You estimate that would cost about \$30 per mile?

Mr. OLIVER.—It ought not to cost that much, but of course it would always depend upon how it was managed.

Hon. Sir JOHN CARLING.—It would cost more than that in heavy timber would it not?

Mr. OLIVER.—Yes, it probably would. On some of it there is no timber at all, there is a great deal of it that is lightly timbered, and some is heavily timbered.

Hon. Sir JOHN CARLING.—You would put scows on the rivers?

Mr. OLIVER.—The government is putting ferries on the Peace River. The principal river beyond this is the Liard, and some provision should be made for crossing it. Cattle would have to swim across that if there were no scows. That is a point that I wish to make clear to the committee; I have been asking for improvements on this road and I would like to show that I have not been asking for unreasonable expenditures. A very little expenditure would give a good business result. If we get the timber cut out we can drive our cattle through, and we can swim the rivers if we have no ferries. Not only can we drive the cattle through, but, if the committee would pardon me for a minute, I may say the prospector could get through with pack ponies, and I should like to say how valuable that would be.

Hon. Mr. MACDONALD (B.C.)—Do you propose to put ferries on that route?

Mr. OLIVER.—We would like very much to have ferries but we could do without them. As I say, if we do not have ferries we can swim the rivers, but we cannot get through hundreds of miles profitably or satisfactorily where there is timber. It could be done, but would not pay. There have come to Edmonton already a matter of, I suppose, from four to five hundred men, from all parts of the world who are desirous of getting through to the Pelly River. They came to Edmonton because they wanted to make to that particular point. They got it into their minds, through some course of reasoning, that at the divide between the Pelly and the Liard was a good place to prospect for gold.

THE CHAIRMAN.—They strike it both east and west?

Mr. OLIVER.—Yes, their idea was that gold having been found down the Yukon, and that gold area having been entirely staked out now, they would have to look for a new field, and their judgment led them to believe that the place to look for a new field was towards the head waters of the stream. Then, if they wished to go to the head waters of the streams, they judged that it was better for them to start from Edmonton to reach the head of the Pelly River than to start from the coast and go over the passes and down the Lewes River and then up the Pelly, because if you take that way the distance from Edmonton is very little greater, and by taking that route they avoid the difficulties of the passes, and get cheap transportation and supplies by way of Edmonton. That is the reason they came to Edmonton to make their start. If they had been going to Dawson as their objective point they probably would not have come to Edmonton, but they desire to explore the interior of the country at the head waters of the Yukon.

Hon. Mr. WOOD.—Have they gone on from Edmonton?

Mr. OLIVER.—Yes, hundreds of them. They began to come there in August last.

Hon. Mr. MACDONALD (B.C.)—Can you give us the cost, roughly, of making a trail from Edmonton to the Lewes River?

Mr. OLIVER.—I would think that the mere cutting of the trail, six to eight or ten feet wide, would not cost more than twenty or thirty dollars a mile—in fact I do not think it would cost that. That is a very outside estimate.

Hon. Mr. McCALLUM.—I rode a horse in the North-west country going through the woods and a man going ahead with an axe and could get along quite fast. The horse following the trail and three or four times, when allowed to do so, he left me hanging in the trees.

Mr. OLIVER.—The timber there is not at all like the timber here. What is called heavy timber there you would called scrub here. It is not like cutting a trail eight feet wide through a hardwood bush. There is no comparison at all.

The CHAIRMAN.—When you are making arrangements to cut a trail or take in supplies would it not be just as well to make it wide enough for a wagon road?

Mr. OLIVER.—Certainly, if money was available, but what I am trying to impress upon the committee is that minimum expenditure would produce a valuable result, that the very lowest expenditure would still produce a very valuable result. There are four or five hundred men, as I have said, who have been coming to Edmonton since August last, and they are still coming in and going north as fast as they can. One inducement for taking this route is the cheapness of transportation—that is to say, they can get cheap horses.

Hon. Mr. COX.—Have any of them reached their destination yet?

Mr. OLIVER.—Not as far as I know.

Hon. Mr. COX.—And you say some started from Edmonton as far back as August last?

Mr. OLIVER.—They did not get away until September.

Hon. Mr. LOUGHEED.—When you speak of their destination, what do you mean?

Mr. OLIVER.—The Pelly River. I am speaking of the transportation to Pelly River and of Pelly River as the objective point of our route, as it is of those prospectors. That is the objective point of the whole of them—the divide between the Liard and the Pelley. These people require to purchase five to eight horses apiece, at a cost of \$20 to \$30 apiece, for the purpose of packing through their supplies. Then they have to purchase their supplies, and so on. Five hundred men purchasing five horses apiece means a lot of horses and a lot of money. There is no question if the road were cut through as I suggest that these people could get through, and there is no question that hundreds and thousands of others would follow. The Hon. Mr. Cox asked the question: Have any of these people got through? None of them have got through as far as I know, although I know that a large number will get through, but the difficulties they will meet with on the way will certainly deter others from trying to follow them.

Hon. Mr. McCALLUM.—They might have got through for all you know?

Mr. OLIVER.—They might, but we have got no word back from them. I am not arguing that they did get through, or that they can get through: what I am arguing is that if they do get through they will encounter such difficulties under the present circumstances as will deter others from going by that route. A small expenditure to cut out the trail would diminish the difficulties, and the effect would be that hundreds and thousands would go by that route.

The CHAIRMAN.—On their own resources?

Mr. OLIVER.—On their own resources.

Hon. Mr. OGILVIE.—One great advantage of having a trail would be that they would not need to inquire about the road.

Mr. OLIVER.—They follow the trail. They would buy their horses and supplies at Edmonton, and if the road were cut out they would have no further expenditure, but without this trail being cut out there are very great difficulties in the way. Another reason why these people are taking this route is that gold is found on the Peace River, and some of them think that possibly they might strike something good in that region and they will prospect on the way. When they cross the mountains on the Liard they are then in the same gold bearing area that is continued to the Yukon. The Cassiar district of British Columbia is on the Dease River, which in the south branch of the Liard and is practically continued up the north branch

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of the Liard to the Pelly and down the Pelly to the sea, or to Dawson City at all events, so that once they reach the Liard River at a point marked Halkett on the map, they are in the gold bearing territory and the prospects of striking paying mining are just as good there and from there on, as anywhere; so that instead of having to travel 1,000 miles to reach a probably gold country on the Pelley River they can reach it on the Liard River at a distance of seven hundred miles from Edmonton and have a chance—not only a chance, but a certainty, of having a gold bearing country all the way through. That is beyond question. That is the reason why these people are taking this route and why I impress on the committee that there should be even a minimum expenditure in opening up a trail for the purpose of assisting these prospectors.

Hon. Mr. LOUGHEED.—Can you give us an idea of what you consider a minimum expenditure.

Mr. OLIVER.—For seven hundred and forty miles an expenditure of \$30 a mile would be ample.

Hon. Mr. OGILVIE.—That would be less than \$25,000 altogether?

Mr. OLIVER.—It would be ample to cut out a trail. Certainly, as one honorable gentleman has suggested it would be better to have a wagon road.

Hon. Mr. McCALLUM.—But you would be satisfied with a pack trail first?

Mr. OLIVER.—It is not a question of satisfying me; it is for the representatives of the country to use their own judgment as to what will give the largest amount of trade to the country for the smallest possible expenditure.

The CHAIRMAN.—That is sound economy.

Hon. Mr. BELLEROSE.—Do you think that labourers could be got to cut that timber and clear it from the trail for one dollar?

Mr. OLIVER.—No.

Hon. Mr. BELLEROSE.—There are twenty acres in a mile.

Mr. OLIVER.—Not the way I have been stating it. I stated it one way and you are taking it another. The acre I mention is a square acre, that is seventy yards square. I am speaking of an acre seventy yards long and six feet wide.

Hon. Mr. BELLEROSE.—What would be the cost of that?

Mr. OLIVER.—Perhaps a dollar would not be sufficient for that. Of course, these other gentlemen can give you better information on that subject than I can. Certainly the timber there is nothing to compare with the timber here in the way of cutting it. It is more like what we call second growth here.

Hon. Mr. PERLEY.—In cutting a trail you do not remove every stump?

Mr. OLIVER.—No, and that is the difference between making a pack trail and making a wagon road. On a wagon road you have not only to cut the timber, but you have to remove the stumps and improve the bases of the road where as on a pack trail if you cut the stumps pretty well towards the ground it will do.

Hon. Sir JOHN CARLING.—If authority was given now to make the trail, how long do you think, it would take to open up a pack trail from Peace River to that point on the Pelley River that you have spoken of?

Mr. OLIVER.—I have no hesitation in saying that if properly handled it could be down inside of three months.

Hon. Sir JOHN CARLING.—Inside of six months anyway?

Mr. OLIVER.—There would be no difficulty in doing it inside of three months—that is making such a trail as I have been speaking of.

Hon. Mr. LOUGHEED.—What is the cost of the trail that is being built by the Government of the North-west Territories?

Mr. OLIVER.—There is one hundred and fifteen miles altogether, and it is costing about three thousand dollars. That is through heavy timber all the way, and it is out out, I think, twenty feet wide.

Hon. Sir JOHN CARLING.—That is for a wagon road?

Mr. OLIVER.—Yes. Of course as you get further north the cost of supplies would be very much greater and the difficulty of management and so on, so that you would have to take these things into consideration.

Hon. Mr. PERLEY.—But that is a wagon road?

Mr. OLIVER.—Yes.

Hon. Mr. PERLEY.—And this is only a pack trail?

Mr. OLIVER.—Of course, a pack trail, six or eight feet wide would be cut out for one half.

Hon. Mr. LOUGHEED.—It would be about \$26 a mile.

Mr. OLIVER.—I am giving the outside figures, about which I think there is no question.

Hon. Sir JOHN CARLING.—That is \$30 a mile.

Mr. OLIVER.—Yes, and if parliament should see fit to appropriate \$30 a mile, it would be always advantageous to put it on—the better the road the more advantage it would be.

Hon. Mr. MACDONALD (P.E.I.)—That would make a total of 740 miles?

Mr. OLIVER.—Yes.

Hon. Mr. LOUGHEED.—Are the difficulties to be encountered continuous?

Mr. OLIVER.—It is a timbered country, but it is not timbered in the sense that Ontario is timbered. It is called there a timbered country. There is more or less timber all the way. Dr. Dawson and Mr. McConnell can give you much better information and Mr. MacLeod could also give you information. These gentlemen have been through and can give you much better information on it than I can. In regard to a wagon road and stretches of navigation from Peace River through to the Pelly, it would of course be very desirable to have a practicable freight route through there if we could get it. From the point at which the North-west Government route reaches the Peace River there is a navigable stretch of the Peace River, which might be used on this route of 125 miles, and is of excellent steamboat navigation, or any other kind of navigation, up to Fort St. John. If you were transporting there you could probably transport more cheaply over that stretch by boat than you could by wagon. Then from that point across to the Nelson Branch of the Liard is about 120 or 130 miles, or we will say 150 miles from Fort St. John over to the Forks of the Nelson. If you wanted to make a freight route through there, that would have to be made a wagon road; so put that down as wagon road that would have to be constructed; 150 miles from the forks of the Nelson Mr. McConnell reports that it is navigable down to the Liard and up the Liard to the Grand Cañon. Then Mr. McConnell reports that from Hell Gate to the head of the Devils' Portage, that would have to be a wagon road.

Hon. Mr. MACDONALD (B.C.)—That would be the steamer route?

Mr. OLIVER.—It would be practicable for winter. The pack trail part of it would be practicable for winter and summer.

Hon. Mr. MACDONALD (B.C.)—Any difficulty in keeping it open?

Mr. OLIVER.—No, that is another point I wanted to bring out later on in regard to the pack route. You would have thirty-five miles from Hellgate to the head of the Devil's Portage, then forty miles of good navigation on the Liard across the Rocky Mountains. Then there is a succession of three rapids within fifteen miles so that a wagon road over that piece would give you navigation to the Francis Lake, and then fifty miles or eighty miles to the Houle Cañon. That would be 150 miles, thirty-five miles, fifteen miles and eighty miles, making in all 280 miles. That amount of wagon road would give you summer freight communication right through. Now, as to the commercial value of that as a freight route. I fancy that if it was opened out by using the navigable stretches freight could be taken through there as cheaply as it formerly was for the same distance by wagon entirely from Winnipeg to Edmonton; that is to say, ten cents a pound. That is only a fraction of the present cost of packing, merely across the Chilcoot Pass. Last fall, the government paid fifty cents a pound for packing across the Chilcoot Pass. I have no hesitation in saying that freight can be carried in by wagon and steamboat navigation from Edmonton to Pelly River in the way I suggest, provided these roads are made, at half of that, anyway, and a good deal less. You must remember that when freight is across the Chilcoot Pass that is only a starter on the road, if people are going up to the head of the Pelly. It is only a starter on the route, because you would have up stream navigation for 300 miles on the Pelly River; so that while this suggested wagon

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amphibious route would not be able to compete with the railway away from the coast, nor perhaps with direct steamboat navigation around by the mouth of the Yukon to the Dawson City, it would always be able to compete to a point at the head of the Pelly on account of the up stream navigation on the Pelly coming from these other directions and for that interior part of the country is to be opened up—and it is certainly desirable that it should be—it can be opened up, I maintain, by such a proposition as this, better than any other.

Hon. Mr. OGILVIE.—Until a railway is built?

Mr. OLIVER.—Yes, well, I would not suggest the building of a railway at the present time, until the resources of the country are more thoroughly demonstrated. I do not wish to see the country run into expense until it has proved necessary.

Hon. Mr. MACDONALD (B.C.)—How many days would it take to make that distance by wagon road or pack trail?

Mr. OLIVER.—A pack trail should make it in three months. Of course, I am giving the full limit.

Hon. Sir JOHN CARLING.—That is the 1,000 miles?

Mr. OLIVER.—Yes, for the 1,000 miles.

Hon. Mr. POWER.—You speak as though the Pelly River was the objective point.

Mr. OLIVER.—Yes, that is the objective point of the parties starting from Edmonton.

Hon. Mr. POWER.—But it is not the objective point of the people who are influenced by the Klondike boom. They are going to Dawson City.

Mr. OLIVER.—I am merely speaking of those going from Edmonton. I am pointing out that several hundred people are influenced by these ideas to go from Edmonton, and whether their ideas are good or bad, it is certainly profitable to us that they should hold that in view.

Hon. Mr. POWER.—Going back a little distance in your evidence you spoke of going up to Slave Lake. I think you said there were two routes. You might go up to Slave Lake and then up by the Mackenzie and Peace River, or you might go across diagonally from Edmonton to a point on the Peace River?

Mr. OLIVER.—Yes.

Hon. Mr. POWER.—Is that above or below Dunvegan?

Mr. OLIVER.—It is fifty miles below.

Hon. Mr. POWER.—What sort of country is it between Edmonton and Slave Lake?

Mr. OLIVER.—I mentioned that to the committee.

Hon. Mr. POWER.—I only ask that one question. I do not want any extensive answer. What sort of country is it generally?

Mr. OLIVER.—For the first sixty miles it is slightly undulating prairie country and settled. From Pembina to the Athabasca it is considerably more rolling and well timbered. Then from Athabasca to the Slave Lake you cross the Deer Mountains, which is a broken country at a considerable elevation, and the soil is principally light and sandy and the country is pretty heavily timbered with poplar, spruce, jack pine and tamarack, and the road is some times difficult. That is the part the North-west Government is cutting out now. Then when you reach the basin of Slave Lake you get again into fertile country with an immense growth of grass, and from Slave Lake over to the Peace River the country is also fertile, and although principally timbered, has some prairie on it.

Hon. Mr. POWER.—Is it level?

Mr. OLIVER.—Yes, but it is slightly undulating. The Peace River itself is in a very deep valley; you drop down 800 feet into the Peace River.

Hon. Mr. POWER.—How does the country from Edmonton to this river compare with this country between Edmonton and Calgary?

Mr. OLIVER.—It is a very different country in the matter of timber. In the district between Edmonton and Calgary when you are near Calgary there is no timber and it gradually increases as you come to Edmonton and as you go north-west of Edmonton the timber is still more increased, so that the country is practically a

timbered country from Athabasca to Slave Lake, what we call a heavily timbered country, but not what you would call a heavily timbered country here.

Hon. Mr. POWER.—I do not speak so much of the timber as the surface of the country. Take the line of the Calgary and Edmonton Railway, how does the surface on which that road is built compare with the country between Edmonton and the Peace River, and by Slave Lake.

Mr. OLIVER.—I would say that it is very much the same as far as the undulations of the surface are concerned, except the part between Athabasca and the Slave Lake, in which the Deer Mountains are situated, which are, of course, more rugged than any part of the road. Mr. Macdonald asked me something about this as a winter route. I think that if the road were cut out as a pack trail six or eight feet wide from Edmonton to the Pelley River it would be practicable as a winter route for sleighs all the time. The snow fall is not as deep east of the mountains as it is west of the mountains or as it is down here, and being through a country very well timbered, a country which produces grass in swamps and the passes, where hay can be cut there would be no difficulty whatever in using that route as a winter freight route, right through to Pelly River if it were cut out as only a pack trail, although it would not be possible to use it as a summer freight route for wheels. It would be practicable for sleighs and mails or freight could be carried over it.

Hon. Mr. MACDONALD (B. C.).—With shelters and stable of course?

Mr. OLIVER.—Yes, but the country being partly timbered, it offers little difficulty in travelling.

Hon. Sir JOHN CARLING.—You have given us the cost of a pack trail. What would be the cost of a wagon road?

Mr. OLIVER.—I could not give you an estimate because it would depend on the quality of the road.

Hon. Sir JOHN CARLING.—Similar to the Edmonton and Peace River road?

Mr. OLIVER.—The part of the road from Edmonton to Athabasca costs nothing. They simply travelled over it. I have no idea what it would cost, but it would cost a great deal more than the cutting out of a pack trail.

Hon. Sir JOHN CARLING.—One hundred dollars a mile?

Mr. OLIVER.—I fancy it would. It is one thing to say something is a road, but it is a different thing to have a practical route to haul freight over, and I would not like to give any estimate.

Hon. Mr. OGILVIE.—Some places you would have to take soil and gravel from one place to another.

Mr. OLIVER.—I do not think there would be much of that but some of it. There would be swamps to be taken care of. It would all depend upon the quality of the country.

Hon. Mr. POWER.—Have you any idea of the length of the summer in that district?

Mr. OLIVER.—Yes, Mr. Ogilvie gives it very fully in his book. He gives the date of the opening and closing of the river.

Hon. Mr. POWER.—I was thinking rather of the season for cultivation.

Mr. OLIVER.—Well, I do not know but what he gives that too. Here is what Mr. Ogilvie says:—

“At Fort Liard, planted on 9th May; ice drifting in the river on 15th October; ice set on 7th November;”

He gives the dates from 1878 to 1890. The seeding began from 20th April to 7th May, and the river set fast about the end of October.

Hon. Mr. POWER.—Reaping in August?

Mr. OLIVER.—Yes, he gives it here some places about the Peace River.

Routes to the Yukon.

Mr. HEWITT BOSTOCK, M.P., then appeared before the Committee and made the following statement:—

There have been one or two different routes proposed in British Columbia for running up to the Yukon by means of a road or trail. There is a road, for instance, by way of Donald up to the big bend of the Columbia River, and that goes up over the old Moberly trail, to the Tête Jaune Cache, and then follows down the Fraser, coming in here to this route and going up in that direction. But the most feasible route at the present time, for opening up an overland route from the mainline of the Canadian Pacific Railway to the Yukon would be either to start from Ashcroft or Kamloops and go up practically due north. There is at the present moment a wagon road from Ashcroft to Quesnelle, about 200 miles. That is a good wagon road. It is part of the old road that was built in the province years ago, when the mining excitement in Cariboo was on, and was built from Yale right up from the Fraser Cañon to Ashcroft and then to Barkerville, and the road from Ashcroft to Barkerville has been kept in order ever since, and there is a great deal of trading from Ashcroft, starting from the Canadian Pacific Railway up to Barkerville and the forks of the Quesnelle, and other places. At the same time there is a telegraph line which is part of the old telegraph line which starts from Ashcroft and goes to Barkerville.

Hon. Mr. Cox.—That is 200 miles?

Mr. BOSTOCK.—It is 200 miles to Quesnelle and about 260 to Barkerville. Following on from Quesnelle there is a trail through, it crosses the Fraser River at Quesnelle and comes across and strikes Fort Fraser and then follows along to Hazleton.

Hon. Mr. MACDONALD (B.C.)—There is a good deal of steamboat navigation where you are pointing out?

Mr. BOSTOCK.—Not if you follow this trail. The trail runs from Fort Fraser and on to Hazleton, but you can go from Quesnelle, follow up the Fraser River, and then strike across and come up the Stuart River to the Stuart Lake, and there was a survey made by some of the officers of the Department of Public Works this last summer for the purpose of seeing what obstructions there were in this route between Quesnelle and Stuart Lake for the purpose of opening it up. There was at one time, I believe, a steamer that ran up from Quesnelle to Fort George, but owing to the mining excitement up there falling off again, it was not continued. The trail as I say runs from Quesnelle to Hazleton, and then you follow up the Skeena River and strike what is marked as the old trail to Glenora. That is practically the old Telegraph Trail which was cut out at the time they were putting in the telegraph line. The distance from Quesnelle to Hazleton is 327 miles, and from Hazleton to Telegraph Creek is 240 miles.

The CHAIRMAN.—Hazleton is on the Skeena?

Mr. BOSTOCK.—Yes. I think Hazleton is rather above the point of navigation on the Skeena, but not very far.

Hon. Mr. MACDONALD (B.C.)—How many miles is it from Ashcroft to Dawson?

Mr. BOSTOCK.—I do not know the distance. The distance from Quesnelle to Hazleton is 327 miles and Hazleton to Telegraph Creek 240 and Telegraph Creek to Teslin Lake is 135 miles, making 702 miles from Quesnelle, but there is the distance from Teslin Lake to Dawson which I have not got.

Hon. Mr. MACDONALD, (B.C.)—Six hundred and eighty miles, I believe and 150 miles Telegraph Creek to Teslin. That would make about 1,400 miles to Dawson City.

Mr. BOSTOCK.—Yes, it would be somewhere about that; I may say at the present time there are quite a number of prospectors going in this way, starting either from Ashcroft or Kamloops. The difference between the two routes from Kamloops or Ashcroft is that, starting from Kamloops you can use the north Thompson River, a distance of about fifty miles, and then strike across a place called Little Fork to a place called

Bridge Creek, and you strike the same wagon road again. There was a deputation sent from the people of Kamloops down to the Provincial Government the early part of this year asking them to open up that road between North Thompson River and Bridge Creek, as there is a good piece of country through there, which would make it better for the packers and men going in, to get hay and grain, of course, when they get away from the railway there they often find it difficult to get grain for their horses and as a rule they like to get a piece of country where they can turn their horses out at night. Now, owing to this wagon road from Ashcroft having been opened a number of years, nearly all the available land—that is, available for settlement at all—has been taken up, and prospectors going through there either have to take their own grain and hay with them, or else make some arrangement with the settler to pasture their horses, and of course that adds to the expense, and if they can come in another way and save expense, they would rather do so. That is a matter connected with the Provincial Government. The advantage of opening up this piece of country is that there is a mining development going on. There has been mining on the Skeena and there has been a good deal of prospecting all through this part of the country and from reports received it seems that there is a good mining country in this part of it, which would certainly be benefited by the opening up even of a trail to Hazelton and on this way to Glenora.

The CHAIRMAN.—Where do you live?

Mr. BOSTOCK.—I live not far from Kamloops, some times.

The CHAIRMAN.—Then the mines are north of Quesnelle nearly?

Mr. BOSTOCK.—The big mines at the present time, that big hydraulic mine at the Quesnelle forks—Mr. Hobson is at present the manager of it—that is off the Cariboo, and the mines at Barkerville and all those hydraulic mines are on this side of the Cariboo road.

Hon. Mr. MACDONALD (B.C.)—Where did the cattle go in from?

Mr. BOSTOCK.—They go from Chilcotin, just on the other side, and drive through on the old trail.

Hon. Mr. MACDONALD (B.C.)—And I believe they were in good condition when they got there and sold well?

Mr. BOSTOCK.—Yes, I believe so. This old trail was used at the time of the Cassiar excitement in 1875-76. There are men living around Ashcroft now, who drove them over this trail to Glenora and to Peace River.

Hon. Mr. COX.—How long would it take to drive cattle through there?

Mr. BOSTOCK.—Well, with the condition of the trail at the present time, I suppose it would take them about two months to do it—that is, to keep them fat. Of course, the greater part of this country is a fairly open country with a certain amount of timber on it, very much the same as it is around Kamloops, and that part of British Columbia, and there is a good deal of bunch grass all through this way.

Hon. Mr. POWER.—Where is the Omenica?

Mr. BOSTOCK.—It is over to the east.

Hon. Mr. POWER.—Is there any great difficulty in getting from the place where you propose to have your road to the Omenica country?

Mr. BOSTOCK.—No, they go in from there now with pack horses.

Hon. Mr. POWER.—Does not the Parsnip River come into the Omenica River?

Mr. BOSTOCK.—It is in the Omenica country and runs into the Fraser.

Hon. Mr. POWER.—Is not the Parsnip River really the main branch of the Peace River?

Mr. BOSTOCK.—Yes, I think it is but I would not be quite sure about that.

Hon. Mr. POWER.—So that if you follow up that Peace River you can get into the neighbourhood where you propose to put your road without any difficulty. There are no mountains.

Mr. BOSTOCK.—Yes, the Peace River makes a bend and comes down towards the Fraser.

Hon. Mr. POWER.—It gets through the Rockies without any high pass?

Mr. BOSTOCK.—Yes, there is no very high pass there.

Routes to the Yukon.

Hon. Mr. MACDONALD (B.C.)—Which of the coast lines do you think the best? The Kitimat Harbour or where?

Mr. BOSTOCK.—That is a point I do not know very much about?

The CHAIRMAN.—It is south of the Skeena.

Hon. Mr. MACDONALD (B.C.)—That could join a road from Ashcroft?

Mr. BOSTOCK.—Yes, but of course the great difficulty of getting in this way as Mr. Oliver described just now, is that these prospectors and men who are anxious to go into the country at as small an expense as possible, can take their own pack animals, and just go slowly along, as it suits them, and they stand a very good chance on any of these small rivers of being able to wash a certain amount of gold which would probably pay their expenses. Nearly every stream in that upper part of British Columbia carries more or less gold so that a man can get something out of it.

Hon. Mr. McCALLUM.—If it carries more gold they will stop right there, I suppose?

Mr. BOSTOCK.—Yes, if it is good enough they will stay.

The CHAIRMAN.—The Cassiar region and the Dease River region are synonymous.

Mr. BOSTOCK.—Yes, they are all there, and the Omenica country is to the south. You see practically this mineral belt runs right up.

Hon. Mr. MACDONALD (B.C.)—From Rossland.

Mr. BOSTOCK.—Yes, and as soon as we can get railway communication up through Cariboo we ought to have as good a mining country there as we have in the Kootenay. It is only a question of transportation.

Hon. Mr. POWER.—You have never travelled from the Yellowhead Pass across to Edmonton.

Mr. BOSTOCK.—No, I have not. The idea that I believed the Canadian Pacific Railway have, would be to continue this telegraph line through this way in order to get telegraph communication with the Yukon. I have a blue print here showing the direction of the line that they are considering.

Hon. Mr. Cox.—Railway or telegraph lines.

Mr. BOSTOCK.—That was simply a telegraph line.

Hon. Mr. Cox.—A railway line is feasible through there.

Mr. BOSTOCK.—Oh, yes, either from Ashcroft or Kamloops a railway line would be quite feasible.

The CHAIRMAN.—How far apart are Ashcroft and Kamloops?

Mr. BOSTOCK.—About eighteen miles.

Hon. Mr. POWER.—I think Mr. Reid, who gave evidence before our committee the other day, said it would be quite practicable to construct a line of railway from Yellowhead Pass into this region between the two ranges of mountains and on to Glenora or Telegraph Creek. Do you know whether that is the case or not?

Mr. BOSTOCK.—There was a company in British Columbia, called the British Pacific, that projected a line starting from the coast and going across by way of Barkerville to the Yellowhead Pass. I do not know whether they carried their surveys right through there, but I think the old Canadian Pacific Railway surveys show that route.

Hon. Mr. POWER.—But Mr. Reid said he thought there was no difficulty in getting a very good line up north from the Fraser River?

Mr. BOSTOCK.—You mean to follow the Fraser?

Hon. Mr. POWER.—Yes.

Mr. BOSTOCK.—Yes, and then you strike the Parsnip, of course.

Mr. MARCUS SMITH appeared before the Committee and was examined as follows:—

The CHAIRMAN.—You were in the employ of the Canadian Government as an engineer, Mr. Smith?

Mr. SMITH.—Yes, I was twenty-five years serving under the Canadian Government as an engineer. I was four years on the Intercolonial.

The CHAIRMAN.—You conducted the surveys.

Mr. SMITH.—Up until the Intercolonial was nearly completed in the spring of 1872, and the surveys were commenced then of the Canadian Pacific Railway and they transferred me before the work was finished, made me deputy chief engineer for the surveys, and I was sent out to British Columbia to take charge of the surveys in British Columbia from the Rocky Mountains to the Pacific coast. I was on that for four years, and Mr. Fleming, chief engineer, was sent to England for some purpose and I had to take his place as acting chief engineer, and I continued that for two years and a half.

The CHAIRMAN.—What year was that?

Mr. SMITH.—From 1876 to the end of 1878 I had charge of the whole work.

The CHAIRMAN.—And what line of survey did you follow and what could you tell us that would assist us in our object, which is to connect our railway system with some route that will take us into the Yukon district?

Mr. SMITH.—Yes, I can give that. Of course, a great number of miles were explored and surveyed some hundred thousand miles, and we actually trailed and levelled something like 40,000 miles. You will understand I could not see the whole thing but I saw a great deal of it. I was in the field all the time and I was constantly with my staff and the reports published were condensed reports, but I have received hundreds of letters and I understand the country just as well as if I had seen it, because we knew the description so well.

Hon. Mr. POWER.—I would suggest that we start from Edmonton and consider the way of getting up from Edmonton and not deal with territory which will not be traversed by any of the proposed routes. If there was a survey up the Peace River that would be valuable information.

Mr. SMITH.—I simply mention the surveys because part of the time I was on that very subject. In the year 1877 I was making a survey for the northern terminus of the railway. Mr. Alexander Mackenzie was Premier, and he had been in Scotland and he was informed that it was received very favourably in Great Britain, the information that a line could be constructed there. We made the surveys in 1877 from Fort Simpson right through by the Pine River Pass, and through the Peace River and in fact to Edmonton, and from those surveys I projected a line which appeared to me to be exceedingly favourable—more favourable than any we had seen and that was published with my report of 1878 and here is the map.

Hon. Mr. POWER.—That would be in the railway report of what year? 1878 or 1879.

Mr. SMITH.—The surveys of 1877 were reported in 1878. We came home in the winter time, and the reports were always made the following year in the spring.

Hon. Mr. POWER.—Was this report of yours ever published?

Mr. SMITH.—The report was published, but the map was not published. Mr. Fleming came home in the end of 1878 and he thought that Peace River Pass was a better one than the one I had selected and no action was taken on it, and the matter was reserved. He also found fault with some colouring I had put on the map, significant of the general character of the soil, which I thought was important, because in all my surveys I always took notice of the character of the country.

Hon. Mr. POWER.—Is this map which you are now submitting to the committee a copy of that map?

Mr. SMITH.—Yes.

Hon. Mr. POWER.—This is a copy of a map which accompanied your report?

Routes to the Yukon.

Mr. SMITH.—Yes, this was printed and published.

Hon. Mr. POWER.—I thought you said it was not published.

Mr. SMITH.—It was issued. It was issued afterwards. The reason it was not issued, Mr. Fleming thought a better line could be got. Then in the following year there were four large parties sent out to examine the work I had reported upon and to examine the Peace River, and they all reported favourably to the Pine River instead of the Peace.

Hon. Mr. POWER.—Their reports will be found in the reports for 1879.

Mr. SMITH.—In the reports of 1880. In 1879 several parties were sent out. One was Mr. Charles Horetzkey, an explorer. He was not an engineer.

The CHAIRMAN.—Where is he now?

Mr. SMITH.—He has been employed by the Provincial Government. The last time I saw him some years ago he was employed by them. There was Mr. H. J. Cambie, and Mr. Joseph Hunter and Henry MacLeod. These were all my assistants—had been my assistants—and along with those was Dr. Dawson of the Geological Survey and there was a clergyman, the Rev. D. M. Gordon; he made a very good report. He made reports of the surveys of 1879, which appear in the published report of 1880.

The CHAIRMAN.—What route?

Mr. SMITH.—They examined both Pine River route and Peace River from Fort Simpson, and they concluded that the Pine River was the best.

The CHAIRMAN.—Can you describe how you would reach Pine River Pass from Edmonton?

Mr. SMITH.—You can first of all take up the description from Edmonton to the Peace River. That would form part of it; when you get down to the west end of Lesser Slave Lake, the line would go away from there to the Pine River Pass. And from the west end it would cross the Smoky River a little below the mouth of the little Smoky River to the north of the Simonette River and then it strikes the Pine River for some considerable number of miles and some forty miles south of the Peace River.

The CHAIRMAN.—Then you keep south of the Peace River all the way through there?

Mr. SMITH.—Yes, and we came out at Fort Macleod on the west side of the Rocky Mountains and the value of that pass was this; it was said to be 2,400 feet and Dr. Dawson went over it in 1879 and he made the pass 2,700 feet above the level of the sea. The Yellow Head Pass is 1,000 feet more than that.

The CHAIRMAN.—What is the Kicking Horse Pass?

Mr. SMITH.—That is five thousand and some feet.

Hon. Mr. POWER.—What about the Peace River Pass?

Mr. SMITH.—It is about 2,200 feet. There is where Mr. Fleming was misled in his judgment; it was because the Peace River Pass was a lower pass that he preferred it to the Pine River but when he got westward of the Peace River Pass there was no way to get into the Skeena except over a much higher pass, a pass about 4,000 feet high. After we got through the Pine River Pass and through the main range of the mountains and coming to the coast range by the Babine Lake the height is only 2,200 feet whereas on the northern line by the Peace River it is 3,800.

The CHAIRMAN.—From Pine River Pass through the Babine River you strike the head waters of Skeena.

Mr. SMITH.—We strike the Skeena at a point that would be favourable for connecting with the projected line to Teslin Lake. I will show you on the map. You see that blue line (pointing to the map) that is the line that I located by the Pine River Pass; here is Lesser Slave Lake; here is Edmonton up here; it strike the Athabasca landing about ninety-six miles north of Edmonton; then it goes down to the Lesser Slave Lake and follows the south shore of that, and from thence westward crossing the Smoky River about I think sixty miles from the Peace.

The CHAIRMAN.—South of the Peace.

Mr. SMITH.—Yes. Then it goes along and crosses several rivers till it strikes the Pine River and that Pine River goes down to the Peace River very near to old Fort

St. John on the Peace River, near Hudson's Hope, that is at the foot of the cañon, there is a great cañon there. The Peace River passing through the Rocky Mountains forms a cañon about twenty-five miles in length; that is not navigable, at least they always go around it anyway;—and this is at the foot of that where the Pine River comes in. Here is the pass (pointing to the map) you can see where the bend is. It makes even a worse bend than that.

Hon. Mr. POWER.—You say the maximum height is 2,700 feet.

Mr. SMITH.—Yes, the summit—I may say that in going across from the Lesser Slave Lake in crossing the Smoky River you cross what is called the Grande Prairie a very fine country, all the way up to Pine River in fact,—a wonderful country. There are some forty miles by thirty miles in the Grande Prairie, all good soil.

Hon. Mr. Cox.—How far is that point you were speaking of a moment ago from the present line of the Canadian Pacific Railway say from Ashcroft?

Mr. SMITH.—I have not anything with me to measure the distance.

Hon. Mr. POWER.—It is four or five hundred miles.

Mr. SMITH.—The Parsnip River is the south branch of the Peace River in fact it might almost be called the main branch of the Peace River.

The CHAIRMAN.—It is navigable.

Mr. SMITH.—Yes for large boats. This goes into what is called the Omenica country there; as soon as you get to the Parsnip River this is the Omenica country and the line runs right along side of it.

The CHAIRMAN.—It taps the head waters of the Skeena?

Mr. SMITH.—Yes, at a point, Fort Sturgeon. None of the maps exactly agree as to that, but that is the point, and you will see where it is marked old trail there connecting with the Glenora and you will see also connecting in one direct line with the Yukon.

The CHAIRMAN.—That point there and a corresponding point on this side is the elbow on the Liard?

Mr. SMITH.—Yes.

The CHAIRMAN.—Between the Liard and the Stikine River comes Dease Lake and the Cassiar region?

Mr. SMITH.—Just so.

Hon. Mr. POWER.—There is no difficulty as far as you know in getting a line north here to Glenora?

Mr. SMITH.—I only know that from original reports and from conversation.

Hon. Mr. POWER.—Did you go down to the ocean there down the Skeena River?

Mr. SMITH.—Yes, we made a survey.

Hon. Mr. POWER.—I have been told recently that some officer who has been up there thought that Douglas Inlet was about the farthest point north at which connection would be made with the shore, but the Skeena River is north of Douglas Inlet, and you say you found a good location for a line running down the Skeena?

Mr. SMITH.—It is pretty heavy work on the Skeena, the Skeena is a bad river for navigation; there are shallows in it and then there is the ice coming down and so on.

Hon. Mr. POWER.—Is there a harbour at the mouth of the Skeena?

Mr. SMITH.—No; here is Port Essington; but going twelve or fifteen miles further we go to Fort Simpson; we have to cross the peninsula between Fort Simpson and the Skeena.

Hon. Mr. POWER.—Is it a good country?

Mr. SMITH.—It is somewhat heavy work on the Skeena; I have examined the whole of all of these rivers coming down and they are all heavy.

Hon. Mr. POWER.—Have you examined Douglas Inlet?

Mr. SMITH.—Yes, here (pointing to the map) is the head of Douglas Inlet. You will find in the report of 1877 that I described that. I examined all these Inlets. I examined all these rivers right from the Skeena up to Fort Simpson.

Hon. Mr. POWER.—What do you think of the Douglas Inlet?

Routes to the Yukon.

Mr. SMITH.—There is a fine inland passage for small ships there; going right up from Victoria here (pointing along the map) you can be sheltered all the way by islands. It is very good navigation, of course, it is rather intricate. Captain Lewis with whom I went up, an old navigator for the Hudson Bay Company, knew every channel.

Hon. Mr. POWER.—Cannot you get in from the open sea?

Mr. SMITH.—Large ocean-going vessels would not likely go there; Fort Simpson is a good general port; in fact Fort Simpson is an ocean port, the best port north of San Francisco; but Douglas would be a very convenient port. I went up the Grenville channel and when I came back the water appeared to be rather shallow. I did not make soundings but I made a note which was printed in my report of 1877, that there is a depression; there are very high mountains there that make that bend of the Skeena, and I saw a depression there, leading through the Skeena and that is what they call the Kitimat; and from there there is another low depression that would strike the Nass River, and go up there and I think the most northern port for having a Canadian line would be the Nass River. Of course what they call the Alice Arm is up the same channel.

Hon. Mr. POWER.—That is the shortest way to get in from Victoria?

Mr. SMITH.—From Victoria there could not be a better one; it is a wonderfully direct line from Victoria instead of going to Portland.

Hon. Mr. POWER.—I have been told with respect to Observatory Inlet and Alice Arm that you cannot get in because the land was so high there, that it would be almost impracticable.

Mr. SMITH.—The farthest we went down the Nass River—and I know you can get a line up that river; I would not advise any part of the river to be navigated.

Hon. Mr. POWER.—I do not think the harbour is good at the mouth.

Mr. SMITH.—It is a small harbour, but, of course, the true harbour would be Fort Simpson. You could put almost the navies of the world in it.

The CHAIRMAN.—We will have to rise now and some other day we will be glad to hear Mr. Smith further.

The Committee then adjourned.

OTTAWA, 2nd May, 1898.

Committee met this day.

The Honourable Mr. BOULTON, Chairman.

Dr. GEORGE M. DAWSON called and examined.

I have had this map coloured to show roughly what appear to be the three main routes northward, following the natural conformation of the country, and finding a common point at Selkirk in the Yukon district. Of course, there are many others possible, and this map does not take into consideration the several routes which have been proposed from the Pacific Coast directly. It is intended rather to show favourable routes connecting with the railway communication already provided from, Edmonton, or in British Columbia from Ashcroft, or other point on the line of the Canadian Pacific Railway there.

The CHAIRMAN.—What surveys have you made either for geological or engineering purposes?

Dr. DAWSON.—The part of the country under consideration that I know from personal examination, extends from Edmonton up to the Peace River, and along various routes through the northern part of British Columbia.

Hon. Mr. MACDONALD (B.C.)—From Peace River to Edmonton, does the route pass through a good country?

Dr. DAWSON.—It is varied in character—In the north of British Columbia and Yukon country in 1887, I was in charge of the Yukon expedition, with Messrs. McConnell and McEvoy, of the Geological Survey, as assistants. In that year we explored parts of the country as far north as Fort Selkirk, from which point I returned. In the following year, Mr. McConnell (having already examined the lower part of the Liard River,) followed down the Mackenzie, and from Fort Macpherson, crossed to the Porcupine, followed that river through the northern part of the Yukon country and returned to the coast up the Lewes. Reports of these journeys were published by the Geological Survey. Mr. Ogilvie was also attached to that expedition, and he wintered, in 1887-88, as you are aware, near the boundary line (Long. 141°) for the purpose of determining that line by observations. The following year he crossed by the southern head waters of the Porcupine River to the Mackenzie, meeting Mr. McConnell in the vicinity of Fort Macpherson, and then ascending the Mackenzie River. His report is published in the Report of the Department of the Interior for 1888.

Perhaps the simplest way of giving what facts I can on routes, will be to begin with that starting from Edmonton, marked number one on the map. This route has been chiefly referred to in the newspapers as the "Edmonton route," and is advocated by many people there. It is no doubt an extremely direct route if you take Selkirk as a common point, as we may do, because Selkirk is the natural point at which these different routes converge, no matter how much further north they may be intended to go.

Hon. Mr. MACDONALD (B.C.)—What is the distance from Edmonton to Selkirk by that route?

Dr. DAWSON.—It is about 1,300 miles from Edmonton to Selkirk.

Hon. Sir JOHN CARLING.—And how far from Selkirk to Dawson City?

Dr. DAWSON.—It is about 175 by the river. The measurements from Edmonton to Selkirk are made in a series of straight lines without allowing for curvature, which would add at least ten per cent to the whole.

Routes to the Yukon.

Hon. Mr. McCALLUM.—What is the nature of the country by that route?

Dr. DAWSON.—There are several routes that might be followed in the first part from Edmonton. One goes from Edmonton to Athabasca Landing, which is about 96 miles, then follows the Athabasca River up to the mouth of Lesser Slave River, and that river up to Lesser Slave Lake, thence across to the Peace at the mouth of the Smoky River, to what is called Peace River Landing. A more direct route is, however, the one that I understand has been already partly opened up from Edmonton, running across by old Fort Assinaboine, on the Athabasca, and going nearly straight to the same point on the Peace River. Besides these two routes, there is a third, for of course a line drawn straight from Edmonton to a point on the Peace River, near Fort St. John, would be the most direct of all. Leaving out of consideration the route *via* Athabasca Landing, which although it follows the rivers, is the longest, I may say something about the character of the country along the two last-mentioned routes. From Edmonton to old Fort Assinaboine there is good arable land for the most part to within about ten miles of the Athabasca River, when it becomes rather poor and sandy.

Hon. Mr. PERLEY.—Is it good land to build a road on?

Dr. DAWSON.—Yes, there are occasional swamps, but no large swampy tracts. The Athabasca valley, at that point where it would be crossed is about 450 feet deep. The river is about 250 yards wide, and the height of the river there above sea level is about 2,000 feet, nearly the same with that of the Saskatchewan at Edmonton.

Hon. Mr. PERLEY.—Is that the height of the land or the height of the river?

Dr. DAWSON.—The height of the river. Then from old Fort Assinaboine to the vicinity of Lesser Slave Lake, I do not know very much about the character of the land in detail. I have never followed the exact line of that route, but I should judge that not more than one-half of it is what might be called arable land. There are ridges and intervening swampy valleys, but nothing high or difficult to overcome in building a road or a railway.

Hon. Mr. MACDONALD (B.C.)—Is there a Catholic Mission near Lesser Slave Lake?

Dr. DAWSON—I do not know. There is a Hudson's Bay Company's post there and I believe they have some cattle, but I am not informed as to the extent to which farming is carried on, although good crops are produced. I have never visited the west end of the lake where the post is situated. The height of Lesser Slave Lake above the sea is about 1,890 feet.

Returning to the route which passes by the west end of Lesser Slave Lake, it may be stated that there is some good land near the lake where the Hudson's Bay post is, but a great deal of the land around the lake is swamp or muskeg, and to the south it is high and broken. So that in the immediate vicinity of Lesser Slave Lake it is not a very attractive country for settlement, but from Lesser Slave Lake to the Peace River, the road, which already exists, runs through a very good stretch of country for the 65 miles of its length. Nearly all the land in fact along the road is what would be called good land, but on both sides, it is more or less swampy. I may here mention in regard to all this country that its swampy character is largely produced by old beaver dams. The beavers have dammed it up in all directions to such an extent that much of it that originally drained freely into streams is nothing but old beaver meadows and these might of course be eventually drained if desired.

Hon. Mr. McCALLUM.—It would not take much to drain it?

Dr. DAWSON.—It could be drained for agricultural purposes without any great difficulty in most places.

Hon. Mr. MACDONALD (B.C.)—Is there a road through there?

Dr. DAWSON.—There is a road traced by the Hudson's Bay Company, 65 miles long, from Slave Lake to Peace River landing.

Hon. Mr. MACDONALD (B.C.)—Could you take carts along?

Dr. DAWSON—Yes, they have been used there for many years.

Hon. Sir. JOHN CARLING—Where is the road from Edmonton to Peace River?

Dr. DAWSON—The 65 miles I am now speaking of is a part of the road, whether you travel direct to the west end of Slave Lake or follow up the rivers from Athabasca Landing.

The CHAIRMAN—In the event of a railroad would it be desirable to go to a point towards Dunvegan instead of the Peace River Landing?

Dr. DAWSON—Yes, that is what I was coming to next. Having reached Peace River Landing, instead of going straight to Dunvegan overland, you would cross the Peace River valley.—It is about 700 feet deep at that place, but, as a rule, there is no difficulty in building a railway or road across these valleys, there is no particular difficulty, as lateral valleys afford means of descending from and ascending again to the plateau level. The height of the Peace River at this place is about 1,225 feet—much lower than the levels of the Saskatchewan and the Athabasca on the line of route described.

Hon. Mr. PERLEY—The banks are 700 feet above the river?

Dr. DAWSON—Yes. The banks sloping up to the general level of the plateau or plain.

Hon. Mr. PERLEY.—How deep is it to go down?

Dr. DAWSON.—About the depth mentioned and the same height to rise out of the valley on the opposite side, following tributary valleys or gullies with comparatively gentle slopes.

Hon. Mr. PERLEY.—But there are abrupt banks?

Dr. DAWSON.—Yes, in some places.—The river itself at this place is about 1,300 feet wide.

Hon. Mr. PERLEY.—Deep enough?

Dr. DAWSON.—Deep enough for stern wheel steamers, fairly rapid and full of gravel bars, very much like the Saskatchewan at Edmonton, but a larger river.

I may now state the through distances beginning at Edmonton again.—Edmonton to old Fort Assiniboine on the Athabasca River, 75 miles; thence to the west end of Lesser Slave Lake, 135 miles; Lesser Slave Lake to Peace River at the mouth of the Smoky—that is Peace River Landing—65 miles, total 275 miles.

The CHAIRMAN.—To Peace River Landing?

Dr. DAWSON.—Then from Peace River Landing there is a good trail north of the Peace River which is already partly practicable for carts or waggons running to Dunvegan and from Dunvegan to St. John, the whole distance to St. John being 145 miles.

Hon. Mr. MACDONALD (B.C.)—Is that at the crow flies or following the ups and downs?

Dr. DAWSON.—It is pretty nearly as the crow flies. The trail is laid out on no regular principle—it follows the country where it is open and easy.

Hon. Mr. MACDONALD (B.C.)—These mileages are by following the sinuosities of the trail?

Dr. DAWSON.—No, I am giving them nearly in direct distance; you would have to allow at least ten per cent for curveture.

The CHAIRMAN.—These are made by the natives?

Dr. DAWSON.—Yes, or by the Hudson's Bay Company. It is about 145 miles in direct distance from Peace River Landing to Fort St. John.

The CHAIRMAN.—That makes it 420 miles from Edmonton to St. John?

Dr. DAWSON.—Yes—Now as to the nature of the country between Peace River Landing and Fort St. John. From the Landing to Fort Dunvegan, the trail for the most part runs through a prairie country—a plateau elevated on the average about 2,000 feet above the sea, with very rich soil and groves of poplar; a very attractive country. The only drawback that may exist, here as elsewhere on the general plateau of the Peace River district, is the liability to summer frost; but I do not think this is greater than it is in the vicinity of Fort Saskatchewan and in other places thereabouts, although more extended meteorological observations are needed to determine this accurately. At any rate, in the valley at Dunvegan, wheat, barley, oats and potatoes are successfully grown.

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Hon. Mr. McCALLUM.—They are not affected more by frost there than in other parts of the country ?

Dr. DAWSON.—No; comparing this, for example, with the Edmonton district.

Hon. Mr. MACDONALD (B.C.)—Of course, drainage would obviate that ?

Dr. DAWSON.—Yes, to a great extent. At Dunvegan, the river is again flowing in a very deep valley, so that any road or railway would naturally keep back on the north side of the river, to head off the large lateral valleys. From Dunvegan to Fort St. John the trail is one which I have never myself travelled, but Mr. Cambie, who examined that route in connection with the old Canadian Pacific Railway survey, reports that the trail keeps about 15 miles from the river for the reason I have mentioned and the distance is about 120 miles. The country is undulating, varying from 1,900 to 2,400 feet above the sea, with a range of hills to the north estimated at 1,500 feet above the general level. About 25 percent of the tract passed through is wooded land and the rest is open prairie with good soil.

Hon. Sir JOHN CARLING.—Is it heavily wooded land ?

Dr. DAWSON.—I cannot speak from personal knowledge of this tract; speaking generally of the Peace River country, most of the forest has originally consisted of large white spruce from 18 inches to two feet six inches through. That has been burnt, over large tracts, and it is followed by a second growth of poplar and birch of a rather more open character, and a great deal of the area is now covered by a second growth of the kind interspersed with prairie. There are some notable tracts of prairie—the whole country in fact is a very pleasing and attractive.

Hon. Mr. MACDONALD (B.C.)—Would you call that east or west of the Rocky Mountains—the Peace River country you are describing now ?

Dr. DAWSON.—I am speaking at present altogether of what is east of the Rocky Mountains. The Peace River country, between the foot hills of the Rocky Mountains on the west, bounded by the 57th degree of latitude on the north and (by a line) following the Peace River itself southward from the 57th parallel to the west end of Lesser Slave Lake, then running south to the Athabasca River, and back along that river to the foot hills again. Within these limits is a tract with an area of about 31,000 square miles, of which, as far as we are able to form an estimate, about 23,000 square miles is good land for eventual occupation for agriculture. One of the most notable tracts of good open land is what is called Grand Prairie south of Dunvegan.

The CHAIRMAN.—Was not that Grand Prairie a portion of land that was transferred from British Columbia? Did not they make some transfer of that part east of the mountains ?

Dr. DAWSON.—No, Grand Prairie lies to the east of the 120th meridian, which is here the eastern boundary of British Columbia.

Hon. Mr. MACDONALD (B.C.)—Are the mountains high in that of the Peace River country you are describing now ?

Dr. DAWSON.—No, they are a long way further west than the part I am speaking of. There is a belt of foot hills between 20 and 30 miles wide between. I am only speaking of the country to the east of the foot hills.

Hon. Mr. MACDONALD (B.C.)—What height are the foot hills ?

Dr. DAWSON.—They rise from low ridges to hills several hundred or even several thousand feet in height.

Hon. Mr. MACDONALD (B.C.)—And all timbered ?

Dr. DAWSON.—Yes, all timbered except where the timber has been burnt off. I was speaking of Grand Prairie. That is probably the largest open area in the Peace River country. It was the home of the Peace River buffalo at the time they existed there before they were killed off—the most northern band of the prairie buffalo. The prairie is about 40 miles long and 20 miles wide in the wide part, with an area of about 230,000 acres of rolling surface and a very fertile soil. Of course in speaking of the fertility of that country one must not forget to remark that the fact of its remoteness is against its being immediately utilized, because no matter what crops are grown there it would cost too much to bring them to market, after satisfying any local demand.

Hon. Mr. McCALLUM.—You could not sell them in the market ?

Dr. DAWSON.—If there were a railway there it would still be so far from Winnipeg, for instance, that the freight would probably be more than the value of the crop before it reached Winnipeg.

The CHAIRMAN.—Unless the Hudson Bay road was developed?

Dr. DAWSON.—So that unless a large local demand could be established, under present circumstances grain would not really possess any material value.

Hon. Mr. PERLEY.—How far are they from Edmonton?

Dr. DAWSON.—About 300 miles.

Dr. DAWSON.—Returning now to the route traced to Fort St. John, or to the mouth of the Pine River, which is near St. John, and would probably be the natural route of a road going on in a north-westward direction, it is a distance of at least 250 miles from there to the Liard River, near the mouth of its tributary from the south, the Nelson River.

Hon. Mr. MACDONALD (B.C.).—You have crossed the mountains by that time?

Dr. DAWSON.—No, the route is still to the east of the mountains. From this same point, say the mouth of the Pine River, it is 225 miles to Fort Nelson, on the Nelson River. It is likely that a road or railway line would follow that Pine River valley, because the valleys in all this country between the Peace and Liard are cut very deep. I have not travelled through that stretch of country but the information I am giving you is that derived from Mr. Ogilvie's report to the Department of the Interior in 1892. He crossed from the Liard to the Peace, and he describes the valleys as being from several hundred to 1,000 feet or more in depth. It would therefore in all probability be necessary to follow the Pine River valley, gradually rising to the level of the plateau and keeping on it until Fort Nelson is reached, to avoid those deep intersecting valleys. As far as can be ascertained the plateau itself is fairly level and presents no unusual difficulties to railways or roads. It is almost all wooded. At the present time, unless it has been very recently made, there is really no travelled route across this region. The Indians portage across from rivers flowing to the Peace to rivers flowing to the Liard, but it is a long portage and they do not carry much weight across. From Fort Nelson down to the mouth of Nelson River on the Liard it is nearly 100 miles following the flexures of the river, and this part of the Nelson is reported to be navigable for stern wheel steamers.

The CHAIRMAN.—The Nelson, you mean?

Dr. DAWSON.—Yes. And the Liard also is undoubtedly navigable in the same way, down to Fort Simpson, where it joins the Mackenzie; a fact of great importance in connection with the opening up of the route which I am now describing.

Hon. Sir JOHN CARLING.—You would cross the Liard going to Fort Selkirk?

Dr. DAWSON.—Yes, that is in travelling by land. The timber between the Peace and Liard is said to be mostly spruce. Ogilvie reports, in the valleys, good large spruce timber and large cottonwoods, but on the higher lands a good deal of scrubby timber, as one would suppose.

Hon. Mr. McCALLUM.—Jack pine, I suppose?

Dr. DAWSON.—Probably. The mouth of the Nelson River, as near as we can tell, although this has not been accurately determined, is about 1,000 feet only above the sea. The land is continually lowering to the northward. The Liard River itself, where it crosses the mountains to the west of the mouth of the Nelson, is an extremely dangerous, rough stream. It falls about 1,650 feet from the mouth of the Dease River, west of the mountains, to Fort Simpson on the Mackenzie, and a large part of that fall occurs in its passage through the mountains. It is extremely rapid and is full of bad cañons and whirlpools.

Hon. Mr. PERLEY.—How wide is it?

Dr. DAWSON.—It varies much. In places it is restricted in very narrow cañons and in other parts it widens out to half a mile or more.

Hon. Mr. MACDONALD (B.C.).—A rough country to build through, I suppose?

Dr. DAWSON.—I do not think so, because the banks of these cañons are generally not high, and the valley is fairly wide. Mr. McConnell descended this river and surveyed, it and, judging from his map and report, I think a road or railway could

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be taken through the mountains by keeping along the slopes of the main valley and away from the actual cañons. The navigability of the river is not a good criterion for the availability of the valley for building a road or railway, but it would be necessary in most places to keep away from the banks of the river itself.

The CHAIRMAN.—Keeping on the high plateau?

Dr. DAWSON.—Keeping above the edge of the cañons and along the trough of the valley on the lower slopes of the mountains, the valley being generally wide. In this part of the valley you cross the Rocky Mountains, proper, at a very low elevation. On reaching the mouth of the Dease River to the west of the mountains, you are at an elevation of about 2,500 feet only above the level of the sea. Thence the route would follow a line along the upper valley of the Liard and the Francis River to Francis Lake, crossing thence to the headwaters of the Pelly and following the Pelly down to Fort Selkirk, which I have spoken of as a common point for the several routes.

Hon. Sir JOHN CARLING.—Fort Selkirk is to be the headquarters of the Yukon District?

Dr. DAWSON.—It is so stated.

Hon. Mr. MACDONALD (B.C.).—How far is Fort Selkirk from Dawson City?

Dr. DAWSON.—About 175 miles by the river.

Hon. Mr. MACDONALD (B.C.).—That would be twelve or thirteen hundred miles that Dawson City would be from Edmonton?

Dr. DAWSON.—Yes, fully that.

Hon. Mr. PERLEY.—On the whole there would be no difficulty in building a wagon road or pack trail from Edmonton to Selkirk?

Dr. DAWSON.—No; and I may say with particular reference to the country to the north of the mouth of the Dease, on this route, that I do not think there is any difficulty in building a wagon road or pack trail or railway by the Liard and Frances rivers—and across from Frances Lake to the Pelly—no great difficulty. The height of land there in the pass, if it can be called a pass, is quite easy; it is a wide uniform valley and the elevation is low; the watershed is only 3,150 feet above the level of the sea.

THE CHAIRMAN.—That would not be that to go over the Pass?

Dr. DAWSON.—No; it is quite low, the difference in height between Frances Lake and the summit is about 570 feet and between the summit and the Pelly about 180 feet. Then continuing down the Pelly valley, there would be no great difficulty in making either a trail or wagon road or railway chiefly along the north bank of that river down to the Selkirk.

The CHAIRMAN.—That would be down in the Pelly?

Dr. DAWSON.—Yes; keeping not far from the river in most places. The valley is wide, with easy slopes. There are some places where it would be necessary to take to the hill-side and cut the road out, but these are few and short.

Hon. Mr. MACDONALD (B.C.).—Is that part of the Pelly River rapid?

Dr. DAWSON.—It is fairly rapid, but it is navigable, I believe, for light stern wheel steamers as far as Hoole Cañon, and is easily navigable up to the Macmillan River, which is 50 miles above Fort Selkirk. Perhaps I may now be allowed to read the distances out again so as to make the note continuous as far as possible. Peace River Landing to Fort St. John, about 145 miles; Fort St. John to the mouth of the Nelson River, about 310 miles; Nelson River to the lower end of the Grand Cañon of Liard River, 40 miles; route across the Liard River and following north bank through the Grand Cañon, 20 miles—that is the difficult part where the river crosses the mountains, it is the only rough part there is. Grand Cañon to the mouth of Dease River, 135 miles—most of that distance is fairly easy for construction; from the mouth of Dease River northward along the east side of the Liard and Frances Rivers to latitude 60°, 30', 50 miles, chiefly easy; thence northward to lower end of Frances Lake, 53 miles—chiefly easy; thence along Frances Lake, west side, to Finlayson River, 27 miles—rather difficult. It is hilly, with slopes running down to the Lake. Then along the Finlayson River and Lake to the Pelly, 50 miles—mostly easy; crossing Pelly River and following the north bank to Hoole Cañon, 35 miles—easy.

Hoole Cañon is the highest point to which the Pelly River might be navigated by steamers of light draft, and good power at favorable stages of the water; it is about 270 miles above Selkirk following the bends of the river, following the north bank of the Pelly, with a trail or road, it would be about 200 miles to Selkirk from Hoole Cañon, and that distance is fairly easy for construction all the way.

Hon. Sir JOHN CARLING.—Hoole Cañon is the head of navigation on the Pelly River?

Dr. DAWSON.—Yes.

The CHAIRMAN.—Making a total of 1,100 miles, I think?

Dr. DAWSON.—Yes, about that, to Hoole Cañon I make it 1,090 miles from Edmonton, to Selkirk 1,340 miles from Edmonton.

Hon. Sir JOHN CARLING.—Do I understand you that the Pelly River from Hoole Cañon is navigable for 200 miles without any break?

Dr. DAWSON.—Yes, 200 miles in straight distance. I am of opinion that it can be navigated by properly constructed stern wheel steamers with good power and not too large; but it is not a river like the Lewes; it is not so large as the Lewes, and at low water it would be difficult I think to find three feet of water over all the bars going up there.

The CHAIRMAN.—What about snow in these valleys for railroad purposes, have you any idea?

Dr. DAWSON.—There is no evidence of any heavy snow-fall along the route I am now describing. In fact we know that for the greater part of the distance at least from Edmonton to Selkirk, the snow-fall is light.

Hon. Mr. McCALLUM.—What length of time in the year, would you have navigation on that river?

Dr. DAWSON.—The Pelly is not likely to freeze earlier than the other rivers; I suppose it is open from about the 15th of May to the 15th of October or 1st of November; but the lowness of water in the autumn may be found to shorten the navigable season somewhat. We are without experience on this point.

Hon. Mr. McCALLUM.—But as far as the frost is concerned you can navigate that length of time?

Dr. DAWSON.—That is my opinion.

Hon. Sir JOHN CARLING.—You think, Doctor, there would be no difficulty in constructing a waggon road through that distance?

Dr. DAWSON.—That is my belief.

Hon. Sir JOHN CARLING.—Nor railroad?

Dr. DAWSON.—No; none at all, except in regard to the distance; the total distance to be covered in either case, is very great. The route is an easy one on the whole and a pack trail or wagon road could be made at small cost, considering the distance, apart from the bridging of the numerous rivers.

Hon. Sir JOHN CARLING.—You can have scows?

Dr. DAWSON.—Yes, or swim your horses across, and raft your stuff over.

Hon. Mr. McCALLUM.—You could not get timber suitable, could you; the timber up there would sink?

Dr. DAWSON.—You could get plenty of burnt timber that would be suitable for making rafts, in most places, according to my experience.

Hon. Mr. PERLEY.—Then, as has been suggested, you could get scows to use in crossing?

Dr. DAWSON.—Certainly, if the route should be employed at all extensively.

The CHAIRMAN.—As far as distances are concerned that probably is the most direct route and will be actually the shortest distance to Fort Selkirk?

Dr. DAWSON.—Yes, undoubtedly the most direct route to Fort Selkirk; from the east, which connects with any actual railway line.

The CHAIRMAN.—And you have a less mountainous country?

Dr. DAWSON.—Yes, but that may or may not be an advantage, because the mountainous country would perhaps be more productive than the foothill and prairie country which the route I have been speaking of would traverse.

Hon. Mr. PERLEY.—Why?

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Dr. Dawson.—With the exception of the agricultural resources, from Edmonton to the point at which you cross the Rocky Mountains on the Liard River, and the gold which occurs in a finely disseminated form in the larger rivers in that stretch of country, there are no mineral resources to be looked for except coal. There is coal through that country, it can be found in many places, but that part of the line from Edmonton until it crosses the mountains by the Liard valley (or you may almost say to the mouth of the Dease River) cannot be expected to become a mining country to any great degree except in regard to coal. Thus, in respect to the immediate prospects of development dependent on discoveries of rich metaliferous deposits, it is a question whether a road running for the most part west of the main range of the Rocky Mountains would not pay for itself better and even produce better results in regard to the Edmonton district.

Hon. Mr. McCallum.—Did you discover any indication of petroleum in the banks of any of those rivers?

Dr. Dawson.—Yes; Mr. McConnell has carefully examined the region along the lower Athabasca and has described fully the large outflows of mineral pitch which occur there. The Geological Survey has been boring for two or three years, in the endeavour to tap petroleum-bearing strata from which this tar is believed to be derived. We have not yet succeeded in this, although we have tapped a tremendous flow of natural gas at the mouth of the Pelican River last year which brought the boring operations to a close at that place for the time being, because nothing could be kept in the bore-hole.

Hon. Mr. Perley.—Have you discovered any indication of coal on that route?

Dr. Dawson.—Yes, there is plenty of coal. There is coal at Edmonton—lignite coal; and there is coal at several places on the Athabasca, as well as on the Pembina River, where it is crossed by the old Canadian Pacific Railway exploratory line. There is coal also on the Smoky and on the Peace River. I do not know that any coal of value has yet been found on the Nelson or Liard Rivers, but the same formation runs through that country, and no doubt it can be found.

Hon. Mr. Perley.—Is there nothing north of that?

Dr. Dawson.—Yes, coal and lignite-coal are known at intervals along the Mackenzie valley nearly to the Arctic Ocean.

Hon. Mr. Macdonald (B.C.).—Mr. Ogilvie mentioned about a discovery of coal to the extent of ten miles along some river near the Yukon and Dawson City.

Dr. Dawson.—That reference is probably to the coal which occurs near Forty-mile Creek, on the Yukon. Coal or lignite-coal is known already in several places in the Yukon district.

Hon. Mr. Macdonald (B.C.).—He spoke of ten miles being discovered there.

Dr. Dawson.—I cannot speak from personal knowledge of the exact area of the place in question.

The Chairman.—There are two other routes; there is one through the Pine River Pass to Fort Simpson, and there is another short elevated pass. Would you give us an idea of those?

Dr. Dawson.—Yes, sir. I may refer next, briefly, to the route by the Yellow Head Pass. There is a certain advantage in that route, as I have just indicated. It leads most directly from Edmonton into what will undoubtedly become a rich mineral country. From Edmonton it is about 240 miles only to the summit of the pass in a westward direction, and having crossed the summit at an elevation of about 3,700 feet, the route would follow a remarkably straight valley which, though it lies in a mountainous country, might prove equally suitable, or perhaps more suitable, for a railway line than that to the east of the Rocky Mountains proper. A road or railway constructed along this route would lead to the development of mineral wealth in all the contiguous region west of the range, along its course. Thus although the country to be crossed east of the mountains may be rich in agricultural possibilities, and in coal, these resources are not immediately marketable, while the alternative route via the Yellow Head Pass and west of the mountains the prospector would be enabled to get into a mineral country and he would follow up, and open up that country.

The CHAIRMAN.—Then you would come out at the Dease River valley ?

Dr. DAWSON.—Yes. This route which I have called No. 2, joins the first at the mouth of the Dease River.

Hon. Sir JOHN CARLING.—What would be the difference in the distance ?

Dr. DAWSON.—Measuring the respective distances as I have done, without taking into account minor curvatures, the difference is about 90 miles against the Yellow Head route.

The CHAIRMAN.—To Fort Selkirk ?

Dr. DAWSON.—To Fort Seikirk or to the point where they meet at the mouth of the Dease River.

The CHAIRMAN.—Both routes meet at the mouth of the Dease ?

Dr. DAWSON.—Yes, they come together there.

Hon. Mr. PERLEY.—This route number one, east of the mountains, would be a better route for a pack trail, for cattle, and number two would be the better railway route ?

Dr. DAWSON.—Yes. On route number one, there are more facilities for grazing, agricultural lands and opportunities for cutting hay.

The CHAIRMAN.—In order to be available to get foot into that country number one route would be a better route than the other ?

Dr. DAWSON.—Yes, only I doubt somewhat the feasibility of carrying supplies for so great a distance, from a commercial standpoint.

Hon. Mr. PERLEY.—It would take three months ?

Dr. DAWSON.—You cannot drive cattle more than about ten miles a day if you want to keep them fat and in good condition and it is a long summer's journey. It would be necessary, unless bridges were built, to swim the animals over twenty or thirty rivers. The greater part of a day would be occupied in each case.

The CHAIRMAN.—The proper way would be to keep your cattle at the Peace River and go on the following season ?

Dr. DAWSON.—Yes.

Mr. McCALLUM.—Keep them in good order all winter ?

Dr. DAWSON.—Yes, cut hay for them. Continuing by the second route from the Yellow Head Pass along the valley of the Upper Fraser which this route would follow to the Giscome Portage, is about 205 miles measured in a straight line, and without taking the sinuosities of the river. The valley is wide, from two to four miles wide in many places and direct in its main course.

Hon. Mr. PERLEY.—And timbered ?

Dr. DAWSON.—Yes, mostly timbered, and a great part of the length of the river is navigable water. A stretch of navigable water of this kind helps much in opening out any such route. From about 50 miles west of the summit of the Yellow Head Pass, at the mouth of the Cranberry River, to the Grand Rapids there is 185 miles of river following the sinuosities, which is easily navigable for stern wheel steamers.

The CHAIRMAN.—That is on the Fraser ?

Dr. DAWSON.—That is on the Upper Fraser. Then from the north bend of the Fraser across to the Giscome Portage and on to the junction of the Parsnip and the Finlay Rivers—these two rivers joining practically form the Peace River—is 150 miles, and that is through an easy country, a country low in its relief, but still in the mineral bearing belt, but there is little agricultural land.

The CHAIRMAN.—And of value for a railway ?

Dr. DAWSON.—Yes, it is generally speaking a flat country on this part of the route, without deeply cut valleys. The Fraser Valley to Giscome Portage is deep lying between two mountain ridges.

Hon. Sir JOHN CARLING.—Is there much timber on that route ?

Dr. DAWSON.—An abundance of it.

Hon. Sir JOHN CARLING.—Good heavy timber ?

Dr. DAWSON.—Fair timber, chiefly spruce. Then from the point I have just spoken of, the junction of the Parsnip and the Finlay to the mouth of the Dease River, which is our common point there with route No. 1, is a distance of about 370

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miles. Very little is known of that part of the route. For of more than half that distance we have no trustworthy survey, but there is no reason to anticipate any difficulty in getting through, because it follows the general trend of the mountain ranges. We know the Indians go through there habitually, and I do not feel the slightest doubt that there is an easy way to be found for that part of this proposed route.

The CHAIRMAN.—Would you get into the valley of the Stikine or the valley of the Black River?

Dr. DAWSON.—You would strike the valley of the Black River and after crossing it traverse the intervening country to the mouth of the Dease. There is a wide stretch of low and nearly level land there as far as the eye can reach, although, that does not of course cover the whole distance referred to.

The CHAIRMAN.—You would not strike over to Dease Lake?

Dr. DAWSON.—No, you get into the hilly country there and it would be off the direct route. With regard to the route from Edmonton, west, through the Yellow Head Pass, and its continuation down the Fraser as far as Giscome Portage, I may add that we have accurate instrumental surveys made by the government during the explorations for the C. P. R. Mr. Marcus Smith and Mr. H. Macleod are conversant with these and could, undoubtedly, if you require it, give you all the distances and other data in detail. I am only endeavouring to present a general idea of the route.

The CHAIRMAN.—From Yellow Head to where?

Dr. DAWSON.—To the Giscome Portage at the north bend of the Fraser.

Hon. Mr. PERLEY.—Where does the Fraser run?

Dr. DAWSON.—It runs south from the vicinity of Giscome Portage.

Hon. Mr. PERLEY.—What is the red line numbered 3.

Dr. DAWSON.—That line follows another natural route up through the western part of British Columbia. It might begin at Ashcroft or Kamloops or some other suitable point on the railway, leading to Queenselle at the mouth of the river of the same name, which may be taken as a point common to routes coming up from the south. Thence the western route would cross the Blackwater River, going in a north-westerly direction, on to Fort Fraser. The country is somewhat hilly but not difficult. I believe a railway line could be built through there without any difficulty. Crossing the river at Fort Fraser you get into the Bulkley and Watsonkwa valley, which constitute a main depression running parallel to the mountain ranges. There is comparatively little agricultural land, but much good grazing land. This main valley leads to the Forks of the Skeena River, commonly known as Hazelton. This place is only about 150 miles from the coast and can be reached by steamers from the coast. Thence, following known valleys which are not difficult, the route crosses to the Nass River. From the Nass to Telegraph Creek, on the Stikine, very little known, but there is no reason to suppose any particular difficulty in traversing this distance.

Hon. Mr. PERLEY.—Where is Teslin Lake?

Dr. DAWSON.—It is on the route I am following now, about 145 miles north of Telegraph Creek. The old Telegraph Trail followed the route I am now describing as far north as Telegraph Creek, and although the surveys made in connection with it were little better than sketches, they show continuous valleys leading to Telegraph Creek.

Hon. Mr. MACDONALD (B.C.).—The only thing against it is the distance?

Dr. DAWSON.—Yes. I think it is about the same from Ashcroft to Selkirk, or to Dawson, as from Edmonton.

Hon. Mr. MACDONALD (B.C.).—About 1,400 miles?

Dr. DAWSON.—Yes about 1,340 to Dawson.

The CHAIRMAN.—In taking that route to the Yellow Head Pass you could reach Hazelton without any difficulty?

Dr. DAWSON.—Yes, you could run right across on the line of the projected British Pacific Railway to any terminal on the coast.

The CHAIRMAN.—To Port Simpson?

Dr. DAWSON.—Yes, and then you might have a northern branch.

The CHAIRMAN.—I think I heard Mr. Jennings say that if he was going to survey the route between Telegraph Creek and Teslin Lake again, he thought very probably he could find a better route by keeping to the east of the Dease River.

Dr. DAWSON.—I think he referred to the Tooya River as a probable route.

Hon. Mr. MACDONALD (B.C.).—There is a line being built this year up in that direction, the Cassiar Central Railway.

Dr. DAWSON.—We had reached Telegraph Creek on the third projected route. Then from Telegraph Creek to Teslin Lake is about 145 miles. That is the route which has been so much discussed.

The CHAIRMAN.—You have two passes to cross, have you not, between Telegraph Creek and Teslin Lake?

Dr. DAWSON.—Although I have been at Telegraph Creek, I know of the route between that place and Teslin Lake only from Mr. Jennings's report, so that I think it would be more satisfactory to refer to that report, than to depend upon anything I might say from memory. But the 145 miles just spoken of would eventually become a part of the general route I have been describing. It would fall in eventually as a part of the whole.

Hon. Mr. MACDONALD (B.C.).—The Kitamat is supposed to be very good—very fine grazing country almost to Telegraph Creek?

Dr. DAWSON.—Mr. Gauvreau examined that route I believe and made a report for the British Columbia Government some years ago. He went through from the head of Kitamat Arm to the Skeena, and I think through by the Quatsalix to the Nass. There is a valley there and a route. I have forgotten the year, but it is printed in one of the reports of the Department of Public Works of British Columbia.

The CHAIRMAN.—Could you tell us where the mines are located in the neighbourhood of the routes you have spoken of? There are some mines in the Omenica district, are there not?

Dr. DAWSON.—The famous old Cariboo mining district lies to the south of the north bend of the Fraser. Then, north of that, about 260 miles, is the Omenica country, almost due west of the confluence of the Parsnip and the Finlay.

Hon. Mr. MACDONALD (B.C.).—Then the Cassiar?

Dr. DAWSON.—The Cassiar gold country lies about 280 miles still further north, including Dease Lake and the upper part of the Dease. Then about 490 miles still further north is the new Klondike mining district.

The CHAIRMAN.—So that the Dease River is an objective point for mining?

Dr. DAWSON.—Yes, sir, McDames Creek and other smaller gold bearing streams run into the Dease. Some of these were extensively worked and are still worked to some extent. The Cassiar country has not been half prospected owing to high prices of supplies ruling in the district. Provisions were dear and after the first years the miners became indebted to the traders and were pretty badly handicapped. In marking out the main districts above referred to, without noting many less important ones where gold has been worked—it has been worked on the Skeena River and the Stikine, for instance—the general fact I spoke of before is brought out, the general trend of the main gold-bearing belt in British Columbia. Either of the two western routes described, approximating to that belt, would tend to its development—apart from other considerations—more than a route running for a great part of its length east of its mountains. There is no reason why there should not be additional important gold-bearing districts discovered between those I have noted specially. That part of the country is practically unexplored.

The CHAIRMAN.—There is another point which is perhaps a little foreign to your professional ideas, but that is the construction of a railroad and the consequent cheapening of all supplies for mining operations there would lead to a very large development of the mining industry which cannot be developed without the assistance of a railroad.

Dr. DAWSON.—Undoubtedly; because in any mining district the really rich deposits are always comparatively limited in area, or in length along the valleys, while deposits of lower grade are usually more extensive. Such deposits generally

Routes to the Yukon.

surround the richer ones, in the form of gravel benches or beds, both in the valleys and on the slopes of the hills. Most of these could not be touched until cheap prices for supplies and transport has been provided, The want of such facilities has kept Cariboo back greatly.

The CHAIRMAN.—And cheap transport for machinery ?

Dr. DAWSON.—Yes; if the Canadian Pacific Railway had happened to take a route by Cariboo—I do not mean to say it would have been advisable to do so on general grounds; I do not suppose it would—but if it had taken one of the northern routes going through by Cariboo, I have no doubt Cariboo would now be just as flourishing a quartz mining district as West Kootenay is. As long as it remains 300 miles from a railway it is very difficult to induce mining development requiring extensive capital.

Hon. Mr. McCALLUM.—It costs too much ?

Dr. DAWSON.—Yes. You cannot get people to invest money in it such a district. Everything costs so much more than in less remote places.

The CHAIRMAN.—There is another point I would like to make perfectly clear and that is that a pack trail or a cheap wagon trail on the first route, you described by the Nelson or the Liard would materially help prospectors in getting them there, in the cheapest way on their own resources.

Hon. Sir JOHN CARLING.—It would not be a difficult thing to pass through there in winter time ?

Dr. DAWSON.—Not if hay were cut in advance and stacked at intervals. What made it impossible to go through last winter was chiefly the fact that there was nothing for the horses to eat.

Hon. Mr. McCALLUM.—You have to provide a year before ?

Dr. DAWSON.—Yes.

Hon. Mr. McCALLUM.—And you want places of accommodation ?

Dr. DAWSON.—Yes.

Hon. Mr. MACDONALD (B.C.)—You could not carry enough food ?

Dr. DAWSON.—No, in a few hundred miles either horses or dogs will eat up all they can draw.

Hon. Mr. MACDONALD (B.C.)—In summer you could drive cattle ?

Dr. DAWSON.—Yes.

The CHAIRMAN.—Have you finished your notes ?

Dr. DAWSON.—I think so, practically.

The CHAIRMAN.—You might make the distances of the three routes you have referred to as distinct as possible in the report.

Dr. DAWSON.—I have given no distances on this route from Ashcroft, but I can add these for comparison.

The CHAIRMAN.—You might add the distance from Calgary to Ashcroft, which is 450 miles.

Dr. DAWSON.—Yes, that is by rail.

The CHAIRMAN.—And describe the routes as one, two and three.

Dr. DAWSON.—Yes. I would like also to repeat what I have said before in case there is any misconception, that I have left out of consideration a number of other routes which have been suggested, not because they may not be valuable or useful routes.

Hon. Mr. McCALLUM.—Do you think we should deal with them ?

Dr. DAWSON.—I do not know. They would be chiefly the routes leading from the Pacific coast. There is the route by the Dalton trail from Chilkat Inlet. I do not know anything personally about that, but it has been spoken of. Then there is the route from Dyea Inlet by the Lewes River, and the route from the Taku Inlet to Teslin Lake, which has also been discussed. I doubt if it is an easy route, but on the map it is a short one. There is the Stikine River route, and a suggested route from Alice Arm, or from the Nass River, where there is a good harbour. There are also possible routes by the Skeena River and from Kitamat Arm—all these are routes, running in a comparatively short distance from the coast, are generally designed to strike some navigable water in the interior. I understood the

object of this inquiry to be rather to discover some means of connection with the existing Canadian Railway lines.

MEMORANDUM, added by request of the Chairman, on the distances from point to point along the three routes described, from different points on existing Canadian railways to Fort Selkirk, Yukon District.

Note.—The distances given are measured in straight stretches of about ten miles, without taking into consideration any of the smaller sinuosities of the several routes. The addition due to such sinuosities would probably be about the same on the average on the different routes, and so far as our information goes, the difficulty of constructing a road or railway along the three routes mentioned would be about the same, while each of the routes may be described as generally favourable.

ROUTE 1.—

From Edmonton, east of the Rocky mountains to Liard river and thence to Old Fort Selkirk.

	Miles.
Edmonton to Old Fort Assiniboine, Athabasca River.....	75
Old Fort Assiniboine to West end of Lesser Slave Lake.....	135
Lesser Slave Lake to Peace River at mouth of Smoky River, (Peace River Landing).....	65
Mouth of Smoky river to Fort St. John	145
<i>(Note.</i> —A saving of about 50 miles in distance might probably be made by going in a nearly direct line from Old Fort Assiniboine to Fort St. John.)	
Fort St. John to Liard River near mouth of Nelson River...	310
Liard River near mouth of Nelson River to mouth of Dease river	195
Mouth of Dease River to mouth of Finlayson River.....	130
Mouth of Finlayson River to Pelly Banks.....	50
Pelly Banks to Hoole Cañon.....	35
Hoole Cañon to Old Fort Selkirk.....	200
Total	1,340
Or, deducting 50 miles, as above.....	1,290

ROUTE 2.—

From Edmonton to Yellow Head Pass, thence by Upper Fraser River to Giscome Portage, thence by Finlay and Black Rivers to mouth of Dease River, joining route 1 there.

	Miles.
Edmonton to Yellow Head Pass.	240
Yellow Head Pass to Giscome Portage.....	205
Giscome Portage to mouth of Finlay	150
Mouth of Finlay to mouth of Dease (about)	370
Total	965
Add distance as by route 1, from mouth of Dease to old Fort Selkirk	415
Total	1,380

Routes to the Yukon.

ROUTE 3.—

From Ashcroft Station, Canadian Pacific Railway to old Fort Selkirk, Yukon District following the western line of valleys in British Columbia.

NOTE.—Other stations on the Canadian Pacific Railway. Such as Savona or Kamloops might be adopted as starting points without much difference in the through distance.

	Miles.
Ashcroft to Quesnel (distance by wagon-road 230 miles)....	185
Quesnel to Fort Fraser	115
Fort Fraser to Hazelton (Forks of Skeena).....	165
Hazelton to Telegraph Creek (Stikine)	255
Telegraph Creek to head of Teslin Lake.....	145
Head of Teslin Lake to mouth of Teslin River	165
Mouth of Teslin River to old Fort Selkirk	140
Total.....	1,170

The CHAIRMAN.—I wrote to the manager of the Hudson Bay Company at Prince Albert and received this reply which I will read to the committee.

OFFICE OF THE BOARD OF TRADE,
PRINCE ALBERT, SASK., 21st April, 1898.

Hon. C. A. BOULTON,
Chairman Senate Committee.

SIR,—In reply to your letter addressed to Mr. Galbraith, Hudson Bay Company officer, in charge here, I beg to inclose a short report based on reliable information received from disinterested parties who speak from a practical knowledge of the same.

I have the honour to be, sir,
Your obedient servant,

ALEX. McNABB,
Secretary Prince Albert Board of Trade.

REPORT FROM PRINCE ALBERT TO THE SENATE COMMITTEE ON ROUTES TO THE YUKON.

OFFICE OF THE BOARD OF TRADE,
PRINCE ALBERT, SASK., 21st April, 1898.

Starting from Prince Albert, the terminus of the Long Lake and Saskatchewan Railway and the proposed terminus of the Manitoba and North-western Railway, a passably good wagon road of 140 miles in a north-westerly direction brings you to Green Lake, the commencement of water navigation. But by the expenditure of some (\$2,000) two thousand dollars a good wagon road could be built to Green Lake in a direct line and reduce the distance to (92) ninety-two miles. Some thirty miles of this road is at present open and in good condition.

From Green Lake the entire distance to the mouth of the Liard River, or, if preferable, to the mouth of the McKenzie, is down stream, with the exception of a short stretch (some twenty-four miles) ascending Mettie River and two portages, one between Mettie Lake and Clearwater River, known as Portage la Losche (12½) twelve and one-third miles in length, and one at Fort Smith, on Slave River (14), fourteen miles in length. The cost of freighting supplies is guaranteed by the Board of Trade not to exceed \$1.50 per 100 pounds from Prince Albert to Green Lake, and fifty cents crossing Portage la Losche. The Hudson Bay Company charge seventy-

five cents per 100 pounds at Fort Smith. There are no rapids or dangerous navigation, nor are any difficulties encountered until reaching "Hell gate," on the Liard River, a considerable distance above the junction of the Nelson with that river, when very rough water is encountered. It is estimated that all the portaging put together between "Hell gate" and navigable waters of the Pelley amount to (80) sixty miles. This of course includes Campbell's portage, from the lakes to the Pelley. From this point on the Pelley the river can be descended with good water and no danger; any distance required.

Posts of the Hudson Bay Company are at intervals along this line of travel, as also missions of the Roman Catholic Church, in the following order:—Green Lake Post, Isle a la Crosse Post and mission of Roman Catholic Church; also a convent school—Buffalo Lake Post, (south end), Buffalo Lake Post (north end), Portage la Losche Post, Fort McMurray, Fort Chippeweyan, on Athabasca Lake, Fort Smith, on Slave River, Fort Resolution, mouth of Slave River, Hay River Post and Roman Catholic mission, Fort Providence Post and Roman Catholic mission, Fort Simpson, mouth of Liard, Fort Liard on that river. If one proceeds down the McKenzie River you pass Fort Norman, Fort Good Hope, and on the Peel River Fort McPherson, at most of which there are resident priests of the Roman Catholic Church who conduct schools as well as give religious instruction. It might not be out of place to explain the actual mode of travel and cost to each individual person. A "sturgeon head" boat, capacity 8,000 pounds, cost at Green Lake \$150 for a party of (5) five. This allows 1,600 pounds per man, if 140 pounds are allowed for each man's clothing, miner's tools and a proportionate share of camp equipage, it leaves 1,460 pounds weight of provisions, or (2) two pounds per day for (2) two years. This ration is not sufficient, but as only eighteen months are necessary to give two summers' work in the mines, and as fish, fowl and game are abundant along the line of travel, this with economy should suffice. As regards expense—say $\frac{1}{5}$ of \$150:—

Each individual's share of boat.....	\$	30	00
Freighting 1,600 pounds to Green Lake at \$1.50 per cwt.		24	00
do 1,600 do across Portage la Losche at 50c.		8	00
do 1,600 do do Fort Smith at 75c.....		12	00
		<hr/>	
Total expense.....	\$	74	00

If we make a similar calculation by pack animals as via the Edmonton route, we would have

10 horses carrying 150 pounds each.....	1,500	pounds.
1 horse do 100 do	100	do
1 extra horse to ride and have in emergency.		
	<hr/>	
<u>12</u>		<u>1,600</u> pounds.

It would be safe to say that these (12) twelve horses, with pack saddles, hobbles and halters would cost at least \$50 each or \$600 for twelve against \$74 by the Prince Albert water route. The time taken should also be taken into account, whereas pack animals will make but one spell each day and travel from eight to fifteen miles, the boat would travel on the main river with a current from three to five miles an hour, and during the long daylight of summer proceed for twenty hours or sixty miles per day. It will be borne in mind that the Edmonton pack trail joins the Prince Albert water route at the mouth of the Nelson, and boats can proceed with full cargo for a considerable distance beyond this point (up to "Hell gate.")

If the Manitoba and North-western Railway were completed to Prince Albert it might be continued to Fort McMurray a distance of (330) three hundred and thirty miles in a direct line, through a country already containing settlements and easy of construction, such a line could be built for less than \$8,000 per mile of

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standard equal the Canadian Pacific Railway or a total cost of say two and one-half millions of dollars. From Fort McMurray steamers carrying two hundred tons could descend the Athabasca River and Lake, and ascend the great Peace River for two hundred and twenty miles, opening out this magnificent country for settlement of which a conservative estimate gives sixty-five millions of acres of arable land. By the construction of a tramway at Fort Smith steamers of larger draft could navigate Slave River and Lake proceed down the McKenzie to the delta of that river or ascend the Liard for over two hundred miles.

From "Hell gate" on the Liard although many difficulties occur; the route is by no means impracticable. It having been utilized the entire way from Prince Albert for the last one hundred years by the Hudson Bay Company, in bringing in their supplies of merchandise and exporting their furs.

The distance from Prince Albert to Edmonton is 450 miles, but none of this distance is serviceable as a part of the route to the Klondike as the village of Edmonton is almost due west of Prince Albert, and the route from Prince Albert is northly. It will be remembered that the Edmonton water route joins the Prince Albert route at Fort McMurray and the overland route at the junction of the Nelson with the Liard supplies of all kinds for intending miners, boats, tents and every requisite can be procured at Prince Albert more cheaply than at any other point and pay freight charges. Enclosed is a pamphlet (marked exhibit A) containing letters from reliable parties, the original letters being in the possession of the Board of Trade of Prince Albert. This pamphlet descriptive of the route is guaranteed for accuracy by the undersigned. There is also enclosed herewith a copy of the Winnipeg Commercial (marked exhibit B) which also gives information of this route. The letter from His Grace Bishop Pascal, is considered by the undersigned as worthy of particular attention.

We have the honour to be, sir, your obedient servants,

F. C. BAKER,

Mayor of Prince Albert.

D. C. McLELLAN,

President, Board of Trade.

WM. GALBRAITH,

Hudson's Bay Company's Prince Albert Manager.

LETTER FROM HIS GRACE BISHOP PASCAL.

BISHOP'S PALACE, PRINCE ALBERT,

3rd December, 1897.

To Mr. F. C. BAKER,

For the Prince Albert Board of Trade.

DEAR SIR,—You have expressed a wish to know my opinion as to the best route to follow in order to reach the now celebrated gold mines on the Klondike. Here it is :

While waiting until the railway companies, with the assistance of government, open a direct line across the fertile valley of Saskatchewan, to reach Peel River (let us say for example via Portage la Prairie, Yorkton, Prince Albert, Shell River, Jackfish Lake, Victoria, Athabasca Landing, Little Slave Lake, Peace River, Liard River and Peel River), while awaiting this railway which is now impending, I do not hesitate to tell you that in my opinion—and I believe it to be the true one, the most comfortable, the most direct, and the most easy route is that which the hand of divine Providence has traced, and which has been followed for a century by the Hudson Bay Company's men, and for a half century by the missionaries who evangelize the Indians of the north-west in the immense districts of Athabasca and McKenzie.

Taking Regina for a starting point we may go to McMurray by two routes, one by Prince Albert, Green Lake, Portage la Losche, Clearwater River and McMurray; the other via Calgary, Edmonton, Athabasca Landing and McMurray. On leaving McMurray the traveller was borne down stream as far as Peel River, without effort, without danger, and without difficulty. Everywhere on his road he will meet with Hudson Bay Company's posts and missionaries willing to render service, and who inculcate charity; half-breeds and Indians ready to serve as guides and facilitate his voyage without being too exorbitant. Besides Lake Athabasca and the Great Slave Lake, which one can cross without danger there is the portage of Fort Smith, 140 miles below Lake Athabasca. This portage is eighteen miles in length, and can be made by wagons or carriages drawn by horses or oxen.

Starting from Regina you will ask me which is the best route to reach McMurray? Is it via Edmonton or via Prince Albert and Green Lake? I confess, dear sir, that I should prefer Prince Albert and Green Lake. These are my reasons: This route is direct everywhere, and is shorter by about 300 miles; it presents not the least danger, and is exceedingly cheap. It is by this road that the Hudson Bay Company has transmitted its goods for seventy-five years to provision its posts on the Athabasca and Mackenzie. The company would still continue to do so had not the development of its commerce compelled it to use the Calgary and Edmonton Railway and to construct a steamer on Athabasca River.

All those who have ascended or descended the River Athabasca have retained a souvenir of the difficulties and dangers to which they were exposed in descending the impetuous torrent. When the waters from the mountains swell the river, as happens two or three times each spring, the waves are enormous, and one blunder might cost you your life. It is better to avoid the rapids. The guides, who at such times hold the fate of the traveller in their hands, occasionally show themselves exorbitant and dishonest. In autumn, when the water is low, the bed of the rapids is strewn with rocks and shoals, necessitating, in such cases, the portaging of goods and occasioning much loss of time. Besides Grand Rapids, which resembles the key of the country to the north, the traveller has yet to pass nine more rapids, some of them several miles in length, in which there is great risk of loss of life and property. These reasons alone, to say nothing of economy and saving of time, decides my opinion in favour of the route via Regina, Prince Albert, Green Lake, Isle a la Crosse, Portage la Losche, Clearwater River and McMurray. As I have already said, this route presents no danger, is direct, very pleasant, and is like a pleasure trip. The essential point is to have a boat at Green Lake prepared beforehand so as to gain time.

Such, my dear sir, is my humble opinion based upon my numerous voyages by each of these routes during the twenty-four years I have resided in the North-west, sixteen of which were passed in the missions on the Athabasca and McKenzie.

Accept, dear sir, my best salutations.

ALBERT PASCAL, O.M.I.,
Vicar Apostolic de Saskatchewan.

Routes to the Yukon.

OTTAWA, May 3rd, 1898.

Committee met this day.

Honourable Mr. BOULTON, Chairman.

Mr. A. ST. CYR was called and examined by the Committee as follows:—

The CHAIRMAN.—The object of this Committee is to ascertain by inquiry the best mode of connecting the railway communication of Canada into the Yukon country, so as to ascertain how far it is advantageous for eastern trade over the coast route. What surveys have you made of that country?

Mr. ST. CYR.—I surveyed Teslin Lake and Teslin River.

The CHAIRMAN.—Last year?

Mr. ST. CYR.—Yes.

The CHAIRMAN.—Were you up there before?

Mr. ST. CYR.—No, sir.

The CHAIRMAN.—That is your first trip to that country?

Mr. ST. CYR.—Yes.

The CHAIRMAN.—Have you ever been in from Edmonton?

Mr. ST. CYR.—No.

The CHAIRMAN.—Did you survey from Telegraph Creek?

Mr. ST. CYR.—Yes, I made a track survey of the trail.

The CHAIRMAN.—For a wagon road, or for a railroad?

Mr. ST. CYR.—Well, the tract survey was just to give a description of the country.

Hon. Mr. MACDONALD (B.C.)—Where did you go into the country? What part did you start from?

Mr. ST. CYR.—Telegraph Creek.

The CHAIRMAN.—You went up the Stikine?

Mr. ST. CYR.—Yes, I went up the Stikine.

Hon. Mr. MACDONALD (B.C.)—What time of the year was that?

Mr. ST. CYR.—I went there in May—about the middle of May.

Hon. Mr. MACDONALD (B.C.)—The river was quite open then I suppose?

Mr. ST. CYR.—Yes and the water was pretty high.

The CHAIRMAN.—And you then started a track survey from Telegraph Creek to Teslin Lake?

Mr. ST. CYR.—Yes, sir.

The CHAIRMAN.—And what kind of country did you pass through? Just give a description.

Mr. ST. CYR.—Well, first of all I went along the Stikine and surveyed up to the Tahltan bridge. This part of the country is cut up a good deal by deep gulches.

The CHAIRMAN.—Tahltan bridge is above Telegraph Creek?

Mr. ST. CYR.—Yes, it is about eleven miles above.

The CHAIRMAN.—You went up that far, I suppose for the purpose of trying to get out of the Stikine River.

Mr. ST. CYR.—Yes, there was an old road there, and I wanted to see what the country was like. After you get to the Tahltan River the gorge, there is quite an obstacle to a road—any kind of road—the only road they have to-day is a pack trail. It would be pretty hard either to get a wagon road or railroad there. So I came back to Telegraph Creek, and I went to the Pass, up to the Tahltan again, and of course I had to cross the summit there. The summit is, I think, 3,500 feet above the sea level.

The CHAIRMAN.—That is from Telegraph Creek or from Tahltan?

Mr. ST. CYR.—From Telegraph Creek.

The CHAIRMAN.—About 3,500 feet above the sea level.

Mr. ST. CYR.—Well, I am not sure I think the report gives it. My report does give it.

The CHAIRMAN.—How is it about getting out from Telegraph Creek? Pretty deep valley?

Mr. ST. CYR.—Yes, it is a slope—it is a regular slope up to the Pass. It is a pretty steep grade. The average grade would be about six per cent.

The CHAIRMAN.—And it is several miles to get up there?

Mr. ST. CYR.—Yes, about nine miles.

The CHAIRMAN.—That is to get up to the summit?

Mr. ST. CYR.—Yes.

The CHAIRMAN.—And then after you cross the summit?

Mr. ST. CYR.—After we cross the summit it is pretty level up to near the Tahltan river. There is a bench there about 150 feet high to get down to the river, and of course when I strike the river on that trail I have gained about 1,200 feet.

The CHAIRMAN.—And then you proceed, and what is the character of the country?

Mr. ST. CYR.—Oh, it is good, it is level.

The CHAIRMAN.—After you get over the summit?

Mr. ST. CYR.—Yes.

The CHAIRMAN.—There is only one summit to cross?

Mr. ST. CYR.—There are only two summits but the other one is only about 200 feet and there is a bench road from the river, and then it is level up the valley of the north Fork of the Tahltan, and after that it is level up to Eggle's Post.

The CHAIRMAN.—That is on Teslin Lake?

Mr. ST. CYR.—No, this is on Cacketts River. It is one of the tributaries.

The CHAIRMAN.—And then from there?

Mr. ST. CYR.—Well, from that post there is a steep hill, very steep hill.

The CHAIRMAN.—Which you have to get over?

Mr. ST. CYR.—Yes, and then we get to the height of land. From that to the Maligne River the country is pretty fair.

The CHAIRMAN.—So that the grades are pretty heavy in some places?

Mr. ST. CYR.—Yes, very heavy in some places.

Hon. Mr. MACDONALD (B.C.)—Heavy grades from Telegraph Creek up to Teslin?

Mr. ST. CYR.—Heavy grades from Telegraph Creek to the summit and then again from Eggle's Post to the height of land—after passing Eggle's Post.

The CHAIRMAN.—The water then commences to run north and before that was running south into the Stikine?

Hon. Mr. MACDONALD (B.C.)—The water runs to the north before you get to Teslin Lake?

Mr. ST. CYR.—Yes, this water runs north and joins the Inklin River, and from the valley of the Inklin River there is still sixty-five miles to Teslin Lake.

The CHAIRMAN.—It is still sixty-five miles to Teslin Lake?

Mr. ST. CYR.—Yes, and it is not good. From the Maligne to the Big Lake it is a bad country, but I located a road on the east side of the valley that would do for a wagon road or a railroad.

Hon. Mr. McCALLUM.—On the east side of the valley?

Mr. ST. CYR.—Yes, on the east side of the valley.

Hon. Mr. MACDONALD (B.C.)—Is there a trail or sleigh road through there now at all?

Mr. ST. CYR.—I could not say.

Hon. Mr. MACDONALD (B.C.)—Just the rough country you were going through?

Mr. ST. CYR.—Yes, just a path. There was only a bridle path.

Hon. Mr. MACDONALD (B.C.)—There must have been a trail of some kind going to Cassiar in the old days?

Mr. ST. CYR.—Through that district?

Routes to the Yukon.

Hon. Mr. MACDONALD (B.C.)—Yes, they used to go a little east of Teslin Lake towards these lakes to the Cassiar. Is there a trail there, that they could go up by?

Mr. St. Cyr.—Yes, it is still travelled a good deal.

The CHAIRMAN.—Up to these lakes?

Mr. St. Cyr.—Yes.

The CHAIRMAN.—Then there is some talk about ten miles up the lake further?

Mr. St. Cyr.—Yes.

The CHAIRMAN.—What was that for?

Mr. St. Cyr.—Of course, it is part of the river. In low water this part may be called the mouth of White Swan River; that flows in the Big Lake in that place where Corbett's Post is.

The CHAIRMAN.—And the water is very low?

Mr. St. Cyr.—Shallow water—yes.

The CHAIRMAN.—So that you go up there in order to get deeper water?

Mr. St. Cyr.—Yes. There are a couple of places in the narrows where there is not more than three feet of water—that is at the time that I went through in September.

The CHAIRMAN.—And how far up the Hootalinqua did you go?

Mr. St. Cyr.—Oh, I went down the whole length of it.

The CHAIRMAN.—And is a railroad practicable in the valley of the Hootalinqua up to Fort Selkirk?

Mr. St. Cyr.—I could not say up to Fort Selkirk, because I did not go any further than the confluence of the Hootalinqua and the Lewes.

The CHAIRMAN.—Is a railroad practicable that far?

Mr. St. Cyr.—Well, it is bench country; it is all benches.

The CHAIRMAN.—What we call the spurs of the mountain come down there?

Mr. St. Cyr.—Yes. You know there are deep ravines, but still there is no rock work; it is all gravel.

The CHAIRMAN.—But then, of course, the crossing of these ravines would be expensive?

Mr. St. Cyr.—Well, yes; they are very high, that is, very deep.

The CHAIRMAN.—Then you started in on the Tooya. You backed and started in on the Tooya Valley; that is a little creek running up to that lake there. That leads you into the Dease River country?

Mr. St. Cyr.—Yes.

The CHAIRMAN.—How did you find that route as far as Tooya Lake?

Mr. St. Cyr.—I did not go the whole distance. I was called back in the fall, you know. Of course I had to follow the instructions that were given, but what I saw of it, it was high.

Hon. Sir JOHN CARLING.—What were the instructions? Was it with a view of exploring for a railway?

Mr. St. Cyr.—It was to keep high on the east side of Tooya Valley.

Hon. Sir JOHN CARLING.—You are an engineer, are you?

Mr. St. Cyr.—Surveyor.

Hon. Mr. MACDONALD (B.C.)—Did you go out for the Dominion Government?

Mr. St. Cyr.—Yes.

Hon. Sir JOHN CARLING.—It was not with a view of making a road or railroad, or anything of that kind?

Mr. St. Cyr.—No.

The CHAIRMAN.—Just a track survey to ascertain the lie of the country and the heights and so on.

Mr. St. Cyr.—Yes.

Hon. Mr. McCALLUM.—You speak of running a railroad along the river. Could you get a little distance from the river?

Mr. St. Cyr.—From the Hootalinqua.

Hon. Mr. McCALLUM.—Yes?

Mr. St. Cyr.—The mountains and hills are far away.

Hon. Mr. McCALLUM.—Because when you speak of gulley they will be deeper next the river ?

Mr. ST. CYR.—Yes.

Hon. Mr. McCALLUM.—But you could not get a way from the river at all, could you ?

Mr. ST. CYR.—The mountains are cut by deep valleys and there are several of them along this bank, and of course, if you are going to run far with the railway you would have to cross all those valleys.

The CHAIRMAN.—If it were going further than Teslin Lake you would have to cross all those valleys ?

Mr. ST. CYR.—Yes.

The CHAIRMAN.—And of course they are very wide at the mouth ?

Mr. ST. CYR.—Yes, but of course these benches are easily worked, being all the valleys.

The CHAIRMAN.—But you could not block up the gulleys ; you would have to trestle them ?

Mr. ST. CYR.—Yes.

The CHAIRMAN.—Take this Tooya route—was that an easier route than the one you followed ?

Mr. ST. CYR.—I did not explore the valley.

The CHAIRMAN.—You did not explore the valley sufficiently ?

Mr. ST. CYR.—No.

The CHAIRMAN.—The Tooya route leads into the Cassair mountain country. There are mines in the Dease River, are there not ?

Mr. ST. CYR.—Yes. Well, Dease Lake is east of that Tooya Lake quite a distance.

The CHAIRMAN.—Thirty or forty miles ?

Mr. ST. CYR.—Yes, and of course, when they go to Dease Lake they follow the right bank of the Stikine—they follow it on the Stikine.

The CHAIRMAN.—Until they get up pretty close to the Dease Lake ?

Mr. ST. CYR.—Yes.

The CHAIRMAN.—Now would it be practicable, supposing a railway was coming from the east ? Is there a practicable crossing there on the Stikine. Is it a very easy place or difficult place ?

Mr. ST. CYR.—That is opposite the Tooya ?

The CHAIRMAN.—Supposing we were to go in by the Yellow Head Pass or Pine River Pass, so as to join the railway there, what sort of crossing is it over the Stikine ?

Mr. ST. CYR.—The crossing is bad because it is all canons.

The CHAIRMAN.—A canon is where the walls parallel ?

Mr. ST. CYR.—Yes, and high mountains close too.

The CHAIRMAN.—So that coming in from the east there would be considerable difficulty in going across the Stikine ?

Mr. ST. CYR.—Right at the Tahltan bridge it would be pretty hard. There may be some other places further north.

Hon. Mr. MACDONALD (B.C.)—Is the water very rapid from Glenora to Telegraph Creek ?

Mr. ST. CYR.—Yes.

Hon. Mr. MACDONALD (B.C.)—A railway should commence at Glenora, not Telegraph Creek. Mr. Jennings, in his report on that part of the river, says it is very strong water, and a steamer might easily get wrecked there if she lost her steam or power ; she would be dashed against the rocks.

Mr. ST. CYR.—Yes, there is a bad rapid quite a distance above Glenora.

Hon. Mr. MACDONALD (B.C.)—But you must go through to get to Telegraph Creek.

Mr. ST. CYR.—Yes. In May there was no sign of rapid there.

Hon. Mr. MACDONALD (B.C.)—The water was high.

Mr. ST. CYR.—Yes.

Hon. Mr. MACDONALD (B.C.)—But it was a very strong current, was it ?

Routes to the Yukon.

Mr. ST. CYR.—Yes, pretty strong; but still it does not bother those steamers. They go up there.

Hon. Mr. MACDONALD (B.C.)—Did you examine any other route south of the Stikine River?

Mr. ST. CYR.—No.

Hon. Mr. MACDONALD (B.C.)—Not the Skeena River or Nasse, or any of those?

Mr. ST. CYR.—No. I spent the summer between the Stikine and Lewes River.

Hon. Sir JOHN CARLING.—What is the distance from Glenora to Telegraph Creek?

Mr. ST. CYR.—It is about twelve miles.

The CHAIRMAN.—All the surveying that you have done in that north-western country, as yet, is what you did last year?

Mr. ST. CYR.—Yes.

The CHAIRMAN.—And purely in connection with the track surveys from the Stikine to the Teslin Lake and north?

Mr. ST. CYR.—Yes, and that valley.

The CHAIRMAN.—That gives us an idea, so far as that particular point is concerned, in approaching it from the east what difficulties there would have to be encountered. When you say that a little further north there might be a crossing of the Stikine, you mean a little further north-east? Just south of Dease Lake there it might be easier?

Mr. ST. CYR.—Yes, it might be easier; I could not say.

Hon. Mr. MACDONALD (B.C.)—Did you go all the way to the Yukon country?

Mr. ST. CYR.—No, sir.

Hon. Mr. MACDONALD (B.C.)—You did not go all the way?

Mr. ST. CYR.—No.

Hon. Mr. MACDONALD (B.C.)—You laugh at that; it is a long way?

Mr. ST. CYR.—It is a long way.

The CHAIRMAN.—And all that country, the Tooya country and the Dease Lake country is all mountainous?

Mr. ST. CYR.—There are some valleys.

Hon. Mr. MACDONALD (B.C.)—I suppose if you had gone out to the Yukon country you would not have come back—you would dig for gold?

Mr. ST. CYR.—Perhaps I could not get out.

Hon. Mr. McCALLUM.—You went there in May?

Mr. ST. CYR.—Yes.

Hon. Mr. McCALLUM.—What time did you leave there?

Mr. ST. CYR.—I left the Lewes River some time in November.

Hon. Mr. McCALLUM.—Was the ice formed then?

Mr. ST. CYR.—No, there was no ice formed on the Hootalinqua.

Hon. Mr. McCALLUM.—That is in November.

Mr. ST. CYR.—Yes, I think so.

The CHAIRMAN.—That is, you left to come back then?

Mr. ST. CYR.—Yes.

The CHAIRMAN.—And there was no ice formed then?

Mr. ST. CYR.—No.

Hon. Mr. McCALLUM.—Was not the weather very cold then?

Mr. ST. CYR.—Yes.

Hon. Mr. McCALLUM.—Then the stream must have been rapid if it did not form ice?

Mr. ST. CYR.—This Hootalinqua is a pretty deep stream. Then, of course, all the water in the river comes from the big lake, and this keeps the water warm—Teslin Lake. It is not warm, but it is—

Hon. Mr. McCALLUM.—It is warmer than it would be in other places?

Mr. ST. CYR.—Yes.

The CHAIRMAN.—Did you see anything of miners or any mining going on?

Mr. ST. CYR.—Yes; there had been some mining on the Hootalinqua River a couple of years ago.

The CHAIRMAN.—And abandoned ?

Mr. St. Cyr.—Yes. I think they must have left when the excitement of the Klondike broke out.

Hon. Mr. McCallum.—When they struck it big somewhere else, they left there.

The CHAIRMAN.—Did you form any opinion as to the mining qualities of that country ?

Mr. St. Cyr.—We washed for gold there. It is all fine gold on the bars. We washed for gold on the Tahltan. There is gold there.

The CHAIRMAN.—You saw colours all over ?

Mr. St. Cyr.—Yes, and especially below the bridge, and along the river before you get to the forks we found colours. Before the forks we could not see anything.

The CHAIRMAN.—What do you call the forks ?

Mr. St. Cyr.—The forks of the Tahltan.

The CHAIRMAN.—And the Stikine ?

Mr. St. Cyr.—Yes.

The CHAIRMAN.—And above the forks ?

Mr. St. Cyr.—Below the forks.

The CHAIRMAN.—You found the gold below the forks ?

Mr. St. Cyr.—Yes.

The CHAIRMAN.—But none above ?

Mr. St. Cyr.—None above.

The CHAIRMAN.—And your report is in the departmental report of the Minister of the Interior ?

Mr. St. Cyr.—Yes.

Hon. Mr. McCallum.—You are going back there again, are you ?

Mr. St. Cyr.—Yes.

The CHAIRMAN.—To the same locality ?

Mr. St. Cyr.—No, sir. I am going on Teslin Lake, but I am going east of the Lake.

Hon. Mr. Macdonald (B.C.)—Were you with Mr. Coste this spring ?

Mr. St. Cyr.—No, sir.

Hon. Mr. Macdonald (B.C.)—You did not go out with him ?

Mr. St. Cyr.—No.

The CHAIRMAN.—Is Mr. Coste here still, or is he going back ?

Mr. St. Cyr.—I have not seen him.

The CHAIRMAN.—Are you going by the Stikine or what route ?

Mr. St. Cyr.—I am going by Dyea this time.

The CHAIRMAN.—And you go down to the Hootalinqua ?

Mr. St. Cyr.—Yes.

The CHAIRMAN.—You would come down by these lakes ?

Mr. St. Cyr.—No, in going by Dyea I have to go over the Chilcoot Pass.

The CHAIRMAN.—And go up the Hootalinqua ?

Mr. St. Cyr.—Yes, but if I go up the Hootalinqua I would have to retrace my steps. I will try to cross Lake Marsh at the Hootalinqua.

The CHAIRMAN.—That is the north part of Teslin Lake ?

Mr. St. Cyr.—Yes, and from there I will strike Nicutlin.

The CHAIRMAN.—That is east ?

Mr. St. Cyr.—Yes, about half way of the big lake.

The CHAIRMAN.—And you will go in there and try and find your way down east ?

Mr. St. Cyr.—I will have to go up to the head waters to the Cassiar part, and then try to cross over to the big Salmon.

Hon. Mr. Macdonald (B.C.)—That is where Major Walsh has been camped all winter ?

Mr. St. Cyr.—Yes, only it was between big Salmon and little Salmon, I think.

The CHAIRMAN.—And this is just for the purpose of a track survey ?

Mr. St. Cyr.—Well, it is to explore the country. This country is unknown. There are no maps of that country ?

Routes to the Yukon.

The CHAIRMAN.—The duties you have to perform is to lay down the topography of the country.

Mr. ST. CYR.—Yes. I am not sure of the figures I gave of the heights, but my notes will show.

The CHAIRMAN.—How do you ascertain that? Is it by barometrical survey?

Mr. ST. CYR.—Yes. I left my barometer at the river and left Mr. Heenan with it.

The CHAIRMAN.—That is your assistant.

Mr. ST. CYR.—No, a storekeeper there. And I took my instruments and went on to the summit.

Hon. Mr. MACDONALD (B.C.)—Was there much snow on the ground in May when you went in.

Mr. ST. CYR.—No, not much. In the Pass there was a little snow. There was snow where the sun did not strike, in shady places.

Hon. Mr. MACDONALD (B.C.)—Nothing to prevent travel of any kind?

Mr. ST. CYR.—No, not through that road.

Mr. HENRY A. McLEOD C. E. appeared before the Committee and was examined as follows:—

The CHAIRMAN.—We would like you, Mr. McLeod, to give us any information which you may possess in regard to this country. I understand your knowledge of the country dates to twenty years back.

Mr. McLEOD.—Of British Columbia, yes; 1879 was the first time I was out there.

The CHAIRMAN.—Have you been there since?

Mr. McLEOD.—Oh yes, I was out there almost continuously from 1879 to about 1891—that is in the lower part of British Columbia about the line of the Canadian Pacific Railway.

The CHAIRMAN.—Do you know anything about the route from Edmonton and on into that north western country?

Mr. McLEOD.—I know it about as far as Dunvegan on the Peace River; but not much farther north; I went some thirty miles further north but no further. And then I went through from the mouth of the Skeena and Fort Simpson to Dunvegan on the Peace River, and from Dunvegan to from Edmonton, then, from Edmonton in by Battleford and through to Winnipeg, all the way travelling with horses and carts and so forth.

The CHAIRMAN.—You took your horses and carts right across the Skeena?

Mr. McLEOD.—Oh, no; we had to go by canoes up to the ports of the Skeena, then portage over the trail to Lake Babine, down Babine lake about 100 miles by canoe, then across a portage into Stuart Lake, where we met a boat of the Hudson Bay Company that was sent to meet us, then we had horses and mules from Fort St. James on the Stuart Lake across the Fort Macleod and Parsnip River. We got a boat there and went down the Parsnip to the Peace river to the Grand Portage.

Hon. Mr. MACDONALD (B.C.)—Were you looking at that time for a route of the Canadian Pacific Railway to get to the coast.

Mr. McLEOD.—Yes, sir.

Hon. Mr. MACDONALD (B.C.)—About the Skeena River could a road be built up the banks of the Skeena River?

Mr. McLEOD.—Yes, expensive in places.

Hon. Mr. MACDONALD (B.C.)—From Inverness?

Mr. McLEOD.—Yes, or Fort Simpson.

Hon. Mr. MACDONALD (B.C.)—There is a fairly good harbour on the Skeena?

Mr. McLEOD.—Yes and a good harbour at Fort Simpson; it is not quite so good on the Skeena.

Hon. Mr. MACDONALD (B.C.)—It is a strong current?

Mr. McLEOD.—Yes.

The CHAIRMAN.—And do you think Fort Simpson is the best harbour?

Mr. McLEOD.—Yes.

The CHAIRMAN.—Can you get over from Fort Simpson to the Skeena?

Mr. McLEOD.—Yes.

The CHAIRMAN.—And then that took you up as far as Hazleton where the trail crosses?

Mr. McLEOD.—Yes.

The CHAIRMAN.—Then you came down the river, and how did you get over from there to Babine Lake?

Mr. McLEOD.—It is over a high mountain portage; we got some Indians to carry our traps across.

The CHAIRMAN.—You could not get a railroad?

Mr. McLEOD.—Not across there, you would have to go round by the water course?

The CHAIRMAN.—What do you call the water course?

Mr. McLEOD.—The outlet of Babine Lake.

The CHAIRMAN.—You would have to go up the Skeena as far as the outlet of Babine Lake?

Mr. McLEOD.—Yes, the Skeena.

The CHAIRMAN.—This is it here (referring to the map), you would have to go up here and then get into the valley of the Babine?

Mr. McLEOD.—Yes, sir.

The CHAIRMAN.—And then from the valley of the Babine to the Stuart?

Mr. McLEOD.—Yes.

The CHAIRMAN.—And down the valley of the Stuart?

Mr. McLEOD.—Yes, over to the Parsnip River, and then go down the Peace River and then across the Edmonton.

The CHAIRMAN.—Did you go through the Pine River Pass?

Mr. McLEOD.—I did not; Mr. Cambie and Dr. Dawson went through that season, and brought the horses through the Pine River Pass and we met them at Dunvegan after having gone down the river on a raft from the other side of the Grand Portage.

The CHAIRMAN.—So, that if a railroad was run from Fort Simpson up to the Skeena, to the connection of the Babine River and then down the Babine Lakes and so on, and then over to the Parsnip River then you could go all the way down?

Mr. McLEOD.—Yes, sir.

The CHAIRMAN.—Did you have to make any portage?

Mr. McLEOD.—We had to make a portage about Fort St. John.

The CHAIRMAN.—How many miles do you think it would be from Fort Simpson over to the Parsnip River?

Mr. McLEOD.—It is just about 300 miles.

The CHAIRMAN.—And then through?

Mr. McLEOD.—In the valley of the Peace River through the Pine River Pass here and down the Peace River and across to Edmonton, through there crossing the Athabasca River.

The CHAIRMAN.—Did you survey the Yellow Head Pass at all?

Mr. McLEOD.—Yes.

The CHAIRMAN.—Then you surveyed from Yellow Head Pass?

Mr. McLEOD.—Yes, from the summit of Yellow Head Pass to Winnipeg, within a few miles of Winnipeg.

Hon. Mr. MACDONALD (B.C.)—How is the ascent and descent of this (the eastern) side and the other side of the mountains?

Mr. McLEOD.—On this (the eastern) side it is very easy, with a broad open valley; on the other side it is comparatively easy also—but I have not been down on the other side. I have seen the profile, and I believe it is very easy.

The CHAIRMAN.—In going from the Yellow Head Pass did you go through Edmonton at Athabasca landing?

Mr. McLEOD.—Through Edmonton; at least about thirty or forty miles to the south of Edmonton.

The CHAIRMAN.—This map shows a little better; in going from Fort Simpson.

Routes to the Yukon.

Mr. McLEOD.—We came up the Wap Inlet, down the Babine River to Babine Lake.

The CHAIRMAN.—Yes, that is rather circuitous.

Mr. McLEOD.—Yes; there may be other routes in here by the Bulkley River that may be better.

The CHAIRMAN.—Have you been up there lately?

Mr. McLEOD.—No, I have not been in this country since 1879, not in the Peace River country.

The CHAIRMAN.—Then most of your surveys were on the Canadian Pacific Railway?

Mr. McLEOD.—Yes, the last few years of course were down on the main line of the Canadian Pacific Railway in the Fraser River country.

The CHAIRMAN.—And then previous to that it was on the Yellow Head Pass?

Mr. McLEOD.—Yes.

The CHAIRMAN.—You did not go west from the Yellow Head Pass at all.

Mr. McLEOD.—No only a few miles; I made some other expeditions near the summit of the Yellow Head Pass to the southward on the Maligne River and found they were impracticable for a railway.

The CHAIRMAN.—The idea of the formation of this committee was to ascertain how far it would be economy for the trade of the country to approach this north-western country and all the mining development which there is there by an eastern route instead of going right across the continent and then up the coast and then in; with the idea of coming in from, say Edmonton, or somewhere in that neighbourhood, have you any idea or any suggestion at all as to the route that you would take—I understand you do not know anything of the Liard River?

Mr. McLEOD.—No, I have not been so far north as that.

The CHAIRMAN.—In order to develop the largest amount of mining which is the industry of those mountains, and taking into consideration the facility of the route and its shortness, have you any idea what route you would be inclined to follow?

Mr. McLEOD.—I should think the most feasible, one of the most feasible, would be to follow the Peace River to this Omenica River and then get up the Findlay River and Black River.

The CHAIRMAN.—Supposing we wanted to reach the coast at the same time so as to utilize the coast route, you would have the choice of two routes, one would be the Pine River Pass and the other the Yellow Head Pass?

Mr. McLEOD.—Yes, the Pine River would lead you out towards Fort Simpson.

The CHAIRMAN.—Yes, by the Babine Lakes and those routes you have been speaking of.

Mr. McLEOD.—Yes; of course the plan would be to follow these water courses and explore them, get to one water course and follow its course down, between the head of the Findlay River and the head of the Black River. There may be an obstruction that would prevent that. There are the other routes spoken of to the east, crossing and going through the Peace River valley by getting on the east side of the Rocky Mountains.

The CHAIRMAN.—There is not much difficulty between Edmonton and the Yellow Head Pass?

Mr. McLEOD.—No; not very much, there are some good sized rivers to cross.

The CHAIRMAN.—Your surveys were more for railway, than geological research?

Mr. McLEOD.—Entirely for railway surveys, and, also to examine the country and its capabilities.

The CHAIRMAN.—What did you find the class of country to be, from Edmonton east?

Mr. McLEOD.—Generally very fine country along the north Saskatchewan, particularly about Edmonton, the country about Edmonton is a very fine country; I think the Edmonton country is the garden of the North-west.

The CHAIRMAN.—You did not go thirty miles north of the Saskatchewan?

Mr. McLEOD.—No.

The CHAIRMAN.—That is where the finest country is?

Mr. McLEOD.—Yes.

The CHAIRMAN.—How did you find the country from the Peace river to Edmonton?

Mr. McLEOD.—There is a great deal of good land around the Peace river.

The CHAIRMAN.—You could get a railroad from Edmonton in on that trail to Dunvegan?

Mr. McLEOD.—Yes.

The CHAIRMAN.—Then you kept south; the trail you followed came from Dunvegan on across the Smoky River.

Mr. McLEOD.—We did not follow any trail, we just came through by compass.

The CHAIRMAN.—And you kept south of the hills alone there?

Mr. McLEOD.—Yes, we made a straight line as nearly as possible from Dunvegan to Dirt Lake.

The CHAIRMAN.—On the Saskatchewan?

Mr. McLEOD.—Yes, near the Saskatchewan.

The CHAIRMAN.—About how far west of Edmonton?

Mr. McLEOD.—About seventy miles west of Edmonton.

The CHAIRMAN.—You mean you struck the Saskatchewan seventy miles west from Edmonton and kept south of the hills which lie to the south of Lesser Slave Lake?

Mr. McLEOD.—Yes.

The CHAIRMAN.—Because the other route we have been speaking of is to go north of Lesser Slave Lake. That route to Dunvegan which you speak of and which strikes the Saskatchewan seventy miles west of Edmonton is practicable for a railway.

Mr. McLEOD.—Yes.

The CHAIRMAN.—Then you get south of the Saskatchewan?

Mr. McLEOD.—Oh, yes (pointing to map); this is the main line, the surveyed line of the Canadian Pacific Railway.

The CHAIRMAN.—In that survey you left the Saskatchewan away to the north.

Mr. McLEOD.—Yes, and touched it at Battleford.

The CHAIRMAN.—And where is your report (Mr. McLeod gives to Hon. Mr. Boulton book containing his report and Mr. Dawson's report and the map showing the proposed survey of the Canadian Pacific Railway.)

The Committee then adjourned.

Routes to the Yukon.

OTTAWA, 4th May, 1898.

Committee met this day.

Honorable Mr. BOULTON, Chairman.

The Chairman read the following article from the Kamloops *Standard* and addressed to the Committee:—

THE YUKON ROUTE VIA KAMLOOPS AND CARIBOO, NOT AN EXPERIMENTAL ROUTE, BUT ONE THAT HAS BEEN TRIED WITH SUCCESS—FEED PLENTY, PROVISIONS SURE.

By C. WENTWORTH SAREL, Editor of the Kamloops *Standard*.

The Kamloops, or Overland route, is really the only route that a poor man can safely undertake. For over 200 miles it traverses a cattle country, by one of the finest roads in America, namely, the old Cariboo stage road to Quesnelle. The country is partially settled up and there are numerous good hotels for men and plenty of feed all along for pack horses. Quesnelle is a small town on the banks of the Fraser, where the ferry is taken, where the usual accompaniments of civilization, such as a telegraph office, post office and saloons are left behind.

Here, too, is where the prospecting may be said to begin, here also is the point at which the goldseeker has to make up his mind whether he will go to the less known, but immensely rich Omineca district, and whether he will follow the trail to Telegraph Creek via Hazelton for the goal of thousands, the Yukon gold fields. Should it be the former he has about 300 miles to go by trail and canoe, should the latter be his destination he will follow the old Telegraph trail over the Blackwater, which is bridged to the Nechaco, where a ferry is provided by the government and on to Fort Fraser. Fort Fraser is a Hudson's Bay post and an Indian village. Should a man care to prospect, and it would repay him, he can easily hire Indians, who are reliable and friendly.

From Fort Fraser to Hazelton several fine valleys are crossed and feed is abundant. The streams are full of fish and small game is plentiful. The streams all show a few colours, but hitherto the expenses of transportation have retarded any serious attempt to work them.

Hazelton is another Hudson's Bay post and an Indian village, with a mission, and it is the head of navigation of the Skeena River, up which, when the water is not too high or too low, the Hudson's Bay steamer "Caledonia" proceeds. The whole distance has been properly surveyed thus far and at one time the telegraph was stretched to here. From Hazelton the trail is not so well defined, in consequence of the travel of late being confined to Indians on hunting tours, but there are no difficulties, the country is rolling and feed is plentiful for man and beast. Several quartz finds have been located but are lying unworked till railway or good wagon road communication cheapens freight.

From Hazelton, the Kyspyox River is followed to its source, near which point are the headquarters of the Naas and the Iskoot, a gold-bearing tributary of the Stikine and the First South Fork. The last is followed by an easy trail to its junction with the Stikine, and which is between Telegraph Creek and Glenora. Here, as at Hazelton, the horses have to be swum across and persons have to cross by canoe. Once on the Stikine, the course is so well known and so much is promised in the way of trails, wagon roads and railways that the prospector will have to learn any further information when he gets there.

Now, at a time when the question is before the public, it is opportune to point out the merits of the route. First, is distance, which is as follows:—

	Miles.
Kamloops to Quesnelle.....	224
Quesnelle to Fort Fraser.....	100
Fort Fraser to Hazelton.....	165
Hazelton to Stikine River.....	125
Stikine River to Teslin Lake.....	120
Teslin to Dawson City.....	339
From Kamloops, on the C.P.R. main line, to Dawson City...	1,073

2. That it is an all-Canadian route.

3. That it is the shortest all-Canadian route (which can be easily ascertained by inquiring from official reports).

4. That it goes through a good agricultural country for a great part of the way, and the best mineral and gold-producing country in Canada for the whole way.

5. That it connects with all-water routes at two points, the Stikine and Skeena, competition of which is good in keeping down the cost of transportation.

6. The route is nearly all the way in the dry belt, consequently there is very little snow to interfere with the traffic, and no snow slides or freshets to cause continual expense in maintenance.

7. All along the line of travel are fine tracts of country suitable for raising stock, and quartz of excellent quality has been found at numerous points, both of which are a guarantee of permanent settlement.

8. With a reasonable expenditure by the Dominion Government 620 miles of the distance can be navigated for six months of the year by sternwheel steamers.

The above reasons, (which could be added to indefinitely if details were gone into), are quite sufficient to show that it is the only all-the-year-round route to the Yukon, that it is the natural railway route and should be used as such without delay, unless the United States is to get the cream of the trade, which she has done hitherto, and as such is worthy of the attention of the government. There are additional reasons why it is a good prospectors' route, which are that:

1. Kamloops being an important town on the Canadian Pacific Railway main line, can furnish supplies as cheaply as any place, and a great deal cheaper than a great many.

2. That being in a mining centre, the outfitters are better posted as to the requirements of the miner.

3. There are no serious difficulties to be met with en route and are no high mountains to be climbed.

4. Feed is good the whole distance and it is the only route on which stores are situated about 100 miles apart.

5. Travel need never be suspended on account of inclement weather, though, of course, summer is better for those taking pack horses.

6. That Kamloops, the starting point, has been for years and still is the great horse and cattle centre of British Columbia, and horses of any kind and price can be had on short notice.

7. That cattle, sheep and horses have already been driven along the whole distance, not once for experiment, but in the days of the Cassiar excitement steadily as a business.

8. The route passes on either side the rich Cariboo gold fields and the scarcely explored Omineca country, besides the Cassiar.

9. The whole distance is traversed in the biggest gold belt in the world.

All these facts, and more, can be verified at any time from official reports. There need be no question of sending the Mounted Police or some one to find out things, they are already on record. But there is every reason why they and the troops should follow this route. That it is in bounds of probability that the Stikine-Teslin Railway will eventually be brought down to connect at Kamloops with the Canadian Pacific Railway is a fact that no one who knows the subject will contra-

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dict. But he gives twice who gives quickly. The railway should be commenced before the trade has flown into other channels and while the public attention is still drawn to the subject. The cities of the United States have received the bulk of the trade hitherto by misrepresentation and false circulars, and it is incumbent on Canadians to grasp the fact that they will continue to hold it as long as they let them. By the all-Canadian route from Kamloops they could not compete to our injury, and yet the fact of connections being made with water-borne freight at the Stikine and Skeena Rivers would prevent the all-Canadian route being a monopoly.

The CHAIRMAN.—We had better embody this in our evidence on behalf of Kamloops, though his table of distances beyond Hazelton do not seem to tally with other evidence, which would make the total distance 1,324 miles, to which would have to be added the distance from Calgary, 425 miles.

Mr. MARCUS SMITH, M. Inst., C.E., again appeared before the Committee and was examined by them as follows:—

The CHAIRMAN.—You were before us the other day?

Mr. SMITH.—Yes.

The CHAIRMAN.—And you were giving us an account of your surveys in 1879?

Mr. SMITH.—Yes. I think we merely talked the matter over generally, and I would like to give some particulars of comparison between the different routes. First of all it seems to divide itself into two different schemes; a wagon road from Edmonton to the Peace River and thence on to the Liard. I will go along that as briefly as possible. The present route used by the Hudson Bay Company is by a road that is made from Edmonton down to the Athabasca Landing, and then they use the water on the Athabasca River, the Lesser Slave River, and the Lake—that is some 170 miles altogether. Then they used land again to go to Peace River from the Hudson's Bay post. That is a combined route of land and water. That does not seem to be favourable, because I learned they would prefer a road all the way. There are two roads, then, that could be made. There is one could be made, the nearest road and shortest road from Edmonton would be the southern road crossing the Athabasca at Fort Assiniboine or some distance above it, and I think that is a route they are making some part of a road on. It is not at all a favourable route for a railway. Any person who is not accustomed to engineering would not think it a bad road but as soon as you cross the Athabasca, there is a spur which comes down from the Rocky Mountains and which has to be crossed. The altitude of that spur as taken by Dr. Dawson is 3,300 feet above the level of the sea—actually 1,000 feet above the level of Edmonton; and then, it is 600 feet higher than the Pine River Pass to the Rocky Mountains and then they have to descend 2,000 feet from that down to the river. That would show that it is not at all a favourable line for a railway.

Hon. Mr. PERLEY.—What distance would you go, to get to that altitude?

Mr. SMITH.—I think that is all included within ten miles; rising from the Athabasca.

Hon. Mr. PERLEY.—Within ten miles then it gets 1,000 feet higher?

Mr. SMITH.—Yes, it goes gradually, of course—I give the highest point.

Hon. Mr. PERLEY.—It is 100 feet to the mile?

Mr. SMITH.—I have not the distances so near as that, it has to be surveyed.

Hon. Mr. PERLEY.—But you gradually go up the slope, not abruptly?

Mr. SMITH.—It is too steep to go straight up to the railway, that is the nearest I can give. However, for a wagon road they do not require such grades as a railway. Scaling it from the map it is some twenty-five miles shorter than the other routes: so what they lost by gradients they will gain by shortening the route and I do not see any objection to that as a wagon road.

The CHAIRMAN.—We had Mr. McLeod here last night, came over from Fort Simpson across the Pine River Pass. He said in coming from Fort St. John he came to dirt Lake, seventy miles west of Edmonton—That I believe is south of those hills you spoke of?

Mr. SMITH.—Yes.

The CHAIRMAN.—They are the bunch of hills you are now describing which this short road goes right across?

Mr. SMITH.—Yes, he was further south.

The CHAIRMAN.—And he described that as quite practicable for a railway, that is to say straight from Fort St. John to Dirt Lake on the Saskatchewan.

Mr. SMITH.—Dr. Dawson and Mr. McLeod travelled along together?

The CHAIRMAN.—That is what Mr. McLeod described as the road he followed in coming across?

Mr. SMITH.—Yes, and he ended at Dirt Lake—I know the point. It is not a favourable line for a railway at all; but a railway could be made, there is no doubt of that.

The CHAIRMAN.—Then your evidence as far as the railway is concerned to come to the Athabasca landing and along the Lake.

Mr. SMITH.—Yes, that is undoubtedly the best; you will get a better idea before we finish that. The route has never been laid down except on this map that was made with my report which was not issued, and these hills were shown on it. (Refers to his own map).

The CHAIRMAN.—There are the hills you speak of. The straight line goes across from Edmonton?

Mr. SMITH.—Yes, Mr. McLeod travelled from Dunvegan, and he came around so as to avoid those hills.

The CHAIRMAN.—He described that as practicable for a railway?

Mr. SMITH.—It is practicable, but there are railroads and railroads.

Hon. Mr. DRUMMOND.—Would not the best way be to go around the other way?

Mr. SMITH.—Yes, Edmonton is 2,300 feet above the level of the sea—

The CHAIRMAN.—You would go up the Pembina Valley then?

Mr. SMITH.—There is a road made, a cart track. It is a gradual fall down to the Lesser Slave Lake; then of course along the Lake is level and then there is still a fall from the Lake down to the Peace River.

Hon. Sir JOHN CARLING.—You say a wagon road is made?

Mr. SMITH.—This is the Peace River here, in coming to this junction from the Hudson Bay post is there, on this peninsula on the north side of Lesser Slave Lake, is a cart road made here.

The CHAIRMAN.—The only thing is, we want to reach Fort St. John. St. John is a point that takes you north by the Nelson River to the Liard, and it is also a point which takes you through this Pine River Pass across to Fort Simpson, so that that seems to be an objective point.

Mr. SMITH.—St. John is a good point; it is exactly opposite the head waters of the Nelson and then the Nelson goes down and strikes the Liard River. I mentioned St. John, I think, in my notes; you have to get on the north side of Peace River to get there.

The CHAIRMAN.—How much south is this Pine River Pass?

Mr. SMITH.—This map is fifty miles to the inch and that is a little more than half an inch there to the end of the Pass; it is quite easy to get to it. This line is not merely a conventional line, it is a line that has been laid down from actual observation, partly surveyed, and that is the cause of all these crooks in it. And you will find the distances I have given, are longer, in almost every case than the distances others may give you from maps, because they make no sufficient allowance for the local curvature.

The CHAIRMAN.—If Fort St. John and Dunvegan are objective points, and the Pine River Pass, then we would want to keep on the south side of the Peace River?

Mr. SMITH.—You cannot make a road on that side; you can get along the north side of the road.

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Hon. Mr. DRUMMOND.—It is 1,000 feet below the plateau on each side of the river.

Mr. SMITH.—Yes, the road going down at that point, at St. John, is about 800 feet below, and that is where the difficulty arises. I object to taking a railway beyond the river at all. You have to get up on to the plateau; you would have to follow the slope of the river, and cut it out of the edge of the slope. It would take about fifteen miles to get up to the plateau with a grade of one per hundred.

Hon. Mr. DRUMMOND.—You would not think of crossing the Rockies by the Peace River.

Mr. SMITH.—Not with the railway. When I was here the last time, I think I said something about a road for packing. I have seen a good deal of packing and mining up in British Columbia. A good road, if there is pasture for cattle, is about the best thing you can do for a miner prospecting. He can take cattle along, and he has beef to use when he wants it, and I think if a wagon road is made it might follow that route; it would be twenty-five miles shorter than the other route to the Peace River.

Then there is a road that they travel on the north side of the Peace River; there is a trail that they use now to St. John, and a little above to Hudson Hope. They could make that into a wagon road, and then another wagon road would be about 170 miles, measured from the plan to the headwaters of the Nelson River. If that was made and stopped there, as far as the road making was concerned, it would give access for exploring on the lower part of the Liard, east of the Rocky Mountains. In the Peace River country there were miners prospecting when I left there.

Hon. Mr. DRUMMOND.—When was that?

Mr. SMITH.—It is twenty years since this map was made and they were prospecting then. I have very great doubts whether there was any quantity of gold east of the Rocky Mountains that would pay for any extensive work. I know the range from the International boundary line right up to the Skeena, and you will find that all the gold that has been taken out in any quantity has been on the west side of the Rocky Mountains; there have been small amounts found on the east side, but I have never known it to an extent to warrant making a road for an extensive work to reach it. I think the Honourable Gentleman from British Columbia (Mr. Macdonald) will bear me out in this.

Hon. Mr. MACDONALD (B.C.)—Yes, on the west side is where the large quantities of gold have been taken from; but you can find traces of gold east of the mountains, but not deposits like you find on the west.

The CHAIRMAN.—How would you get to the west of the mountains?

Mr. SMITH.—There are three different ways of getting there. Some companies have charters. This is the most northern line here; there is nothing on it that we know at present to warrant the cost of making a railway to reach the Pelly River.

Hon. Sir JOHN CARLING.—Would there be any difficulty in that?

Mr. SMITH.—I do not know that there has been any survey.

Hon. Mr. DRUMMOND.—How many charters are there, do you know, for railways in that district.

Mr. SMITH.—To begin with there is one great difficulty, I understand. The idea is amongst other things to find a central point for the distribution of the agricultural products of the North-west Territories—the difficulty of taking Edmonton as a point at present is that it is inaccessible, except by a round-about way. You have to go away 200 miles south by the C. P. R. and you come 200 back again there, and there are companies,—there is the North-western Central Company, they have been at it for fifteen or sixteen years, and they have made only fifty miles, then there is the Manitoba and North-western, and they have made 240 miles in a long time, and why that line has not been finished I cannot tell.

Hon. Mr. DRUMMOND.—They did not find gold enough in London.

Mr. SMITH.—There is far better than gold. There is good land for agriculture from Prince Albert to the Athabasca—there are three hundred odd miles that I have seen—that is worth more than you can find in six times the length of country

for gold. People cannot get into it without a railway. A new company was formed within the last two years, called the Trans-Canada Company, but they will be a long time doing their work; they have four years to make the surveys, and ten years to finish construction.

Hon. Mr. DRUMMOND.—Is that Mr. Beach?

Mr. SMITH.—I do not know; I think the agent here is Mr. Gemmill. Their time for making surveys has not expired, they have two years yet.

The CHAIRMAN.—That road is proposed to go by the north end of Lake Winnipeg and come through Prince Albert?

Mr. SMITH.—Yes.

The CHAIRMAN.—And then keep on a northern route to Athabasca Landing?

Mr. SMITH.—They are not bound to: the railway begins at any point where it is most needed to begin at once. They propose to begin at Prince Albert. I do not know anything particularly of these people, but I was in London on private business last year and the agent here asked me to call at Colonel Church's office, and also upon the agent of the Hudson Bay Company, and I found they seemed to be in earnest. They are taking a great deal of pains to get all the correct information, and all the literature they could about it. The western division of the railway would start from Prince Albert and go to the Athabasca Landing, about 330 miles. It is all a fine country.

The CHAIRMAN.—We want to get our communication from the east.

Mr. SMITH.—I have understood that the great object is to get produce as well as passengers, the agricultural produce of the country to the markets, and they wanted better communication. It was with that object in view I went so far back otherwise, I could begin at Edmonton and discuss the point from there.

The CHAIRMAN.—I do not think we need to discuss that point particularly.

Mr. SMITH.—Then we will take Edmonton and Athabasca Landing, that is the point we will begin at. That line, I made some note of that; that line was laid down some twenty years ago as being the best route that could be found for a northern road. I have the distances. Of course these are approximate to a great extent; but wherever it was surveyed I have it from the reports. Shall I give the intermediate distance?

The CHAIRMAN.—Give all the figures.

Mr. SMITH.—Edmonton to Athabasca Landing ninety-six miles. Thence to the lower forks of Pine River, 370 miles.

The CHAIRMAN.—Is that Pine River south or Pine River north?

Mr. SMITH.—Pine River south. I have nothing to do with Pine River north. I have never been on it at all. And thence to Parsnip River—

Hon. Mr. PERLEY.—Did you measure these distances?

Mr. SMITH.—Partly. I have explained that they are partly measured and the others are scaled from the map, and I made an allowance for curvature and the difficulties of the country, sometimes five per cent and sometimes ten, and these are only approximate; at the same time they will do for comparison, because each route is taken the same way. Then 105 miles to the Parsnip River.

The CHAIRMAN.—From where?

Mr. SMITH.—That is the continuation. This is going on consecutively. I may explain that Parsnip River is the south branch of the Peace River, and the navigation is good from there down to the forks of the Peace River, where all the rivers join.

Hon. Mr. PERLEY.—How large a river is it there?

Mr. SMITH.—I think it is some three hundred or four hundred feet wide where we cross it—very good navigation.

Hon. Mr. PERLEY.—Deep water?

Mr. SMITH.—Yes, large boats go down. They have some difficulty there, in fact they had to swim their horses across. We are through now with the Rocky Mountains there, and we are entering the Omenica district.

Hon. Mr. DRUMMOND.—You have not got to that point yet, have you?

Mr. SMITH.—Yes.

Hon. Mr. DRUMMOND.—I thought you were going to start off north this way?

Routes to the Yukon.

Mr. SMITH.—No; I am going this other route. You see this map was coloured to show, approximately, the general nature of the country, and that yellow patch was gold; all that was more or less worked as placer gold mines.

The CHAIRMAN.—Then the distances from there?

Mr. SMITH.—From there, I put it down eight miles to the Pack River. The reason I put that short distance down is, that, it is very near Fort Macleod, and the Pack River is a little below the Fort, and the other lines I have described intersect there, and then go up further north, and I think you may make an addition and take the total distance to that point from Edmonton 579 miles.

Hon. Sir JOHN CARLING.—What point is that?

Mr. SMITH.—Near Fort Macleod, at the foot of Fort Macleod Lake. It is a well known point. That is the reason I mark it there. Then, from there we make a straight line up to the Tacla, and then run between that and Babine Lake, and a little below that, following the outlet of the lake northward, we come to the Skeena River, and strike the Skeena River at a point—

Hon. Mr. MACDONALD (B.C.)—Hazelton?

Mr. SMITH.—No; at the mouth of the Babine River we strike the Skeena; and then this company go down to Fort Simpson.

Hon. Mr. DRUMMOND.—You are not far from the coast there?

Mr. SMITH.—We are 150 miles.

Hon. Mr. DRUMMOND.—How far is it from Fort Simpson?

Mr. SMITH.—180 miles—fully that. You see, I stop there, and I take all the routes for comparison to that point.

The CHAIRMAN.—What is the distance to that point?

Mr. SMITH.—206 miles. That is to the mouth of the Babine. That is the end as far as we have described.

The CHAIRMAN.—To the Skeena?

Mr. SMITH.—Yes.

Hon. Mr. DRUMMOND.—It is 700 odd miles from Edmonton.

Mr. SMITH.—785 miles.

Hon. Mr. DRUMMOND.—And how much down to Fort Simpson?

Mr. SMITH.—Well, it is not pertinent to this question because there we would join the route then to the Telegraph Creek.

The CHAIRMAN.—What distance have you there to Telegraph Creek? You have 180 miles marked down here.

Mr. SMITH.—That has nothing to do with it. That is running away to Fort Simpson.

Hon. Mr. DRUMMOND.—Do I understand that this survey that you made, was with a view to a railway, or a tramway or a road.

Mr. SMITH.—A first class railway—a better one than the C.P.R. as regards grades.

Hon. Mr. DRUMMOND.—Then up to this point we have a survey for a first class railway?

Mr. SMITH.—Yes.

Hon. Mr. DRUMMOND.—Are you going to continue the same sort of survey up further this way?

Mr. SMITH.—Oh, I do not know.

Hon. Mr. DRUMMOND.—Can you give us any information from that point up?

Mr. SMITH.—No. I never went beyond the Skeena, but I see from the map it will connect at that point. I will give you the distances without knowing more about the country than that there is a practicable trail there. I scaled from Babine—that is the point we left off. To Telegraph Creek is 284 to 300 miles.

Hon. Mr. DRUMMOND.—Where is Glenora?

Mr. SMITH.—That is Glenora. Telegraph Creek or Glenora.

Hon. Sir JOHN CARLING.—Twelve miles difference.

Mr. SMITH.—The length is the same.

Hon. Mr. DRUMMOND.—That is different from the information I had before, because I understood from that. Glenora to Fort Simpson was something under 300 miles.

The CHAIRMAN.—No, it is more than that.

Hon. Mr. MACDONALD (B.C.).—It is 150 miles from the mouth of the Stikine up to Glenora, and from there to Teslin Lake is how much?

Mr. SMITH.—I make it 160 miles to Teslin Lake. I have allowed for curvature. I wish to show you the way I do it. I take the net measurement with the compasses on the scale, and if it is a difficult country, I add five per cent or eight per cent or ten per cent.

Hon. Mr. DRUMMOND.—Well this is not a difficult country.

Hon. Mr. MACDONALD (B.C.).—Oh yes. We had a man who went over it who says it is rough.

Hon. Mr. DRUMMOND.—Dawson does not say so.

Mr. SMITH.—You will find that all the distances given by any one who is not a practical engineer will be too short.

Hon. Mr. DRUMMOND.—I understood the railway projected from Glenora to Teslin Lake by the Mackenzie and Mann way to be 145 to 150 miles.

Hon. Mr. MACDONALD (B.C.).—But this is twelve miles further.

The CHAIRMAN.—In rising out of the Stikine River to Glenora you have to rise about three thousand five hundred feet.

Hon. Mr. DRUMMOND.—On the railway?

The CHAIRMAN.—Yes. Here is the evidence, and there are two mountains to cross.

Mr. SMITH.—It is a rather curious thing in comparing routes: you see there is the west end of Teslin Lake; well if you take the general direction it is very nearly equal to the road to the head of Pelly River, and according to that the northern line away north of the Peace River would be shorter, but it would be simply a through line to one point.

Hon. Mr. DRUMMOND.—How far would you say it is from Telegraph Creek to Fort Simpson.

The CHAIRMAN.—It is about 480 miles.

Hon. Mr. DRUMMOND.—I mean to a navigable point—the point at which navigation could be carried on.

The CHAIRMAN.—On the Stikine the navigation is up to Hazelton. It will be 480 miles to Fort Simpson.

Hon. Mr. MACDONALD (B.C.).—Can you tell us how much it is from Fort Simpson to Wrangel?

Mr. SMITH.—I have not the compasses with me. I will take a note and send it to you in an envelope.

Hon. Mr. DRUMMOND.—I was told it was 240 miles, but that is an impossibility, I suppose?

Hon. Mr. MACDONALD (B.C.).—How many miles is it from Hazelton to Glenora?

Mr. SMITH.—It would be about 284 miles.

Hon. Mr. MACDONALD (B.C.).—284 and 150—that would be 430 miles.

Hon. Sir John CARLING.—And what is the distance from Fort Simpson to Telegraph Creek?

Hon. Mr. MACDONALD (B.C.).—It is only ten miles more. I have taken from Glenora 150 miles down to the Wrangel and I have added that to 284, which gives us 434.

Mr. SMITH.—I do not think the distance I have given is far out. I have given it as close as I can.

Hon. Sir John CARLING.—Are you quite sure of the distance you have given?

Hon. Mr. MACDONALD (B. C.).—No, but that is as near as we can make it.

Hon. Mr. DRUMMOND.—Can you go from Fort Simpson up to the bank of the Nass River and strike in that way?

Mr. SMITH.—Oh, I think so.

Hon. Mr. DRUMMOND.—I would go round that way.

Mr. SMITH.—That is the Nass River you are pointing to.

Hon. Mr. DRUMMOND.—By the scale on this map I make it 275 miles. If you landed at Fort Simpson you would never dream of going back to that point.

Routes to the Yukon.

The CHAIRMAN.—But you have to keep in certain valleys?

Hon. Mr. DRUMMOND.—You can go up the shore of the Nass River. You could navigate up to that point?

Mr. SMITH.—I have not dealt with the line from the coast. I have described the line to connect with the line from the coast, and from Fort Simpson you go up the Nass River.

Hon. Mr. DRUMMOND.—How far up the Nass can you navigate?

Mr. SMITH.—Well, I do not know. There is a Nass harbour.

Hon. Mr. DRUMMOND.—I would go up as far as my vessel could carry me and then start the railway. Supposing we started up that way how far could we go up that Nass River?

Mr. SMITH.—There is a harbour there; it is not a large harbour but it is good enough for discharging a vessel. I believe steamers of light draught have gone up the Nass River nearly 40 miles.

Hon. Mr. MACDONALD (B.C.)—You would not go there at all. You want to get to Yukon?

Hon. Mr. DRUMMOND.—I am told that is not navigable.

Mr. SMITH.—It is in American territory. My opinion is that the Nass is the proper channel to come up to the coast and it is navigable some distance up there. By the line I have described by the Pine River it would make no difference in the total length. It would only be along the road to the east.

Hon. Sir JOHN CARLING.—What is the 285 miles?

The CHAIRMAN.—That is the distance from the mouth of the Nass to Telegraph Creek.

Hon. Sir JOHN CARLING.—That is just about distance I understood it was.

Mr. SMITH.—When I made my report twenty years ago it had not only the advantage of being a good route to the Pacific coast and short, but the altitude of the pass is very low. 2,700 feet is the highest they give it.

Hon. Mr. DRUMMOND.—That is the Rocky Mountain pass.

Mr. SMITH.—Yes; and there is no other over 2,300 feet.

Hon. Mr. DRUMMOND.—That is above the level of the sea?

Mr. SMITH.—Yes.

Hon. Mr. DRUMMOND.—And Edmonton is how much above the level of the sea?

Mr. SMITH.—2,300 feet.

Hon. Mr. DRUMMOND.—You have not much of a climb?

Mr. SMITH.—And besides that you pass through the Cassiar mining district, and as soon as you get across the Rocky mountains eastward, you get into an excellent farming country.

Hon. Mr. DRUMMOND.—I have just been reading a book of Mr. Horetzky's.

Mr. SMITH.—Yes, I know him well and some of the things I have given are from his reports. I did not take all these reports myself. They were all my assistant's reports, but they were all discussed thoroughly with me. I always knew a portion of it myself and they were all thoroughly discussed before they were printed. Then from Edmonton there is another route, and I do not know if there is not a company in existence with a charter for that, and that is from Edmonton through the Yellow Head Pass. I can describe that line. From Edmonton to the summit of the Yellow Head Pass is 267 miles this is by measurements in surveys. From the Yellow Head Pass down to the crossing of the Fraser near the north end of the Cariboo range near Fort George, following the river westward, is 228 miles. From that point there is a very favourable divide going up to Fort Macleod on the lines I have heretofore described. The distance is exactly the same, 579, but it is a very inferior country for settlement.

Hon. Mr. DRUMMOND.—What sort of country is it? All the ranches and the cattlemen are up there?

Mr. SMITH.—No, this is another Fort Macleod. This is an arctic region altogether. It is a mineral country—nothing growing in it.

Hon. Mr. MACDONALD (B.C.)—Where is that Fort Macleod you are speaking of now? west of the mountains?

Mr. SMITH.—West of the mountain. It is just to the west of the Pine River Pass. It is eighty miles north of Fort George.

The CHAIRMAN.—And Fort Macleod is an objective point for both routes, whether you go by the Pine River Pass or the other way?

Mr. SMITH.—Yes. You see we not only want a line between certain points, but we want to serve as much valuable country as we can in the way. In that route you get the Omenica Gold Mines. About 100 miles north of Edmonton there is some good country, but after that, it is really not fit for settlement. Yellow Head Pass is 3,730 feet high, and it is simply a groove in the mountains, and the Fraser from Tete Jaune Cache is a deep groove through which we can make a railway.

The CHAIRMAN.—What is the height of the Pine River?

Mr. SMITH.—1,000 feet less.

The CHAIRMAN.—And the Kicking Horse?

Mr. SMITH.—5,400, I think.

The CHAIRMAN.—And do you know what the height of the Crow's Nest is?

Mr. SMITH.—It is a lower, I think it is something over 4,000 feet. I am speaking from memory now. I can give you the distance by the Canadian Pacific Railway. There is another route by Ashcroft.

Hon. Mr. MACDONALD (B.C.)—From Ashcroft in towards the Yukon, what kind of route would that be?

Mr. SMITH.—I will give you the distances now. First of all starting from Edmonton, of course the same point as the others, by railway to Calgary and then to Ashcroft, the two together are 629 miles. The distance from Edmonton to Calgary is 191 miles and from Calgary to Ashcroft is 438, making 629 miles of railway made, and in operation, and then from Ashcroft, I have had to measure that from the map again, although we made a great many surveys that way from Edmonton northward to Ashcroft, but measuring by the compasses and going to the mouth of the Quesnelle River. They are working some mines on the Horse Fly River and from that to the mouth of the Quesnelle. It is a difficult thing to cross the river at the mouth of the Quesnelle. It is so much below the level of the plateau. We had repeated surveys there. Then from Ashcroft to the mouth of the Quesnelle I measured 215 miles by compasses, and thence following up the best route I could find a rather rough route to Fort Macleod, the same point that others come to, 187 miles. That makes a total of 1,029 miles from Edmonton.

The CHAIRMAN.—I think you should leave Edmonton out of the question.

Hon. Mr. DRUMMOND.—Start from Ashcroft.

The CHAIRMAN.—Start from Calgary. It is not necessary to go up to Edmonton.

Mr. SMITH.—You cannot make a fair comparison if you do not take them to the same point. The distributing point is 300 miles further to the east near Saskatoon.

The CHAIRMAN.—From Ashcroft is how much to Fort Macleod?

Mr. SMITH.—It is 450 miles further than the other. The total distance is 1,029 miles or 1,031 miles, and then the other lines across the Parsnip River, we made them 579 miles.

Hon. Mr. MACDONALD (B.C.)—On your way to Babine Lake or river from Quesnelle, you would not go to Fort Macleod?

Mr. SMITH.—Yes, it is the nearest way, and another thing, it would touch the Omenica gold mines. There is nothing much on the other route. I could go further to the south, and if we went further to the south we would touch on a very rich valley. We have got to Fort Macleod and there is 206 miles to be added to that to reach the Babine.

Hon. Mr. MACDONALD (B.C.)—Better take it up to Glenora as well.

Mr. SMITH.—It is 450 miles longer that way than any of the other routes.

Hon. Sir JOHN CARLING.—Which way?

Mr. SMITH.—By Ashcroft from Edmonton.

Hon. Mr. MACDONALD (B.C.)—That is to Glenora.

Mr. SMITH.—To the mouth of the Babine. Of course if we were taking it further back the difference would decrease a good deal if we were travelling 300 miles eastward. I do not think that that line would serve a portion to the east of

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the Rocky Mountains at all. Speaking of the distances and latitudes does not give any one a thorough impression of the country unless he has been over it and seen a part of it. From Ashcroft there has been a line for a railway surveyed up to Cariboo to Barkerville, and, I think, it is a very proper line. The people connected with the country are working these mines, and whenever it will pay they will make a line up there. The line would serve very well, but I do not think as an engineer that any line from Ashcroft should go north of the Fraser River. It is a most difficult country and there is nothing beyond the Fraser River to take a line until you get to the Omenica—but I will show you a line that they have surveyed. I have the plans here. Of course I keep track of all these things as an engineer. I have nothing to do with it, but as an engineer I have to keep posted in everything that is going on. Now, if you will look here at this map you will see what sort of country it is. They talk of the line from Ashcroft—they cannot go from Ashcroft at all. The ground is too steep to get up. This is the main line of the Canadian Pacific Railway coming up from the coast, and you will see the survey could not commence at Ashcroft, but commenced at Savonna's Ferry and came backwards again, about six or seven miles, and they have to go about twenty-four miles instead of eight; you see the curves they have to make because the country is so rough, and you can notice the zig-zag course which they follow in going up to the forks of the Quesnelle. In measuring on the map some people would measure straight across here to the mouth of the Quesnelle. You will see the survey of this route makes a total of 260 miles to Barkerville. Some people in looking at the map would draw a line straight across and would tell you you would have to go about eighty miles to get to the gold mines there, but an engineer in describing this part will make allowance for curvatures and heights such as has been done on this map. I may say that I have given a great deal of interest to this matter and my conviction is that that line by the Pine River Pass is the best line that can be got to that point in the north-west part of British Columbia. It is as short as any other and it takes in more good agricultural country and mineral country than any other line that can be projected and it can be made at less expense than any other line.

The CHAIRMAN.—And the lower summit.

Mr. SMITH.—It is undoubtedly the best line in every respect according to my judgment, and I have given it a great deal of thought.

The CHAIRMAN.—Can you give me the probable distance Pine River is from Fort St. John?

Mr. SMITH.—I cannot tell exactly from the map, but it is under fifty miles south of Fort St. John.

The CHAIRMAN.—You have not been up to the Nelson River or the Liard River?

Mr. SMITH.—I know nothing at all about the Liard River except from reports. The geological reports show a great deal of grass country considerably back from Peace River, suitable for cattle, especially from Dunvegan. (Referring to his own map). This colouring on this map shows pretty fairly the rich soil; I have been comparing it since I was called upon to give evidence here and some people say that we could not define the character of the land in this way, but generally speaking this shows the character of the soil, and it stretches away around the foot of the Rocky Mountains and into Manitoba and away north of the Peace River, and the soil gets lighter as you go southward. There is where the land fit for settlement ends. (121 deg. longitude.) North and west of Peace River and 122 meridian it is an arctic country. What I have been saying is given by Macoun, the botanist, and I find his description of the country good.

EXTRACTS FROM REPORTS OF THE CANADIAN PACIFIC RAILWAY
GOVERNMENT SURVEYS WHICH WERE UNDERTAKEN PRIOR TO
1881, WHEN THE PRESENT COMPANY DEFLECTED THE LINE TO
THE SOUTH—EDMONTON TO PEACE RIVER—SOUTHERN ROUTE.

1874, *Page 48, C. Horetzky*.—"Fort Assiniboine on the Athabasca was reached after passing over ninety-one miles of very fair country of an easy character, land partly of prairie and timber, the latter abundant from Lac la Nounne to the Athabasca. . . . Arrived at Lesser Slave Lake, passing through an entirely wooded, swampy and, in places, very hilly country, utterly useless for agricultural purposes, and for a line of road excessively rough."

Page 68, J. Macoun, Botanist.—"Between Edmonton and Lac la Nounne, a distance of about forty-nine miles, the land is rolling, and at times hilly. . . . None of it is difficult, but the last half is much broken by hill and dale, swamp and lake. Between Lac la Nounne and Pembina the country is more broken, the hills are steeper and more heavily wooded, and the soil poorer. Bed of river about 100 yards wide, . . . thence the land is comparatively level until you reach the ridges which border the Athabasca. The level of the country is about 300 feet above the river which flows through a pretty wide valley. The Athabasca is large being wider and deeper than the Saskatchewan. The fort (Assiniboine) is built on a terrace. . . . For some distance after passing the Athabasca the country is a series of sand hills, ridges and swamps."

SMOKY RIVER TO DIRT LAKE (ABOUT SIXTY MILES DUE WEST OF EDMONTON ON THE
LINE LOCATED BY THE GOVERNMENT FOR THE CANADIAN PACIFIC RAILWAY).

1874, *Page 68, H. A. F. Macleod*.—"Between the Little Smoky River and the Athabasca there is a high ridge of hills extending in a north-easterly direction, parallel to the Athabasca. . . . These hills rise to a height of about 700 feet above Little Smoky River, and 600 feet above the Athabasca. There are, however, valleys more to the north, lower down Little Smoky River. The stream flowing through the Eoswagon Lake and also Goose River, where favourable lines may be found to the Athabasca.

"The Athabasca is a large rapid river in a deep valley from three to four miles wide at top and about half a mile in the bottom. . . . The crossing would be near the mouth of Marshhead River and would require a bridge 600 feet opening, thirty feet high. Between the Athabasca and McLeod Rivers the country is very hilly and broken, the hills are 900 feet above the river, intervening valleys 300 to 600 feet deep. . . . From the McLeod River to Dirt Lake part of the country is swampy, otherwise the work would not be heavy.

SMOKY RIVER TO THE ATHABASCA.

Geological Survey, 1879-80, *Page 64B, G. M. Dawson*.—"Between Smoky River and Sturgeon Lake the country may be described as, in general, densely wooded, the forest being, for the most part, second growth, and composed of aspen, birch, spruce and cottonwood, generally of medium or small growth, considerable tracts are covered, however, with heavy original spruce or aspen forest. There are many little prairie openings. . . . The lake is about 2,000 feet above sea level, there is good pasturage and a fine, partly open country on the north-eastern border of the lake. Twenty-one miles south-east of this the Little Smoky River is reached, the intervening country in most part wooded. The river averages 250 to 300 feet wide where first touched, the valley is about eighty feet below the plateau and further up it is a quarter of a mile to half a mile. In approaching the Athabasca the country is evidently not only increasing in altitude, but decreasing in value. The soil of the plateau becomes sandy in many places and swamps are more extensive.

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Page 65b.—"From this lake to the bank of the Athabasca—twenty miles—the country is exceedingly difficult to traverse, the dead trees forming an almost impassable windfall. . . . The surface is diversified by ridges which rise in some places nearly 200 feet above the intervening hollows, and still continues rising toward the Athabasca. At eight miles from the Athabasca the watershed between this river and the Peace is crossed with an elevation of 3,300* feet above sea level. The soil is generally light, the silt often turning to actual sand."

PEACE RIVER PASS.

C.P.R. Survey, 1880, *pages 43, 44, 45, 46, 52 and 56.*—*H. J. Cambie*—"The Parsnip and Finlay Rivers are each about 500 feet wide at their confluence, and below that point the stream is known as the Peace River and immediately enters the pass of that name. The pass is bounded for about thirty miles by mountains rising 4,000 to 5,000 feet above the water, on each side leaving a valley about half a mile wide between their bases, through which the river (600 to 800 feet wide) winds from side to side, leaving benches first on one side then on the other, varying in height from twenty to 100 feet.

"The only point where the actual mountain slopes abut on the river is for three-quarters of a mile at the base of Mount Selwyn, which here are bold and rocky. This would require heavy excavation and a tunnel.

"About five miles east of Mount Selwyn a stream about sixty feet wide comes in from the south, and twelve miles farther another stream sixty feet wide, and the clear water about 120 feet wide from the same direction. . . . The low flats are timbered with cottonwood, the hillsides and benches with spruce, poplar and birch.

"At the clear water the width of the valley between the bases of the mountains on either side is about half a mile. From that point eastward to the head of the Rocky Mountain portage, about forty miles, the valley widens out to about two miles between the bases and about six or seven miles between the summits of the mountains, which are there about 1,000 or 1,200 feet in height above the river. Five streams have to be crossed, the two largest of which are respectively 150 and fifty feet wide.

"The climate and vegetation show a marked change to the eastward of the Clearwater, being much milder, and many of the flats have some small clumps of poplar copse, and a large proportion of prairie producing good grass and pea-vine.

" ROCKY MOUNTAIN CANON.

"Three days were spent in crossing the portage with the aid of horses borrowed from the Hudson Bay Post at Hudson Hope.

"The portage, nearly twelve miles in length, runs nearly east and west, and was made for the purpose of avoiding the cañon, through which the Peace River takes a semi-circular bend to the south, about twenty-five miles in length.

"In this distance the river runs generally through a gorge about 400 to 600 feet wide, with sandstone bluffs rising perpendicularly 100 to 300 feet on either side. The surrounding hills vary from 1,000 to 2,500 feet in height above the river and slope down to the precipice at the rate of one in two to one in five; *they are also much broken by ravines, so that a line of railway would require many sharp curves, high bridges and long tunnels, and the expense of construction would be excessive.*

"Hudson's Hope may be said to be on the eastern edge of the foot hills of the Rocky Mountains, extending in a south-easterly direction past the lower end of Moberly's Lake, crossing Pine River a little to the west of the main fork.

HUDSON'S HOPE TO PINE RIVER—ABOUT FIFTY MILES.

"The country around Hudson's Hope is generally a great plain or plateau averaging about 1,900 feet above sea level, through which the Peace River flows in a trough

*This is 600 feet higher than Pine River Pass, which is the highest point on that route, its altitude being 2,700 feet above sea level, and on the whole length from the Athabasca landing it does not exceed 2,300 feet at any point to the Pacific coast.

or valley about 700 feet deep at first, increasing to upwards of 900 feet in the neighbourhood of Smoky River. As far east as Pine River the valley varies from about one and a half to three miles in width at the level of the plateau, and one-half to two miles in the bottom.

"The river varies from 900 to 1,200 feet in width, and wherever it washes the base of the hills extensive slides occur. Those of recent date, on the south side amount to an aggregate of more than two miles besides a much greater extent of old ones. They offer almost an insuperable obstacle to railway construction close to Peace River . . . while the tributary streams have cut such deep lateral valleys that if a line were taken up sufficiently high to pass behind the land slides, the crossing of each little brook would require a structure of gigantic proportions.

Page 45.—"From Pine River to Dunvegan the river varies from 800 to 1,500 feet wide and winds from side to side. The banks are of the same character as the last length described.

Page 46.—"The Peace River at Smoky River is 1,300 feet wide, its immediate valley 700 feet deep.

PINE RIVER TO THE SUMMIT OF THE PASS.

Page 52.—"The general characteristics of the country from this point westward to Stewart Lake have been fully described by Mr. Hunter in your report of 1878 (Appendix G) and as I am prepared to endorse that description, it seems unnecessary for me to touch on any but the most salient features, as seen from an engineering point of view.

Page 56.—"The Pine River Pass is also a remarkable one and although the elevation is greater than that by the Peace the works in passing through the mountain range would be lighter."

Page 102.—*Rev. D. M. Gordon*—"Our party spent the month of August in examining portions of this extensive plateau in different directions from Dunvegan. The facilities for railway construction from Lesser Slave westward, and from a suitable crossing of Smoky River northward in the direction of Pine River Pass, as well as the character of that pass are indicated in the reports that refer specially to those subjects. From Pine River eastward to Lesser Slave Lake and from Dunvegan northward of Peace River about seventy miles to Battle River and southward to the 55th parallel the examination was tolerably thorough. Throughout the whole of the district traversed in these explorations, with very few exceptions, the soil was found to be excellent, with rich herbage, luxuriant wild hay and pea-vine . . . Some tracks lying north of Peace River appear peculiarly fertile, whilst the district known as the Grand Prairie lying between Smoky River and Pine River from thirty-five to seventy miles south of Dunvegan is exceptionally good.

Page 100.—"This route (Peace River) might be of service if a line were constructed through the Omenica District to some northern terminus on the Pacific, such as Port Simpson. For any line, however, that would cross northern British Columbia south of the Omenica District by the Nation River, Babine and Skeena, to Port Simpson, or by any more southerly route, the Pine River Pass, which is known to be practicable, would offer a shorter course than by the Peace River Pass."

Page 43b.—*Geological Survey, 1879-80, G. M. Dawson.*—"The character of Pine River Pass in regard to railway construction appears to be very favourable, but as Messrs. G. Hunter and H. J. Cambie have both given special attention to this point it is not necessary to enter into detail here.

Page 67b.—"The northern banks of Peace River valley are also generally open and grassed"—north of Dunvegan to Battle River was examined and has already been described.

Conclusion.—There appears to be plenty of feed for cattle and no difficulty of constructing a wagon road to the navigable head waters of Nelson River from a point near the old Fort St. John on Peace River. The distance scaled from the Klondike Guide Map is about 170 miles.

MARCUS SMITH.

Routes to the Yukon.

OTTAWA, 5th May, 1898.

The Committee met this day.

Hon. Sir JOHN CARLING, acting Chairman.

W. T. JENNINGS, M. Inst. C.E., of Toronto, appeared before the Committee and was examined by them, as follows:—

The CHAIRMAN.—Have you a map before you, Mr. Jennings?

Mr. JENNINGS.—I have the map Dr. Dawson used when before the Committee and on which he has laid down three different routes extending from Edmonton to Fort Selkirk on the Yukon.

Hon. Mr. MACDONALD (B.C.)—Have you been through the country around Edmonton and that way?

Mr. JENNINGS.—The only parts of the country in the neighbourhood of Edmonton which I have personally seen, are from Edmonton northward to Athabasca Landing, eastward from Edmonton to Fort Saskatchewan, from Edmonton westward to St. Albert, and southward along the line of railway to Calgary.

Hon. Mr. PERLEY.—How far have you been up the Stikine way?

Mr. JENNINGS.—I have been up the Stikine River from the Pacific Ocean to the Tahltan River, a point some 10 or 12 miles beyond Telegraph Creek, or 160 miles from the sea, thence up the valley of the Tahltan River to its head, thence by the Koketsi to Egnall's Mountain, and northward by the Doo-de-don-too and Koshin river valleys to the Nahlin valley, thence following the head waters of the Yukon northward to Teslin Lake.

Hon. Mr. PERLEY.—Then all this section of the country around the Peace River, and so on, you have not been over at all?

Mr. JENNINGS.—I know nothing of the Peace River country from personal observations and only from public reports and conversations with gentlemen who have been over the district.

Hon. Mr. MACDONALD (B.C.)—What is your opinion of the road from Telegraph Creek and as far as you went for a railway. Is it rough?

Mr. JENNINGS.—From Telegraph Creek to Teslin Lake, the country is generally easy, the adverse features on the route being the two summits, severally situated, at the head of Telegraph Creek, and adjoining the Stikine valley; the second in passing over Egnall's Mountain from the Koketsi valley to that of the Doo-de-don-too River.

Hon. Mr. MACDONALD (B.C.)—What height do you ascend from Telegraph Creek going up, to the highest point?

Mr. JENNINGS.—The Stikine River, at Telegraph Creek, is 540 feet above sea level; Telegraph Creek Pass is 3,650 feet above the sea; from that elevation a descent to 2,200 feet is made at the head of the Tahltan River. Again, another ascent to 3,700 feet is made at Egnall's Mountain. After crossing the Egnall divide, a descent of 200 feet occurs. Then with light undulating gradients, the route lies in a northerly direction to Lake Teslin, which is reached at an elevation of about 2,450 feet above sea level.

Hon. Mr. MACDONALD (B.C.)—Will you have to go that height in carrying a railway through?

Mr. JENNINGS. —Yes, on the route referred to, but it is not necessary to use the Telegraph Creek Pass, as a line may be carried around by the Tahltan River, with an elevation of some 1,600 feet at the confluence of the Tahltan and Stikine Rivers.

Hon. Mr. MACDONALD (B.C.)—And that corresponds very well with the altitude at Teslin Lake?

Mr. JENNINGS.—It does; but the summit to the north of the Koketsi valley, at Egnell's Mountain, is unavoidable, except at a very considerable additional expense, by carrying the line to the westward of its present course, and down the valley of the Shesley River to the Nahlin River, over a reported rough district, or by a new route up the Tooya valley.

Hon. Mr. MACDONALD (B.C.)—I think contractors agreeing to do that work in a certain time, had no idea what they were agreeing to?

Mr. JENNINGS.—I know nothing beyond printed statements, as to what they agreed to do, and they never conferred or consulted with me on the subject.

The CHAIRMAN.—You measured the distance from the Stikine?

Mr. JENNINGS.—I did. The distance from Fort Wrangel to Telegraph Creek on the Stikine River had been previously measured and mapped. The railway route was projected to commence at the Little Cañon, distant 96 miles from the sea, and at the head of easy water, a point reachable from the sea in one day.

The CHAIRMAN.—How far is that from Telegraph Creek, and what is the state of the river at that place?

Mr. JENNINGS.—Some fifty-six miles. From the Little Cañon to Telegraph Creek, the fall in the river is much greater per mile, consequently the current is swifter. In my report, I suggested the Little Cañon as the point for a railway to start from, on the assumption that it was desirable to reach the interior as rapidly and in as safe a manner as possible, thus estimating one day's run from the sea to the commencement of the railway on the Stikine River, and that 10 or 12 hours would be sufficient time to cover the 208 miles of rail distance to Teslin Lake.

The CHAIRMAN.—What would be the distance from Little Cañon to Teslin Lake?

Mr. JENNINGS.—208 miles from the Little Canon, to a point some 12 miles down Teslin Lake.

Q. Why run any distance down the lake?—A. The south end of Teslin Lake is very contracted at two or three points where shallow water with soft bottom exists. When I say shallow water, I mean it is shallow in comparison with the depth of the lake proper; however, at the points in question the depth is ample for river steamers, being not less than four feet at low water in October last.

The CHAIRMAN.—Do I understand you, Mr. Jennings, that you would have a boat running 96 miles from Wrangel and then start the railway from there?

Mr. JENNINGS.—I suggested such a course, if deemed advisable, to make as speedy time as possible, also that by constructing the section of 30 miles along the Stikine River, the bad water would be avoided. From the proposed river crossing below Glenora the ascent to Telegraph Creek Summit should be commenced, or the line might be carried around by the valley of the Tahltan River, which enters the Stikine 12 miles above Telegraph Creek; the latter course would mean an additional distance of some 8 miles over easier country; and with the advantage of lighter gradients, also in closer proximity to the Cassiar district of Dease Lake, distant from the Tahltan mouth some 60 miles, again my report points out that from the Tahltan, railway lines may be extended up to Dease Lake or likely by the Tooya River valley to Teslin Lake, or join lines from the south.

Hon. Mr. PERLEY.—Is that the probable route on which this railway would have been built had it been passed?

Mr. JENNINGS.—I have not learned from any authentic source beyond newspaper accounts what was ultimately determined, except in a general way, but I think it was decided to construct via Telegraph Creek. I handed my preliminary reports to the Hon. Minister of the Interior, who expressed satisfaction with my work, and this practically ended my undertaking. I have not since been consulted in the matter. I do not know what was determined on further than that the 30-mile

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section on the Stikine River had been eliminated; that is, it was intended to use steamboats to Glenora, and to build and operate the railway line from that point to the extreme southerly end of Teslin Lake.

The CHAIRMAN.—Would it be possible to build a uniform gauge railway from Glenora to Teslin Lake?

Mr. JENNINGS.—Certainly.

The CHAIRMAN.—That is the uniform gauge of four feet eight and a half?

Mr. JENNINGS.—Yes.

The CHAIRMAN.—Could you say about how much you think a road like that could be built for, with, say, 56 lb. rail?

Mr. JENNINGS.—In my estimate to the Minister of the Interior the cost averaged \$19,000 per mile without rolling stock, which would add about \$500 a mile.

The CHAIRMAN.—So that the whole road could be built and equipped for \$20,000 a mile, of uniform gauge from Glenora to Teslin Lake?

Mr. JENNINGS.—That would be the average price, but it must be borne in mind that my estimate to the Minister was cost price, based on the assumption that either myself or somebody else would be asked to carry out the work directly for the Government, as engineer and manager of construction. I also informed the Minister that under the ordinary course of "letting" railway construction work, &c., out by contract it would cost, probably, at least \$2,000 a mile more. Then it must be borne in mind that the elimination of the Stikine River section would change the average cost per mile and the average cost rates of work.

The CHAIRMAN.—From Glenora to Teslin Lake, if you were building a road, what would be the distance that you would take from one point to another by taking the course you suggested?

Mr. JENNINGS.—Between 150 and 165 miles. The length would depend on the gradients adopted and the terminal point at the lake. The point of commencement on the Stikine River could only be absolutely determined upon after running a survey line over the best ground from Telegraph Creek summit elevation, or that of some fixed point to a suitable site on the Stikine River, then the question of a northern terminus would depend on the desired period of navigation of Teslin Lake. A terminus at the extreme south end of the lake would probably mean two weeks' less navigation time, each, spring and autumn, owing to the possible earlier formation of ice in the narrows; and, consequently, a later date for opening and an earlier date for closing the area within the narrows.

The CHAIRMAN.—I suppose it would run from 160 to 170 miles?

Mr. JENNINGS.—About 170 miles. I may say that the distances as shown on the plan are by a "track survey," and not from actual chained measurements. The latitude of Stikine River and Teslin Lake points is correct, but the intermediate distances are estimated, consequently, as the route is not a straight one the length of line as given should not be considered absolute.

The CHAIRMAN.—As I understand you, Mr. Jennings, a uniform gauge railway with 56 lb. rail, complete with rolling stock could be built for not over \$20,000 a mile, if it was done under your own supervision?

Mr. JENNINGS.—Yes, or thereabout, say \$22,000, with river section omitted. If done by agent without contractor's profit.

The CHAIRMAN.—In the way you built the Canadian Pacific Railway?

Mr. JENNINGS.—Yes. I have built sections of the Canadian Pacific under varying circumstances; but assuming that the road is built in a manner as required by the government specifications under a subsidy grant, and admitting "pile" and other wooden bridge structures, made from the most available timber to be found in the district.

The CHAIRMAN.—What would be the cost of a narrow gauge road?

Mr. JENNINGS.—The cost of a narrow gauge road would be not much less than that of a standard gauge say, 15 per cent.

The CHAIRMAN.—There would be this difference that a narrow gauge route would not require heavy rails?

Mr. JENNINGS.—That does not necessarily follow. I have seen narrow gauge roads with rails from 44 to 80 lb. per yard but a 15 per cent reduction would cover lighter rails.

The CHAIRMAN.—What rail did you estimate for ?

Mr. JENNINGS.—56 to 70.

The CHAIRMAN.—For the narrow gauge ?

Mr. JENNINGS.—For a standard gauge railway.

The CHAIRMAN.—That is the four foot and a half gauge.

Mr. JENNINGS.—I did not estimate for a narrow gauge road but for a standard gauge road, except for an electric railway line, and that was for the purpose of comparison; although beyond stating length of the ties and width of the road-bed, I do not mention the gauge of road, in my report. My reports were not final ones, (pending news from one of my assistants who was sent to find a short route from the Stikine by the Clearwater and the Sheshay Rivers), they were sent in, as requested by the Minister and I understand that I would have the privilege of editing and correcting proof if the reports were to be printed.

The CHAIRMAN.—I understand the contract with the contractors was for a narrow gauge road not a standard gauge road.

Hon. Mr. PERLEY.—Is that report printed, your report ?

Mr. JENNINGS.—Yes, but it was not proof read or arranged. It was just printed apparently as the typewritten sheets had been put together by those who took them apart. Each report as sent in by me was separate and distinct, and I had not an opportunity to proof read or arrange the matter for the printer. I am told that the hurry was due to a desire to get the information into the hands of the public in a speedy manner.

The CHAIRMAN.—Could a broad gauge road be built as rapidly as a narrow gauge road.

Mr. JENNINGS.—Not quite as rapidly; principally due to the additional amount of grading, which, to do it as rapidly, would require a larger force.

Hon. Mr. MACDONALD (B.C.)—How did you go down from Teslin Lake to the Hootalinqua River ?

Mr. JENNINGS.—Personally I only went to Teslin Lake: I sent two assistants down the lake to traverse it, and one of them continued the survey and soundings to the mouth of the Hootalinqua or Teslin River, then returned to the coast by White Pass, where I expected to meet him, but on reaching Teslin Lake, I found there was no means of getting from that point over to Taku or Atlin Lake as I intended, consequently, I had to return by the Stikine, and when I reached Fort Wrangel on my return, I met the Minister of the Interior, who thought the season was too far advanced for me to satisfactorily examine Chilcoot and White Passes.

The CHAIRMAN.—Was the country pretty well wooded through the pass you went ?

Mr. JENNINGS.—The country is lightly wooded with small spruce, black pine and poplar on the Stikine slopes, and the bottom of the Telegraph Creek Pass is open. In descending to the Tahltan crossing and on the Koketsi, or head of the Tahltan River the route is principally over gravel benches, timbered with small pine, spruce and poplar.

The CHAIRMAN.—Is it not a difficult country ?

Mr. JENNINGS.—Not for railway construction.

The CHAIRMAN.—Is the country beyond open ?

Mr. JENNINGS.—From Egnall's Mountain northward the mountain is generally covered with moss from one to two feet in depth and partly timbered with small poplar, spruce and pine.

Hon. Mr. PERLEY.—What do you find underneath that moss, frost ?

Mr. JENNINGS.—Generally gravel, somewhat of a clayey and apparently compact nature. I do not think it was frozen except perhaps in wet shady places.

Hon. Mr. McCALLUM.—Would there be any great difficulty in removing the moss ?

The CHAIRMAN.—You would not build on top of it ?

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Mr. JENNINGS.—There would not be any difficulty in removing the moss which should not be built upon or used in the construction of the road bed.

Hon. Mr. PRIMROSE.—How far does the moss extend?

Mr. JENNINGS.—It extends from Egnall's Mountain northward, say, 100 miles, and as far as I went, but I understand it continues as far northward as vegetation is found.

Hon. Mr. McCALLUM.—The moss could be removed with scrapers?

Mr. JENNINGS.—It struck me that the old fashioned farm cultivator would be a good appliance for removing the moss; by tearing it out and removing it to the sides of the clearing where it could be burned when dry.

The CHAIRMAN.—After this Mackenzie & Mann Company got to Teslin Lake what means were to be taken to navigate the lakes and rivers? Were the company going to build boats and going to carry freight and passengers through Teslin Lake?

Mr. JENNINGS.—I really know nothing at all about their plans.

Hon. Mr. PERLEY.—That is apart from the investigation?

Mr. JENNINGS.—I may mention that I understood a company has been formed in Victoria for the purpose of building steamers to ply on Teslin Lake, and the Hootalinqua or Teslin River, if found navigable. A number connected with that scheme went up the Stikine River with me. They were in charge of Capt. York. His outfit consisted of some sixteen men with horses and supplies, also sufficient iron and machinery for one steamboat and one barge; also for a saw-mill and appliances. This party had reached Egnall's mountain, some forty miles from Telegraph Creek, on their way northward when I passed south from Teslin Lake. I have no doubt that they made Teslin Lake in good season.

The CHAIRMAN.—What was the date when you met those men?

Mr. JENNINGS.—The 20th October, 1897.

Hon. Mr. PERLEY.—They have a steamboat built there, I suppose?

Mr. JENNINGS.—Captain Macdonald, who was placed in charge of the work at Teslin Lake, is an able, active young fellow who will, I have no doubt, push through and have his work completed by the opening of navigation on, say the 18th of May.

Hon. Mr. McCALLUM.—Any snow around there?

Mr. JENNINGS.—Yes, some three or four slight snowfalls occurred while I was on the trail, the heaviest probably being eight inches in depth, but strong "chinook" winds immediately followed the snowstorms, causing the snow to melt rapidly and raising the temperature to about 56°.

The CHAIRMAN.—I suppose the Lake and rivers all the way are clear for navigation, are they?

Mr. JENNINGS.—According to Mr. St. Cyr's report to me there is no trouble whatever about the navigation of the Lake and Hootalinqua River. At that late time of the year (25th October) when Teslin Lake was some ten or twelve feet below its highest level there was no place found in the channel of the Hootalinqua River with less than four feet of water. I believe it to be a good river.

Hon. Mr. MACDONALD (B.C.)—You have to get through the Five Finger Rapids. Is that a difficult thing?

Mr. JENNINGS.—The Five Finger Rapids are on the Lewes or Yukon River.

Hon. Mr. MACDONALD.—Are they unsurmountable for a steamboat?

Mr. JENNINGS.—From conversations with Mr. Ogilvie and Dr. Dawson and from their reports I would not call them at all difficult.

Hon. Mr. MACDONALD (B.C.)—There are some charters now to carry a tramway there to avoid the rapids.

The CHAIRMAN.—What is the usual rate of fare on railroads similar to that built in a new country?

Mr. JENNINGS.—I think that fares extend up to ten cents per mile, and I remember in looking over the Union and Northern Pacific time tables that the local rates ran as high as eight or ten cents, seemingly according to the districts. That was in the early days when the roads were just opened for traffic.

The CHAIRMAN.—I suppose in the early days they would have to charge more than that?

Mr. JENNINGS.—I think it would be reasonable to charge that sum per mile, the difference would be so much in favour of the person using rail travel in preference to the trail.

The CHAIRMAN.—It might be twenty cents a mile?

Mr. JENNINGS.—I should think there would be no necessity to charge so much, unless the travel fell off very greatly and it became a question of making ends meet.

The CHAIRMAN.—And the rates per ton—what do they generally charge on a road like that?

Mr. JENNINGS.—The present rate is \$500 a ton from Telegraph Creek to Teslin Lake by mule. That was the rate in force in 1897. The actual cost of carrying supplies would be nine cents a pound by mule from Telegraph Creek to Teslin Lake and return, a distance of 300 miles.

Hon. Mr. PERLEY.—That is to and fro?

Mr. JENNINGS.—Yes, going out loaded and returning light. This is a full figure. I have taken in every charge that I think might occur in such a business; the highest wages, higher than would maintain if a trail were opened and a good deal of packing done on it, an allowance for depreciation on the cost of the outfit, a considerable quantity of chopped feed and hay for the animals, their care over winter, &c., and in all it comes to nine cents a pound, or \$180 per ton. The charge made last year was twenty-five cents a pound or five hundred dollars per ton.

The CHAIRMAN.—What would you think would be a fair rate per ton from Glenora to Teslin Lake with a railway, supposing the railway was built?

Mr. JENNINGS.—I would hardly like to give an expression of opinion. I think, if you will allow me to suggest, it would be better to get information regarding the charges made on other mountain roads.

The CHAIRMAN.—I thought you might know what was charged on other mountain roads.

Mr. JENNINGS.—I have no particular knowledge in that respect, but in my estimate of cost and operation, &c., and returns of an electric railway to Teslin Lake, I assumed 5 cents per mile for passengers and fifty dollars per ton for freight, simply as a pointer.

Hon. Mr. MACDONALD (B.C.)—Around by Yukon, you can carry freight from Seattle to Dawson City for \$300 a ton.

Mr. JENNINGS.—That would be 15 cents a pound.

Hon. Mr. MACDONALD (B.C.)—Yes. It is about 3,000 miles, with only one handling, at St. Michaels, whence it goes up the Yukon in stern wheel boats.

Hon. Mr. PERLEY.—Would this be an expensive way of getting into the Yukon now?

Mr. JENNINGS.—As it is at present, I think it would probably be fully as expensive as any other way, perhaps more so. It would depend entirely on the charges made this year. If \$180 per ton by mule is taken as a basis from Telegraph Creek to Teslin Lake.

Hon. Mr. PERLEY.—That is the net cost?

Mr. JENNINGS.—No, it is after allowing depreciation and interest on outfit, but nothing more, not an additional profit over 15 per cent depreciation and interest on the cost.

Hon. Mr. PERLEY.—That would be really the actual cost, because a man would want that in any case.

Mr. JENNINGS.—And more. At 15 cents a pound the rate would be \$300 a ton, to which add say \$20 a ton between Victoria and Telegraph Creek.

Hon. Mr. MACDONALD (B.C.)—The tariff lately I think is \$40 to Wrangel.

Mr. JENNINGS.—The charge for some years has been \$40 per ton between Fort Wrangel and Telegraph Creek, but late in the autumn of last year it was doubled. I think the increase commenced with the transport of my outfit.

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Hon. Mr. PERLEY.—How much is the charge per ton from Victoria, round by St. Michaels and up that way?

Answer by Hon. Mr. Macdonald.....

The CHAIRMAN.—You cannot say, if the railroad was finished, what would be a fair thing under all the circumstances to charge per ton?

Mr. JENNINGS.—I should not like to express an opinion on that head in an off-hand way. Had I anticipated such a question, I would have made inquiries.

The CHAIRMAN.—I was thinking of an approximate estimate.

Hon. Mr. PERLEY.—It is about 600 miles from Teslin Lake to Dawson City.

Mr. JENNINGS.—About 560 miles; of this total, it is about 200 miles from the south end of Teslin Lake to the mouth of the Hootalinqua River.

Hon. Mr. PERLEY.—Is that a wide river or a narrow one?

Mr. JENNINGS.—It is from 150 feet to half a mile in width.

Hon. Mr. PERLEY.—A rapid river?

Mr. JENNINGS.—Not very rapid; 4½ or 5 miles per hour is, I think, the swiftest, except in very short runs which reach 6 miles per hour.

Hon. Mr. PERLEY.—Did not some one say it was 8 miles in some of the cañons?

Hon. Mr. PRIMROSE—I understood that.

Mr. JENNINGS.—On the Hootalinqua?

Hon. Mr. PERLEY.—Yes.

Mr. JENNINGS.—I do not remember Mr. St. Cyr reporting such to be the case; however, here is his report in which he states that "only in a few places, and for very short distances was a velocity of 6 miles recorded," and there are no cañons.

The CHAIRMAN.—I suppose that they have copies of your report in the Distribution Office?

Mr. JENNINGS.—I have asked the Minister to suppress this edition (as it was published without arrangement or proof reading) and get out an edition properly arranged. The matter will be exactly the same, but in proper order. For instance, the last clause of the railway report, regarding the cost of a railway from Telegraph Creek to Teslin Lake, is placed at the very end of the pamphlet, and under a table showing cost of supplies per man per day at Teslin Lake. Had I been accorded the customary privilege the whole report would have appeared in proper order.

The CHAIRMAN.—What do you make the distance altogether from Wrangel via Glenora over the route of this railway and by Teslin Lake to Dawson City and by the River and Yukon? Have you measured the distances?

Mr. JENNINGS.—The distance from Fort Wrangel to the Little Cañon is 96 miles; from the Little Cañon to Teslin Lake 208 miles, from Teslin Lake to the mouth of the Hootalinqua, 200 miles.

The CHAIRMAN.—That is taking in Teslin Lake?

Mr. JENNINGS.—Yes. From the confluence of the Lewes and Teslin or Hootalinqua River to Dawson City by the river is 361 miles, or in all 865 miles.

The CHAIRMAN.—That would be to Dawson City?

Mr. JENNINGS.—Yes, I may say the distances along the Yukon River are accurately given by Mr. Ogilvie in his book on the Yukon, and these distances were, I understand, obtained by an accurate micrometer survey.

Hon. Mr. PRIMROSE.—In Mr. St. Cyr's statement (page 15) of your report, he gives the velocity of the Hootalinqua at some points at six miles per hour. I thought it was said to be eight?

Mr. JENNINGS.—I think not. Five miles an hour.

Hon. Mr. PRIMROSE.—And some places six miles?

Hon. Mr. McCALLUM.—They would not make much headway with a stern wheel boat against that?

Mr. JENNINGS.—Only for short distances, a few hundred feet here and there. The impetus gained in slack water would carry a boat through it. However, should there happen to be, say, a quarter of a mile of water at a speed of seven or eight miles, then the better way would be to lay a cable and use the steamer's capstan to assist her.

Hon. Mr. McCALLUM.—If you got a good head of steam on you could run through a short distance of rapid water?

Mr. JENNINGS.—Yes.

The CHAIRMAN.—With regard to the route from Edmonton, could you give us your opinion as to the best and shortest route from Edmonton to, say, Fort Selkirk?

Mr. JENNINGS.—I can give you a general opinion based on information obtained from the reports issued by Dr. Dawson and covering those of gentlemen in his department, also such information as I have had from various engineering reports and from engineers and surveyers, who have passed over parts of the district, but not from my own personal knowledge.

Hon. Mr. McCALLUM.—I thought we got that from Dr. Dawson?

The CHAIRMAN.—Yes. He gave us his opinion as to which was the best route, and I would like Mr. Jennings to give his.

Hon. Mr. McCALLUM.—He says he could only speak from the data furnished.

Mr. JENNINGS.—From such general knowledge of that country and of the routes, which I conceive would generally do the most good in colonizing and opening up sections (and not alone with the object of reaching the Yukon), of country, I have reason to believe are good, both in the North-west territory, and in the northern part of British Columbia.

The CHAIRMAN.—If you would be kind enough to give us that, both as to the route from Ashcroft and also as to the route from Edmonton.

Mr. JENNINGS.—Referring to the map before me, on which lines one, two and three are laid down in red, I think that generally they cover routes that are reasonable, judging from the notes on the plans and information obtained in reports, also from what Dr. Dawson tells me. Route number one extends from Edmonton in a north-westerly direction across the Pembina to the Athabasca River, near Fort Assiniboine; thence to the Smoky River south of Dunvegan, and on to a crossing of the Peace River near Pine River, and east of Fort St. John; and thence probably up the valley of the Pine River, and over the divide to the east branch of the Nelson River, continuing down the Nelson to the Liard River, up the Liard to its confluence with the Francis River, and up the latter to Francis Lake; thence along the south side of Francis Lake, and across a low divide to the Pelly River; thence down the Pelly River to its confluence with the Lewes River at Fort Selkirk. An alternative from route number one and noted number two, may be made by leaving Edmonton and continuing in a westerly course to the Athabasca, continuing up the Athabasca to a point which would permit the line to be carried through the Yellow Head Pass, and thence down the Fraser River valley to near Giscome Portage, at the great bend of the Fraser River; thence northerly by branches of the Parsnip and the Black River to the Liard River, near its confluence with the Dease River, and there uniting with route number one. Or this line may be projected westward from the Fraser by Salmon River Valley, North Tacla Lake, the third fork of the Stikine, the Tahltan, and possibly the Tooya valleys on to the head waters of the Yukon (south of Teslin Lake), to Teslin Lake; thence by land, or by Teslin Lake and river to Fort Selkirk. Another line might be carried from the Canadian Pacific Railway at Kamloops; thence up the North Thompson, &c., rivers, and over the Albretha Summit to a junction with the Fraser River route (as last described), at Tete Jeune Cache, and 45 or 50 miles west of the Yellow Head Pass; thence continuing on route number two.

Hon. Mr. MACDONALD (B.C.).—Continuing to Teslin Lake just the same?

Mr. JENNINGS.—Yes, this route could be diverted to a connection with the line first described at what is called the Lower Post on the Liard River, or by way of Stikine, Tooya or Tahltan Valleys to Teslin Lake. Another line may be projected northward from Ashcroft on the Canadian Pacific Railway, thence through the middle or Fraser River country to Quesnelle, thence northward to a junction with number two route at the bend of the Fraser near Giscome Portage, or it may be projected from Ashcroft, as before, thence across the Fraser near the mouth of the Quesnelle, thence over the old telegraph trail route to the Stikine River, above the

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Tahltan, and on by either the Tooya or Tahltan, &c., valleys, as before mentioned, to Teslin Lake, &c.

If you would allow me, I may here mention that I think a coast route might be had from a strictly British port at or about Port Simpson, thence up the Skeena Valley or the valley of the Nass to the summit of the Skeena, which is also the summit of the Stikine and Black Rivers, and of an elevation, say 3,500 or 3,800 feet above sea level. From this elevated section I have no doubt a railway-route may be obtained to the north-east or south-east.

Hon. Mr. MACDONALD (B.C.)—Have you been in the Kitamat district?

Mr. JENNINGS.—I have passed the inlet leading to it but have not critically examined it. I have read the information obtained in connection with the Government surveys, and have looked over the charts. Alice Arm and Observatory Inlet, to the north-east of Port Simpson, have been mentioned as likely points for a terminus, but I doubt if anybody is now able to speak of either point with certainty. Surveys were made by the Government for the Canadian Pacific Railway routes from Port Simpson and Skeena River. The Nass was also examined. This information is to be found in the Chief Engineer's Reports for 1877 to 1880. Also see reports of Messrs. Gouvreau and Poudrier in Crown Lands Report, B.C., for 1891 and 1892.

Hon. Mr. MACDONALD (B.C.)—Mr. Coste saw that the other day and he says that the land is very high there.

Mr. JENNINGS.—The gentleman whom I think knows about this locality is Mr. McEvoy of the Geological Department, who made a survey there about, and doubtless could give the Committee a considerable amount of information. I may add, in reference to routes from the coast that to meet a line from the south or east, the Stikine route would be a short and quick one for summer travel.

Hon. Mr. MACDONALD (B.C.)—It could be used most of the year, could it not— from April or May to about November?

Mr. JENNINGS.—From early in May to say the third week in October. I travelled down the Stikine by canoe on the 23rd, 24th and 25th of last October, and it was open for a few days later. Fairly good water was found, possibly sufficient for a boat drawing from two to two and a half feet.

Hon. Mr. MACDONALD (B.C.)—I suppose there was some ice then in the river?

Mr. JENNINGS.—Only a small quantity of fine ice in small masses like wet snow; after a heavy frost these masses unite and, gathering in considerable quantities, eventually form across the river and, if the cold continues, close for the season.

The CHAIRMAN.—Have you any particular knowledge as to the Ashcroft route?

Mr. JENNINGS.—I have been over the Ashcroft route to Soda Creek, so far as one can see the country from the Cariboo wagon road.

The CHAIRMAN.—Would it be difficult to build a road through that district?

Mr. JENNINGS.—I do not consider it a difficult country for a road.

The CHAIRMAN.—Taking from Edmonton, what route do you think would be the most feasible?

Mr. JENNINGS.—Personally my belief in regard to that district has always been in favour of a route from Manitoba through the Saskatchewan valley to Edmonton, thence following the most suitable territory to the Yellow Head Pass and down the Fraser to or near the "big bend," thence over an easy country northwards to any desirable district, or to the Pacific coast at the most suitable point to be found, say Port Simpson. Such a route will serve the country to either the north or south of it, northward to a connection with any of the routes described, or southward via the Columbia River valley; via the North Thompson to Kamloops or Ashcroft; by the Fraser, to Ashcroft; or by the Nazce and Chilcotin country to Bute Inlet. From these extensions, or main north and south lines, through British Columbia, branch lines can be extended as circumstances demand.

The CHAIRMAN.—There is an impression that the eastern road for opening up the agricultural and mineral country would be the best route (Route No. 1.) and taking that route that I am speaking of from Edmonton to say Fort Selkirk, is the shortest and the easiest for constructing a railway.

Mr. JENNINGS.—From what I have been able to learn, it is not likely to be an expensive country for railway construction. It is some 1,361 miles (including allowance for curvature) between Edmonton and Fort Selkirk.

The CHAIRMAN.—Have you any idea what a railway could be built for in that section of the country, taking the general lie of the land?

Mr. JENNINGS.—I made an estimate which may or may not be correct, based on the best information as obtained from Dr. Dawson, and covering route No. 1, and from this information, I think a railway could be built and equipped for \$20,500 per mile.

The CHAIRMAN.—That is taking the whole country from Edmonton?

Mr. JENNINGS.—Yes, or a total of \$28,000,000, assuming so many miles of light work, so many miles of medium, so many miles of heavy at various figures, which average \$20,000 a mile and to which add, for rolling stock, say \$500 a mile. These figures are on a cash basis and without profit to builders.

The CHAIRMAN.—What do you think it would cost to build a wagon road from that district?

Mr. JENNINGS.—From \$1,000 to \$1,200 per mile. I may say that I think contractors would not undertake to build a railroad along route No. 1, which I have just referred to, at say less than \$25,000 a mile, but, taking the figures quoted, I mean that with reasonable rates on materials to the point of commencement, it can be constructed for the amount per mile as mentioned. Nearly everything would have to come in by Edmonton, unless very good rates could be obtained from the coast, but there would be no object in constructing a separate section in the neighborhood of Selkirk, as the Pelly River would afford temporary access from that direction until the railway reached it from the coast.

The CHAIRMAN.—You mean a standard gauge railway and heavy rails?

Mr. JENNINGS.—Yes, with the Government section of rail 56 lbs. to the yard.

The CHAIRMAN.—A road such as you estimated for, to Teslin Lake, what would that cost?

Mr. JENNINGS.—Practically the same and on the same construction basis.

The CHAIRMAN.—Not much difference?

Mr. JENNINGS.—It is generally a similar country.

The CHAIRMAN.—Supposing it was a narrow gauge of three feet or three feet six inches?

Mr. JENNINGS.—I did not estimate on a narrow gauge line. If I remember rightly, I stated that it would cost about fifteen per cent less than a standard gauge; however, I do not consider it advisable to build a narrow gauge from Edmonton to the Yukon. I think it would be much better to continue the standard gauge.

The CHAIRMAN.—You would prefer the standard gauge on that route from the Stikine to the Teslin Lake?

Mr. JENNINGS.—I prefer the standard gauge for any locality excepting, perhaps, short isolated lines to mines, or without a connection with a standard gauge system. At the time the narrow gauge roads were advocated, many lines were of a gauge greater than 4'8½"; engines and rolling stock were made in a more rigid manner than now. Again it was supposed four feet and eight and a half gauge would not permit an engine or car to pass around a sharp curve, but that day has passed; the construction of car tracks has been improved and there have been important changes in the construction of the locomotive engines.

The CHAIRMAN.—What do you think a wagon road or packed trail through that country could be built for.

Mr. JENNINGS.—A wagon road could be built for about \$1,000 or \$1,200 per mile, from the point where the present road terminates. I do not suppose that the road from Edmonton to the Peace River cost such a sum but taking the average cost in British Columbia for a good road, say about \$1,500 per mile and deducting a difference in cost due to smaller timber and other features, I conclude that the rate mentioned would be a fair average.

Hon. Mr. PERLEY.—That road would not be in British Columbia?

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Mr. JENNINGS.—A portion would not be in British Columbia. I understand that there is a road now built from Edmonton westward some 300 miles, over a very easy country. From its terminus on the Peace River, the country becomes more undulating with deeper ravines, consequently, entailing heavier work.

The CHAIRMAN.—That means macadamized and gravelled?

Hon. Mr. MACDONALD (B.C.)—Some gravel and some corduroy?

The CHAIRMAN.—Perhaps you do not want to build a road so expensive as that?

Hon. Mr. PERLEY.—You cannot build a road through a country at much less than \$3 a rod, that is about \$1,000 a mile.

The CHAIRMAN.—You would not want to go to such an expense if it was to be followed by a railway.

Mr. JENNINGS.—If it were only a convenience road built to facilitate the construction of a railway and only to be used for a month or so, it might be constructed for a small sum per mile.

The CHAIRMAN.—What did Mr. Oliver give?

Hon. Mr. PERLEY.—\$300 per mile.

Mr. JENNINGS.—\$300 a mile would probably clear a road through the country immediately west of Edmonton and do some little ditching and brushing in low places.

Hon. Mr. PERLEY.—Mr. Oliver said there would be no ditching at all.

Mr. JENNINGS.—A pack trail would cost probably \$150 per mile throughout. The prairie portion costing very little while that in the northern part of the country would cost \$100 to \$300 a mile, according to stability.

The CHAIRMAN.—Of course, 265 miles of road from Edmonton to the Peace River. Mr. Oliver was under the impression that 250 miles of a road, and by utilizing the rivers, that they could go to Fort Selkirk very easily by having scows to cross the rivers and boats to navigate the rivers between different points.

Mr. JENNINGS.—As a temporary convenience, it is possible that such a mode of construction and operation might answer, but I hardly think that such a road would be used as a trunk line. The cost of freighting over such a length of road by wagon, the cost of horse feed along the route and the time consumed would, I fear, make it more expensive than by taking the Yukon direct; at the same time, such a wagon road would afford the means of reaching all the country on each side of it, and no doubt, if advanced gradually, would be of great benefit.

The CHAIRMAN.—Only by the pack trail or wagon road?

Mr. JENNINGS.—It would be a pack trail 1,360 miles in length. At the average rate of travel of a pack train per day, the mules loaded with 250 or 300 pounds, according to their capacity, it would be 100 days net or really four months in making the trip out and about three months in returning. In selecting a route for pack trails it is especially necessary to keep on good ground and, as far as possible where feed may be conveniently obtained, otherwise such a trail would be impracticable. A pack animal could not carry enough feed to maintain itself on such a trip.

Hon. Mr. MACDONALD (B.C.)—I suppose you would come to some parts of the road where there would be no feed in the middle of the summer?

Mr. JENNINGS.—Such is very likely to be the case.

Hon. Mr. MACDONALD (B.C.)—Some rocky parts?

Mr. JENNINGS.—I do not understand that there are any long, rocky or abrupt sections on this route.

Hon. Mr. MACDONALD (B.C.)—And thick timber?

Mr. JENNINGS.—Where there is timber as I understand Dr. Dawson, there are frequent openings or prairie spots where feed might be obtained. Dr. Dawson would much better be able to give you definite information on that point.

The CHAIRMAN.—A railway for colonizing is —

Mr. JENNINGS.—A colonization railway or wagon road from Edmonton generally on the course marked No. 2, and extending to the Athabasca River near its confluence with Baptiste River (140 miles), thence to the Peace River near Dunvegan, would be 300 miles in length.

A branch railway or wagon road commencing at the confluence of Athabasca and Baptiste Rivers and extending in a south-westerly direction to Yellow Head Pass would be 125 miles in length. A further distance of 45 miles through the pass would afford access to moderately navigable water on the upper Fraser River at Tete Jeune Cache, or a total of 465 miles of railway line or wagon road would do much in opening up the country west of Edmonton by affording access to both the upper Fraser and upper Peace Rivers.

The CHAIRMAN.—How would you cross the rivers?

Mr. JENNINGS.—By scow ferry boats, very similar to those in use on the Saskatchewan at Edmonton and many other river crossings if for wagon road—and by suitable bridges for railway use.

W. T. JENNING'S examination continued by the Hon. Mr. Boulton.

Q. You understand in the development of that great mining region economy of transport in order to cheapen supplies is of the utmost importance?

A. I do.

Q. That you cannot develop any trade of any consequence in that region unless that economy is supplied?

A. Precisely.

Q. And that economy from eastern Canada can be best applied by direct railway communication to the interior of that country?

A. From eastern Canada or the north-west country the development can be carried on by the construction of a railway from the most convenient point, presently at Edmonton.

Q. Now, I want to make a comparison of different routes. One route we have in existence now as far as Glenora by the Canadian Pacific Railway and the ocean. We have that open. That makes 650 miles from Calgary to Vancouver, and then we have 700 miles up to Wrangel, and then we have another 135 miles up the Stikine River to Glenora. Total, 1,485 miles. Now we want to get the distance from Glenora to Dawson City?

A. 165 miles to Teslin Lake, 200 miles to the mouth of the Hootalinqua, 361 miles from the mouth of the Hootalinqua or Teslin River to Dawson. That is a grand total of 2,211 miles from Calgary to Dawson.

Q. Will you just tell us the proportion of railway and water communication separating the river from the ocean?

A. The ocean, lake and river communication is 1,396 miles, and railway communication 815 miles.

Q. That is merely contemplating the construction of 165 miles to connect Teslin Lake with Telegraph Creek?

A. Precisely so.

Q. And adding that to the 650 miles of the Canadian Pacific Railway?

A. Yes.

Q. Of course, that navigation is only available for six months in the year?

A. Say six months at the outside.

Q. Contemplating that route, there would be transshipment at Vancouver, transshipment at Wrangel, transshipment again at Telegraph Creek, and transshipment again at Teslin Lake?

A. Precisely so.

Q. Supposing it was in contemplation of the government to project a railway to Fort Selkirk or Dawson City, the actual length of rail, taking that route, would be how much?

A. That would be 1,376 miles of railway to Dawson.

Q. So that if it was in contemplation to complete railway communication up to Dawson City, it would amount, according to your figures, to 1,376 miles of railway

A. Yes, *via* Vancouver, and from a Stikine River point to Dawson. from Calgary?

Q. And 700 miles of ocean navigation to Wrangel and 135 miles of river navigation from Wrangel to Telegraph Creek?

A. Yes.

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Q. In Dr. Dawson's figures, he gives the distance from Edmonton to Fort Selkirk as being 1,311 miles?

A. The distance I gave was from Edmonton to Fort Selkirk, which, according to my scaling of the Dominion plan with ten per cent added for sinuosities, such as would occur in railway construction, would make a total of 1,331 miles to Fort Selkirk.

Q. So that we would reach, by way of Edmonton, Fort Selkirk with the same railway communication and save the ocean transport and river transport and consequent transshipment?

A. Precisely. And further, such a railway would open up a vast area of country.

Q. No doubt the Government is anxious that all interests should be served in developing the Klondike and Fort Selkirk regions and the intermediate country; that is to say, that there shall be access from the coast and that there shall be access from the east?

A. I think that would be the correct course to pursue.

Q. Therefore it is desirable to so locate a route that it could be used generally from a starting point in the interior available for the coast connection and available for the eastern connection?

A. That, also, is my opinion.

Q. With that object in view, it would then be necessary to start from some point further south than the Stikine River for railway connection with a line approaching from the east?

A. In my opinion it is highly advisable that a terminal point on the Pacific coast should be situated at a point beyond doubt in Canada, or outside of the district in dispute between the United States and Canada; thence to a central point on the plateau, from which lines could be carried north or south, or extended eastward to a junction with the present or future lines east of the Rocky Mountains.

Q. Then would the head of the Naas River be a common point to both lines, or what point do you think would be best?

A. At the present time I do not think anyone can speak with absolute authority as to which route should be selected as only one has been surveyed; the best harbour should first be determined upon, or perhaps two points selected; the ground between the coast and the interior should then be gone over carefully, and location lines run from the harbours to the interior. This done, the result will determine the best route as to gradients, curvature and general advantages to the country. The interior once reached, railway lines can be carried in any direction, as the plateau is generally of the same elevation, and particularly near the head of the Naas, Skeena and Stikine Rivers, you will observe by the plan is the crown of that district, or where the highest elevation is reached; consequently, lines extending in any direction from the passes on that crown would not likely attain a higher elevation.

Q. It would be desirable to carry a route from the ocean as far east as possible to meet the approach of a line from the east?

A. It could be carried to the summit of that country; thence a line northward by the Stikine, the Tooya, or Tahltan valleys to Teslin Lake, and so on to Fort Selkirk or Dawson City, or, by way of the Black River to the Liard, up the Liard to its summit, and across the divide to the Pelly; thence down the Pelly River to Fort Selkirk or beyond. From practically the same starting point at the summit, a line could be carried eastward through the Omineca district to the Peace River, continuing along the Peace River valley, the Pine River valley, or by way of the Watsonqua-Nechaco and Fraser, and in what might be considered the most advantageous direction to Edmonton; thence eastward along the Saskatchewan valley to a connection with the lines already built northward from the Canadian Pacific Railway, or generally covering the ground originally selected for the Canadian Pacific Railway by Sir Sanford Fleming, then Chief Engineer for the Government, and a route, which if built upon, would I believe, have been fraught with fully more advantages to the operating company than the line now in use.

Q. That route, which you have referred to, would open up new districts that are now inaccessible?

A. Most decidedly so; and further, I think, had that route been adopted, the ones to the south would also have been built by this date, I mean, either by the Crow's Nest Pass or a Pass south of the one at present used.

Q. You made a report on the Dalton trail route?

A. I made a report on the Dalton trail route based on information supplied me by Mr. McArthur, D.L.S., one of the surveyors in the Interior Department. I met him here and he gave me all the information he had, including barometric elevations, photographs, &c.

Q. That distance I think you put down here at 245 miles to Fort Selkirk?

A. 245 miles from Pyramid Harbour to a point 5 miles below "Five Fingers" Rapids on the Lewes River. A further distance of 57 miles would carry a line by that route to Fort Selkirk, and with an additional 174 miles to Dawson City.

Q. To the mouth of the Nordenskiöld or to Fort Selkirk, a railway would develop all the country tributary to the navigation, to the Hootalinqua and Teslin Lake by going up the river?

A. A railway from the sea at Lynn Inlet to the mouth of the Nordenskiöld would give access to the Lewes or Yukon Rivers and, consequently, to the Salmon, Pelly, Hootalinqua and Teslin Lake districts, but such a line would pass through United States territory.

Q. I suppose you know that that line is bound to be built?

A. No, possibly it will be.

Q. And before we have time to complete these other lines. If the Teslin Lake and Hootalinqua route is developed and can be developed by a railway reaching Fort Selkirk, then the Black River route that you have spoken of will be opened up, and Dease River country, which is reported as being pretty rich in minerals?

A. The whole district between the Teslin Lake route and the Black River and Liard and Pelly country is considered good mining territory. I should like, however, to have it fully understood and recorded that I am not averse to a railway line by way of the Hootalinqua and Teslin Lake southward to some point at or near Fort Simpson, and I think such a line would cover the ground I have described. For access to such a route, the Stikine River would come in very conveniently for construction purposes as it would intersect it about the centre, thus enabling the work to be carried on simultaneously in both directions, from the centre, and from the sea coast end as well.

Q. Do you think that the survey which you were able to make in a short time last year was sufficient to justify immediate construction going on without further location, without examination for an easier route?

A. I do not think that an easier route can be obtained from the Stikine River than the one I described.

Q. Not by the Tooya?

A. I mentioned the Tooya also. I considered it advisable to look at the Tooya for the purpose of improving the gradients and more nearly approaching the Dease Lake country. At the same time I may say that I expressed the opinion that a railway built from some point on the Stikine over to the interior would be found advantageous even if partly abandoned later on, as the road-bed would be a good wagon road for the district, and there would not, after all, be a serious loss, taking the development of the country into consideration.

Q. ———?

A. Yes, I considered the matter pretty fully at the time.

Q. You are still of the opinion that the railway surveys should be so far made, as to serve as an approach from the east as well as from the coast?

A. Yes, I am of that opinion, and a line determined upon southward from Teslin Lake, with the object of reaching the sea coast at or near Port Simpson, such a line would necessarily pass over the high land above referred to at the head of the Skeena or Naas Rivers, and from that high land a route may be projected eastward or southward or again northward to the Liard.

Q. Can you give us any idea of the distance that it would be, taking a point, say, Port Simpson up to the crossing of the Stikine?

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A. 400 to 450 miles. 400 is the scaled distance; 450 would likely be the actual distance including allowance for curvature. The route would likely be from Port Simpson by the Skeena valley to the third fork of the Stikine; thence to the crossing of the Stikine near the confluence of the Tooyah with the Stikine.

Q. So that if you add that 450 miles to the railway from Telegraph Creek north to Teslin Lake, we get how much railway communication?

A. 620 miles.

Q. To Teslin Lake?

A. Yes.

Q. And from Teslin Lake north what do you make the total?

A. 1181 miles.

Q. That would be 1181 miles from a Canadian harbour?

A. From a Canadian harbour in the vicinity of Port Simpson to Dawson City.

Q. And adding that to the 650 miles of Canadian Pacific Railway would make how much?

A. 1831 miles.

Q. 1831 miles of rail travel and some 500 of ocean to the Skeena?

A. Yes, 500 miles from Vancouver to the mouth of the Skeena.

Q. Of ocean travel?

A. Yes. Should some point at or about Observatory Inlet be found suitable for a terminus, and the Naas Valley used in making the ascent to the plateau, a line from the sea to the Stikine River at the point last described would be about 300 miles in length.

Q. That would reduce the railway distance, how much?

A. It would reduce the rail to 1,031 miles, or a total rail haul from Calgary of 1,681 miles, with an increase in ocean travel of 75 or 100 miles. In this connection I might mention that a terminus in the vicinity of Observatory Inlet would be immediately opposite Dixon Entrance, an open passage from the Pacific by the north of Queen Charlotte Islands and south of Prince of Wales Island.

Q. So that as compared with the route from the interior, say from Edmonton, which Dr. Dawson's figures put at 1,311 miles to Fort Selkirk, what would the distance be?

A. It would be, say, 1,486 miles.

Q. So that, as against a route from Edmonton to Dawson City of 1,486 miles, we have 1,681 miles of railway carriage and 575 of ocean carriage, with two transshipments?

A. Yes.

Q. I only wanted to bring out clearly the difference in the transport for the eastern route?

A. Yes, but we will have to check all distances given by the plan.

Q. You have not been connected with mining in any way in that region, have you, Mr. Jennings?

A. I have not. I have heard a good deal about the mining interests and observed what has been going on throughout the whole country for many years, and, from what I have learned, I think that the district immediately to the east of Fort Simpson, through the Omineca, towards Edmonton, will prove a very rich country, both for placer and quartz mining.

Q. And the development of mining when you get railway communication in there is greatly aided by the navigable waters?

A. Very much so.

Q. Most of those large streams are available during the summer season for steamboat navigation?

A. The majority of them are reported available for navigation in places during the open season. I might say as an exemplification that ore of the same value would be worth considerably more per ton net at, we will say, the summit of the Skeena, than at Rossland, as the rail haul to convey such ore to an ocean port would be considerably less, also in the case of the reduction of some ores, fluxing material

might not be had in the vicinity, therefore, their removal by ship to some point where the necessary fluxes were available.

Q. From your large experience as a railway engineer you believe that that country would justify the extension of a railway, that is to say, that it would be just as much a paying transaction as it is going through the Crow's Nest Past, or any other?

A. I thoroughly believe that the construction of a railway from our North-west country to a northern part in British Columbia would be a very great advantage to the whole of Canada, and, before such an undertaking is entered upon, the subject should have full consideration; all information heretofore obtained should be looked up and new plans prepared, showing the various features of the country and its economic value, then colonization routes should be greatly determined in accordance with these features, also keeping in view the development of other districts to the north and south of the main line or lines to the coast. The natural troughs and valleys in British Columbia lie generally north-west and south-east.

Q. Who can give us additional information?

A. There is nobody who, I think, personally knows almost the whole of that district, or who is generally so well informed about it as Dr. G. M. Dawson. See reports. As requested by the Committee, I prepared an estimate of the full cost of a telegraph line from Edmonton to Fort Selkirk (a distance of 1,331 miles), which comes to \$400 per mile; or a total of, say, \$533,000. This work, if done in connection with the construction of a trail would be reduced by the amount of clearing, say an average of \$100 per mile, a sum which would also form a reduction from the cost of a wagon road. The first 300 miles from Edmonton westward could of course be constructed at a less rate than the figures given, as the country is generally level, more open and accessible; but taking the entire route and the inaccessibility of the more distant portions of it, the expense would necessarily be heavy, thus making an average of \$400 per mile, including shelter and station buildings, also instruments and batteries. Upon referring to the contracts let by the government for the construction of a telegraph line extending from Winnipeg to the termination of the then existing telegraph line in British Columbia, I find that the average cost, as let by contract, for the entire distance, was \$390 per mile. But I should add that the clearing provided for in the government specification entailed a larger number of acres per mile than that taken into account in my estimate. However, my estimate and the general average cost, as obtained by government contract rates practically come to about the same amount when reduced to an equal basis.

Q. How many tons of 56-lb. rails per mile?

A. Eighty-eight tons. I calculate including fish-plates, fastenings and sidings; 100 tons per mile is a fair estimate.

Q. As to the price of rails mentioned in your report and cost of construction, could you give us your general basis?

A. I took the English market rate of £4 sterling per ton, on shipboard in England, to which I added £1 per ton to Wrangel by sailing vessels round Cape Horn, at four months time and \$2.50 per ton freight, on the Stikine River making up \$29.60 including freight handlings, insurance, &c., as cost of rails. The £1 freight rate to Wrangel was based on a 13s. 6s. sterling quotation to San Francisco as taken from Shipping list, 6s. 6d. being the balance of £1, gives the time occupied in the trip from 'Frisco to Wrangel and back to Puget Sound for other cargo. Three times the amount per day earned on the journey to San Francisco. The 16,000 tons required would take about eight ship loads of 2,000 tons each. The \$2.50 rate on the Stikine River is based on 15 per cent interest and depreciation on the value of the boat and charging up against rails, her whole cost of operation and maintenance for the season, allowing 200 tons per trip, her passengers and general freight returns would be clear profit.

In the schedule of rates for railway construction, the conditions in that locality were considered. For instance, clearing which would be done in this part of the country for \$10 or \$12 per acre has been entered for at \$25 per acre. Earth work such as would pertain on that section would be let for from 12 to 16 cents on our

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prairie, I have allowed 25 cents, side-hill, rock excavation, estimated for at \$1.00 per yard would be done for 60 cents hereabouts, other items have been treated in the same manner. Then I considered as manager of construction for the Government, I would take enough money for freight and passenger fares after the first ten or fifteen miles of track had been laid or, to Telegraph Summit or Tahltan to pay cost of running the trains. So far as the rate of wages is concerned, I was not of the opinion at that time nor am I now, that wages would be abnormally high, as there is always a large percentage of men looking for work on the Pacific Coast. I give these figures to indicate the basis upon which I made my estimate.

OTTAWA, 10th May, 1898.

The Committee met this day.

The Hon. Mr. BOULTON, Chairman.

PIERRE C. PAMBRUN, of Battleford, North-west Territories, appeared before the Committee and was examined by them.

The CHAIRMAN.—We have asked you to come down here for the purpose of giving such information as your long residence up there would enable you to give as to the capabilities of that country, especially for the purpose of opening up wagon routes and railroads, so far as you know the lay of the country, to the Yukon. When did you go up there first?

Mr. PAMBRUN.—In 1841.

The CHAIRMAN.—Were you born in the North-west?

Mr. PAMBRUN.—Yes, I was born at Lesser Slave Lake on the 27th August, 1824.

The CHAIRMAN.—And your father, I believe, came out with the Earl of Selkirk?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—In 1812?

Mr. PAMBRUN.—No, in 1815. He served during all the war of 1812 and it lasted until 1814.

The CHAIRMAN.—Where?

Mr. PAMBRUN.—In Canada.

The CHAIRMAN.—And he was present also at the battle of Seven Oaks there?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—When Governor Semple was massacred?

Mr. PAMBRUN.—Yes, he was taken down as a witness to give his testimony regarding it.

The CHAIRMAN.—And he saw the whole occurrence?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—So that your connection with that north-western country dates back a very long time.

Mr. PAMBRUN.—Yes.

Hon. Mr. PERLEY.—Seventy-four years, I understand?

The CHAIRMAN.—In 1841 where did you first commence on your line of duty?

Mr. PAMBRUN.—I was engaged in Winnipeg, just came out of St. John's College, engaged by Mr. George Simpson as a clerk in the service, and sent in to Mackenzie River the first of the year.

The CHAIRMAN.—To what station?

Mr. PAMBRUN.—Fort Simpson.

The CHAIRMAN.—That is the mouth of the Liard?

Mr. PAMBRUN.—Yes, sir.

The CHAIRMAN.—And how long did you serve in that part of the country?

Mr. PAMBRUN.—Eleven years altogether. I left it in 1852.

The CHAIRMAN.—And how long did you remain at Fort Simpson?

Mr. PAMBRUN.—I was there just four and a half months under a boss, and I was sent up to Fort Liard during the winter, and in the latter end of the month of June I was sent up to Fort Halkett.

Routes to the Yukon.

The CHAIRMAN.—Then you went to Fort Halkett at the head waters of the Liard?

Mr. PAMBRUN.—No, far from the head waters of the Liard.

The CHAIRMAN.—And then where did you go?

Mr. PAMBRUN.—Up to Francis Lake.

The CHAIRMAN.—That is at the head of the navigation on the Liard River?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—How did you live in those days?

Mr. PAMBRUN.—I got a little cariboo meat, and dropped down ten or twelve nets into the lake and caught fish—jackfish, trout and whitefish.

Hon. Mr. PERLEY.—Fish alone?

Mr. PAMBRUN.—That is all, sir; nothing else. I just got 112 pounds of flour for my year's supply from the Hudson Bay Company, it was so scarce. It was imported all the way from Winnipeg.

Hon. Mr. PERLEY.—Would you have a little flour every day?

Mr. PAMBRUN.—It was hard work to make 112 pounds last for 365 days.

The CHAIRMAN.—Did you never try to grow anything there—any vegetables?

Mr. PAMBRUN.—Not at Francis Lake; but at Fort Halkett I raised all the vegetables I wanted.

The CHAIRMAN.—That is up the Liard, away from Fort Simpson?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—You raised all the vegetables you wanted there?

Mr. PAMBRUN.—Yes; potatoes, barley, turnips, cabbage and carrots.

Hon. Mr. PERLEY.—How early did you sow the seed?

Mr. PAMBRUN.—About the same time as in this climate. About the 15th or 20th May I put in the seed.

Hon. Mr. PERLEY.—What time would the frost come?

Mr. PAMBRUN.—Oh, you may say about the beginning of November. We get the Pacific breezes there.

The CHAIRMAN.—Did you ever grow any wheat there?

Mr. PAMBRUN.—No, not at Fort Halkett; but at Fort Liard we did put in some, and I ate bread the product of the wheat at that post.

The CHAIRMAN.—You did sow wheat at Liard?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—You ground it up and made bread of it?

Mr. PAMBRUN.—Yes. I had one of these hand-mills that the company used to import.

The CHAIRMAN.—But you did not grow it extensively?

Mr. PAMBRUN.—No, just an acre or two.

Hon. Mr. McCALLUM.—You did not grow it every year—only occasionally?

Mr. PAMBRUN.—Just one year there.

Hon. Mr. PERLEY.—Could you grow it every year, do you think?

Mr. PAMBRUN.—Certainly you could.

Hon. Mr. PERLEY.—It was a good climate?

Mr. PAMBRUN.—It was a splendid climate—mild.

Hon. Mr. PERLEY.—How was the grass?

Mr. PAMBRUN.—All the grass you want from two to three feet in height for animals.

The CHAIRMAN.—That was just in the valley?

Mr. PAMBRUN.—No, detached from it. It is not very mountainous at Fort Halkett. I had domestic cattle there and cut hay for them.

The CHAIRMAN.—And you could raise a lot of cattle there?

Mr. PAMBRUN.—Oh, not any large cattle, because that establishment is generally small—two or three men.

The CHAIRMAN.—But lots of feed?

Mr. PAMBRUN.—Yes.

Hon. Mr. PERLEY.—A large country?

Mr. PAMBRUN.—Good country, chain of lakes here and there, through the chain of the Rocky Mountains too, just in the hard range of the Rocky Mountains—that is my conception of the country.

The CHAIRMAN.—But there is a kind of gap in the Rocky Mountains, an opening up?

Mr. PAMBRUN.—All through, you may say, the mountains are just detached, just the same as boulders, and then a passage here or there on either side of the river, just the same. I do not believe that there is any of that chain of mountains that would go more than 2,000 or 3,000 feet in height.

The CHAIRMAN.—Do you have to go over these mountains 2,000 or 3,000 in height or wind round them?

Mr. PAMBRUN.—Wind round them, some times we had to cross them. When we had to go for two or three Cariboo that had been killed by the hunter we had to go round that way.

Hon. Mr. PERLEY.—How high was that above the level of the sea?

Mr. PAMBRUN.—I could not tell you. I am no scientific man and we had no instruments to judge by in those days.

The CHAIRMAN.—I suppose you could wind round the mountains in the valleys if a railway was wanted?

Mr. PAMBRUN.—Yes, with the greatest ease.

The CHAIRMAN.—There is no difficulty in building a railway?

Mr. PAMBRUN.—No.

The CHAIRMAN.—I think you told me there was not as much difficulty as coming down from Winnipeg?

Mr. PAMBRUN.—Oh, no. I never saw such rough country as there is coming from Winnipeg here.

The CHAIRMAN.—No rough country up there, equal to what you saw coming down here?

Mr. PAMBRUN.—No.

The CHAIRMAN.—It is not nearly as bad as that coming down the north shore of Lake Superior from Winnipeg to here?

Mr. PAMBRUN.—No, sir.

The CHAIRMAN.—No country as bad as that?

Mr. PAMBRUN.—No, sir, nothing.

The CHAIRMAN.—About the snow fall, is that very deep?

Mr. PAMBRUN.—Well, I put the utmost say four feet, between two and three and four feet. It is an exceptional year when there is four feet of snow.

The CHAIRMAN.—And how long will it last?

Mr. PAMBRUN.—Well, at Fort Halkett it will fall in the latter end of November, say the middle of November, and disappear by the latter end of April. We have open water there by the beginning of May, and the same time as the vegetation comes on in Winnipeg, between the 10th and 13th May the first leaves come out there.

The CHAIRMAN.—I suppose that snow is affected by the Chinook wind?

Mr. PAMBRUN.—A good deal, sir; but then either about or below the range of the mountains it is just about the same depth of snow, at Fort Simpson and at Fort Liard.

The CHAIRMAN.—How about the rain fall?

Mr. PAMBRUN.—Oh, I cannot say, sir. We generally have a sufficient quantity to wet our gardens.

The CHAIRMAN.—But not excessive?

Mr. PAMBRUN.—No, sir, by no means.

The CHAIRMAN.—Were you ever troubled with drought?

Mr. PAMBRUN.—No, sir, not that I am aware of.

The CHAIRMAN.—The growth of grass and the growth of everything is luxuriant?

Mr. PAMBRUN.—Yes it is very luxuriant.

The CHAIRMAN.—There is a good deal of timber, I suppose?

Routes to the Yukon.

Mr. PAMBRUN.—A good deal, sir, and pretty large size.

The CHAIRMAN.—What kind of timber?

Mr. PAMBRUN.—Pine.

The CHAIRMAN.—Do you call spruce pine?

Mr. PAMBRUN.—Well that is the name you give it here: it is from eighteen inches up to two feet and a half or three feet in diameter, and this rough poplar—there are a great many trees that will be three feet in diameter up the Liard River.

The CHAIRMAN.—Is that extensive.

Mr. PAMBRUN.—No I can't say it is extensive. I have not travelled very far back on either side of the river, but along what I have travelled of the river there is quite sufficient for any purpose at all, for boat building or anything of that kind.

The CHAIRMAN.—You cannot tell to what extent there is of forest?

Mr. PAMBRUN.—No, sir, not exactly, I could not, but I have travelled through on foot. It is generally spruce, these small spruce that you get along the road and through the country.

The CHAIRMAN.—How about the navigation of the Liard?

Mr. PAMBRUN.—You start out from Fort Simpson about fifteen miles from the mouth of the Liard in a strong current, say about seven or eight miles an hour for about fifteen miles, and the rest of it is mild navigation till you come to Hellsgate. I would say that from Fort Simpson it would be about 400 miles to Hellsgate. Well there is a small part from the Hellsgate to go to the Devil's portage, a distance of about thirty miles it is a cañon through the Rockies, with some whirlpool.

The CHAIRMAN.—About thirty miles.

Mr. PAMBRUN.—About thirty miles.

The CHAIRMAN.—All the way.

Mr. PAMBRUN.—Yes, from Hellsgate to the Devil's portage.

The CHAIRMAN.—Is that beyond Fort Halkett?

Mr. PAMBRUN.—No, below Fort Halkett. You cross that portage and it is about twenty-five miles then to Fort Halkett.

The CHAIRMAN.—Did the Hudson Bay Company bring their boats and supplies up the Liard River?

Mr. PAMBRUN.—Oh, yes, always.

The CHAIRMAN.—All the way?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—Because some of the evidence we have had says the Liard River between the mouth of Fort Simpson and Fort Liard is very rough and very dangerous.

Mr. PAMBRUN.—No, sir, it is just as I say. There is just about fifteen miles that it is any way rough, it is at the junction of the Mackenzie. It is a gradual descent but no danger for craft, and we just let our boats drift down.

The CHAIRMAN.—Could a steamboat go up?

Mr. PAMBRUN.—Yes.

Hon. Mr. McCALLUM.—Could you tell us the depth of water?

Mr. PAMBRUN.—There might be five or six feet in the channel. It may be a great deal more some times.

Hon. Mr. PERLEY.—A steamboat could start there at the junction of the Liard and the Mackenzie?

Mr. PAMBRUN.—Yes.

Hon. Mr. DRUMMOND.—On the Mackenzie?

Mr. PAMBRUN.—Yes.

Hon. Mr. DRUMMOND.—At Fort Simpson?

Mr. PAMBRUN.—Yes.

Hon. Mr. PERLEY.—A boat could go over the first fifteen miles of rapid water?

Mr. PAMBRUN.—Easily, sir. I have seen river boats long before now.

Hon. Mr. DRUMMOND.—That is from Fort Simpson to the Devil's portage?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—How could you get round the Devil's Gap?

Mr. PAMBRUN.—At the Devil's Portage we used to launch our boats right over and haul them across.

The CHAIRMAN.—How many miles?

Mr. PAMBRUN.—Four miles.

The CHAIRMAN.—And put them in the water again?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—And the same at Hellsgate?

Mr. PAMBRUN.—No, you make no portage at the Hellsgate. It is just a cañon in the mountains, and it is apt to have whirlpools in it.

The CHAIRMAN.—But your boats came down it?

Mr. PAMBRUN.—Oh, yes, we go up with our boats and down again.

The CHAIRMAN.—And then you go through Hellsgate with your boats?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—And it is only at the Devil's Portage you have to put your boats over?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—Then from Fort Halkett you say you went up to Lake Francis?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—That is called after the interpreter that was with Mr. Campbell, François Houle, so we are told.

Mr. PAMBRUN.—I always heard that it was named by Mr. Campbell after Lady Frances Simpson, wife of Sir George Simpson.

The CHAIRMAN.—How many years were you there?

Mr. PAMBRUN.—I was between it and the Pelly banks five years?

The CHAIRMAN.—How far is Frances Lake from Pelly banks?

Mr. PAMBRUN.—Sixty miles. You have about thirty miles of the lake to go in addition.

Hon. Mr. PERLEY.—Any Indians up there?

Mr. PAMBRUN.—A few.

Hon. Mr. PERLEY.—Those are the persons you were trading with?

Mr. PAMBRUN.—Yes; the Indians. They were very quiet.

The CHAIRMAN.—Have you been down to the mouth of the Pelly?

Mr. PAMBRUN.—No, sir; never went more than fifty or sixty miles below where Pelly banks was—where the post was.

The CHAIRMAN.—Is the navigation good down there?

Mr. PAMBRUN.—For about fifty or sixty miles below there is just one break in the whole of the Pelly River all the way to the mouth. I never saw any difficulty excepting just this rapid which is about fifty or sixty miles below Pelly banks. I went down there myself.

The CHAIRMAN.—What is the trouble on the Pelly?

Mr. PAMBRUN.—It is just a strong rapid; not a waterfall or anything of that kind; it is just a strong rapid. You can track your boat coming up if you are strong enough.

The CHAIRMAN.—And the boat can go down.

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—Any boulders?

Mr. PAMBRUN.—Nothing dangerous.

The CHAIRMAN.—A stern-wheel steamboat could go up.

Mr. PAMBRUN.—From Devil's portage to Fort Halkett is about twenty-five miles, and from Fort Halkett we go up through three rapids, where we are obliged to launch our boats. Eighteen miles above Fort Halkett is the first, the Brulé portage, and we have the Mountain portage and the Cranberry portage. They are fifteen miles above. They are nearly connected.

The CHAIRMAN.—That is between Lower Post and Fort Halkett?

Mr. PAMBRUN.—Yes, the upper one would be about thirty or forty miles.

The CHAIRMAN.—From Lower Post to Frances Lake?

Routes to the Yukon.

Mr. PAMBRUN.—You go up here to this branch of the Dease River. There is no break there. There is one place we call a barrier. It is just a dead pool. You might just wait three or four hours and allow the rush of water to go down and skip down your boats.

The CHAIRMAN.—How about a wagon road there? Is there any room or place for a wagon road?

Mr. PAMBRUN.—Plenty, sir. Now, the route I recommended was to start from Edmonton across the Athabasca River at Fort Assiniboine, across the country to Sturgeon Lake, and then on the west side of the Sturgeon Lake, this would make the road much straighter and cut in a straight line up to Fort St. John. By the route that they (the Mounted Police) went through last year by going down to Lesser Slave Lake and coming round again towards Dunvegan they have lengthened the road a full 100 miles. I travelled on horse back from Dunvegan Post to Lesser Slave Lake, and then from Fort Assiniboine to Edmonton on horse back. I put this distance from Edmonton to Athabasca at about eighty miles. Then a wagon road is formed from Lesser Slave Lake to this. There was one advantage in their having followed this road last year, because once they crossed the Peace River it is all prairie country between there and St. John. You do not want to fell a single tree or anything of that kind. The grass that is growing wild is two or three feet in height; you could run a horse at full gallop all the way across the country till you get to Fort St. John, on the north side of the Peace River, whereas south of the river it is all forest.

The CHAIRMAN.—Were you ever at the mouth of the Baptiste River?

Mr. PAMBRUN.—No, sir; we crossed it coming down the Athabasca River from Jasper's House.

The CHAIRMAN.—This road that you came through here is that prairie? (west of Sturgeon).

Mr. PAMBRUN.—No, lots of forest; there are no rocky things or anything of that kind.

The CHAIRMAN.—No high mountains?

Mr. PAMBRUN.—No, nothing of the kind; nothing at all.

The CHAIRMAN.—How is it timbered through here?

Mr. PAMBRUN.—Oh, not much of timber from Sturgeon River all through this part; you fall in at the Peace River here at Fort St. John; there is timber, but no difficulty to work your way through it. I have just been as far up as St. John.

The CHAIRMAN.—Then you never went from St. John up to the Nelson?

Mr. PAMBRUN.—No, sir.

The CHAIRMAN.—You always went in by the Liard?

Mr. PAMBRUN.—Yes, sir; that is another branch altogether.

The CHAIRMAN.—So that you do not know the country between Fort St. John and Fort Nelson?

Mr. PAMBRUN.—No, sir.

The CHAIRMAN.—Have you been to Fort Nelson?

Mr. PAMBRUN.—No, I have never seen Fort Nelson; it was established after I left Mackenzie River.

The CHAIRMAN.—Then the trail that you recommend for a wagon trail would be from Edmonton to cross to Fort Assiniboine and then to the west side of Sturgeon Lake and then to Fort St. John?

Mr. PAMBRUN.—Yes, sir.

The CHAIRMAN.—And that is the route you travelled?

Mr. PAMBRUN.—It is the route I recommended.

Hon. Mr. WOOD.—That would be level prairie land?

Mr. PAMBRUN.—I cannot say it is exactly all prairie, but there is a great deal of prairie amongst it. There is some forest, but it is level anyway.

Hon. Mr. McCALLUM.—That would be the straightest road you can get?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—And that saves 100 miles from the route that the Mounted Police took?

Mr. PAMBRUN.—Yes, sir.

The CHAIRMAN.—On the map it does not look as if you could save 100 miles by going the route you say?

Mr. PAMBRUN.—There is many a detour to go around so fashion.

The CHAIRMAN.—You mean from Peace River landing you follow the twist and turns of the Peace River to Fort St. John?

Mr. PAMBRUN.—Yes, sir; you have to follow it.

Hon. Mr. BOULTON.—He means to take out all the crooks.

Mr. PAMBRUN.—I put this at ninety miles but there was a good wagon road made about thirty years ago (from Edmonton to Assiniboine) so that there is no difficulty to get along there.

The CHAIRMAN.—Were you there at the time of the buffalo in Saskatchewan?

Mr. PAMBRUN.—There were buffaloes there at the time, I have killed hundreds of buffalo in my time.

The CHAIRMAN.—Are there any buffaloes there now?

Mr. PAMBRUN.—I believe there is a band of about 2,000 still.

The CHAIRMAN.—Whereabouts?

Mr. PAMBRUN.—Between Great Slave Lake and the Peace River. This country around Salt Lake is a great country. This is the principal point where they always come to. There are salt lakes to a large extent all through this part of the country; we come down with our brigade of boats, and used to take a dozen of fifteen sacks; just come to the salt pit there and get all our supply for the Mackenzie River district.

The CHAIRMAN.—Right at that Salt Lake or River?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—Are these buffaloes you speak of the buffalo of the plains?

Mr. PAMBRUN.—No, I cannot say, probably at one time or other some of them started away right into the woods for want of food in the prairies.

The CHAIRMAN.—There is one of them there now?

Mr. PAMBRUN.—Yes, sir, the wood buffalo—we give them the name of the wood buffalo.

Hon. Mr. PERLEY.—They are just the same, only they go to the woods.

The CHAIRMAN.—These buffalo are increasing in numbers?

Mr. PAMBRUN.—Yes.

Hon. Mr. McCALLUM.—They are very heavy, are they not?

Mr. PAMBRUN.—Yes, the bulls would weigh between 1,200 and 1,400 pounds, and the others would average at least six hundred.

Hon. Mr. DRUMMOND.—I have shot them myself at 1500.

Mr. PAMBRUN.—I am not exaggerating; I have put what I reasonably think to be the weight of those animals.

Hon. Mr. PERLEY.—From the country at Fort Halkett up to Pelly banks could your horses live along on the grass?

Mr. PAMBRUN.—Yes, sir; during the summer time I guarantee that any band of horses, if they are not up in the hundreds, would find plenty of food all through that part of the country.

Hon. Mr. PERLEY.—How far is that towards the Yukon?

The CHAIRMAN.—This is within 150 miles of the mouth of the Pelly to Fort Selkirk.

Mr. PAMBRUN.—I will also guarantee that once you reach the Pelly banks that you can go down along the streams either upon the north or south side of the Pelly River, but I would rather travel upon the south, and that you would find chains of lakes all through that part of the country, and enough to feed your horses, and even cattle that you might be driving through there.

The CHAIRMAN.—So you could find food for cattle up there?

Mr. PAMBRUN.—There is a party I got a letter from just before I left Battleford who went up 300 odd miles above Fort St. John in a direct line to Fort Halkett, and they found all the food they wanted for their band of fifteen horses that they took along with them. They brought them fat—

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The CHAIRMAN.—Mr. Pambrun has given me the letter he refers to and I will read it:

HUDSON BAY COMPANY,

DUNVEGAN, PEACE RIVER, 10th February, 1898.

Dear Mr. Pambrun,—Since writing my last letter asking about Lake Frances, three men who started from here in June last bound for the Liard River, have returned having done the trip with fourteen pack horses but lost one of them, the rest are in good fat condition and Jack Graham the owner will start back in a few weeks.

That means to start back to Lake St. Frances.

Mr. PAMBRUN.—Yes, sir.

The CHAIRMAN.—(Continues reading letter.)

Jack Graham, Harry Gilmore and Gilbert Volge are the parties, to whom is due the credit of being the first white men to go through by this route to the Liard from St. John's. Harry and Gilbert are very young men, about twenty years old, but Jack Graham is an old timer and for getting thar he can't be beat. He is truly nick-named "Cayuse." Give him a cayuse and he will git thar if man and horse-flesh can. They report good feed all the way. Muskegs are numerous, but in corresponding length and number are fine, solid ridges. They travelled after crossing the Nelson about thirty miles from the Rockies and thus struck the Liard. In your time I guess you must have heard or seen of two fine lakes about half way between Nelson and Liard. Lots of fish in them.

They report in favour of a wagon road to the Nelson, but beyond that there are too many small creeks, which however supply the finest of feed.

Thinking you might be glad to hear this I have dropped you a line.

Moose, beaver, martin and lynx are reported in hundreds as in the good old days.

I remain, yours truly,

ALBERT TATE.

The CHAIRMAN.—He is a descendant of one of the old Hudson Bay men?

Mr. PAMBRUN.—Yes, sir. As far as regards the food for horses, in my opinion there is plenty of food to be had travelling through that part of the country.

The CHAIRMAN.—So that all we have to do is to open up a trail, and you can take horses right through for the convenience of the soldiers or miners or for anything else, all the horses you want?

Mr. PAMBRUN.—Yes, sir.

Hon. Mr. BOULTON.—And find food for them wherever they go. You could take horses right through the Fort Selkirk?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—The distance is 1,200 miles?

Mr. PAMBRUN.—Put it at 1,500, and you are pretty near the mark, from Edmonton to Fort Selkirk. As to the Liard River my idea is to go right up to Frances Lake; you have navigation on that river for 800 miles—that is the distance I have put it at from Fort Simpson on the Liard River, right up to Frances Lake.

The CHAIRMAN.—Frances Lake is the head of the Liard River.

Mr. PAMBRUN.—Yes, sir, there is navigation right through.

Hon. Mr. WOOD.—But suppose you come here to Fort St. John, how is the best way to get through there to Lower Post?

The CHAIRMAN.—Were you ever on the Black River?

Mr. PAMBRUN.—That is a branch, I know where it comes; but here is the Dease River; now the route I recommended from Fort St. John would be in a direct line right up here to Dease River; from there you could go in a direct line.

If you wish you can go to Teslin Lake from there; you can cut in a direct line and join this other trail that is in British Columbia.

Hon. Mr. WOOD.—Is that level?

Mr. PAMBRUN.—I cannot guarantee anything about the difficulties there; but the principal part of the Rocky Mountains is all below at Fort Halkett, I think you have nothing to do with the principal range of the Rocky Mountains and any part of this country here.

Hon. Mr. WOOD.—But from there to here, how would you get along here?

Mr. PAMBRUN.—That letter says they have travelled 300 miles of this same trail; and they skirted the Liard River about thirty miles from the chain of mountains. They say—I got another letter from them—they kept just about thirty miles from the range of mountains which they discovered from Fort St. John. Keeping in a direct line in a northerly direction and struck the Liard River at what I presumed would be Halkett.

Hon. Mr. WOOD.—Do you recommend to go across some other way?

Mr. PAMBRUN.—Yes, sir, this is the trail I recommended: “to go right through and strike the Dease river.”

Hon. Mr. WOOD.—Where do you cross the Rocky Mountains?

Mr. PAMBRUN.—Here at St. John.

Hon. Mr. WOOD.—How would you get across?

Mr. PAMBRUN.—They (the Mounted Police) had no difficulty, at all to get through, sir, according to Inspector Snider's report; after leaving Inspector Moodie they had no difficulty at all in crossing that chain of the Rocky Mountains above St. John.

Hon. Mr. WOOD.—You do not know how high it was?

Mr. PAMBRUN.—I could not tell exactly.

Hon. Mr. WOOD.—Could you make a wagon road?

Mr. PAMBRUN.—With no difficulty sir; because if they went through with their pack-horses and plenty of food there is no difficulty about a wagon road.

The CHAIRMAN.—The Mounted Police party remained at Fort Graham all winter?

Mr. PAMBRUN.—Yes, sir.

The CHAIRMAN.—Now did you say anything about the route that the Mounted Police party took?

Mr. PAMBRUN.—No, sir, they diverged from the route which I recommended.

The CHAIRMAN.—You did recommend a route to them.

Mr. PAMBRUN.—I could not say if they saw anything of my report.

The CHAIRMAN.—You had no communication with them?

Mr. PAMBRUN.—No, only just so far as the police force at Battleford are concerned; of course, they read my report all through the country and it was published by the *Free Press* at Winnipeg.

Hon. Mr. BERNIER.—Did you recommend a route to them?

Mr. PAMBRUN.—Yes, sir, this is the route I recommended, only on the south side of Sturgeon Lake here.

Hon. Mr. BOULTON.—Did you ever see any gold up there?

Mr. PAMBRUN.—No sir.

The CHAIRMAN.—That was before you knew anything about that?

Mr. PAMBRUN.—That was before the California mines were discovered.

The CHAIRMAN.—You were born at Lesser Slave Lake and spent your life up there and gold was no good to you?

Mr. PAMBRUN.—I was stamping it under foot as being useless.

The CHAIRMAN.—The question was how many skins for a bag of flour in those days?

Mr. PAMBRUN.—We had things to dispose of; just 112 pounds of flour was our allowance for the whole year.

Hon. Mr. PERLEY.—How long could a man live on fish?

Mr. PAMBRUN.—Just about a century and a half.

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The CHAIRMAN.—I think you told me this afternoon that there were upwards of 100 head of Poller Angus cattle at Dunvegan?

Mr. PAMBRUN.—They had not received the first straw of hay on the 17th of January.

The CHAIRMAN.—Do you suppose they would winter the whole year there?

Mr. PAMBRUN.—They were bred there.

The CHAIRMAN.—What you say is that they had not commenced to feed the hay that was put up for them on the 17th of January, but up to that time they had fed on the prairie?

Mr. PAMBRUN.—Yes, sir.

The CHAIRMAN.—You live at Battleford?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—And how long have you been living there?

Mr. PAMBRUN.—Twenty years.

The CHAIRMAN.—And you lost your arm in 1885?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—And there is a route from Battleford is there not to Cold Lake?

Mr. PAMBRUN.—Yes to Fort MacMurray.

The CHAIRMAN.—Where is Fort MacMurray—on what river?

Mr. PAMBRUN.—On the Athabasca River.

The CHAIRMAN.—This is another route? Take Prince Albert and Battleford, you speak of a route from Battleford to Cold Lake and then on to Fort MacMurray at the mouth of the Clearwater River?

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—That would be 275 miles. From Dunvegan to the Smoky River is about 160 miles. I call this 300 miles to Fort MacMurray from Battleford by way of Cold Lake, to Fort MacMurray on the Athabasca it is 300 miles.

Mr. PAMBRUN.—Well I call it 360. 110 to Onion Lake seventy to Cold Lake and then 180 miles; that is 360.

The CHAIRMAN.—What kind of country is that which it passes through?

Mr. PAMBRUN.—All this is prairie country to Cold Lake. There is a good cart trail just to Cold Lake. All that we have to do is just to open up this country, and it is generally all jack pine on high ridges for long distances in a direct line to Fort MacMurray according to Mr. Moberly's report to me, and he was eight or ten years there.

The CHAIRMAN.—How far is it from Battleford to Edmonton?

Mr. PAMBRUN.—Nearly 400 miles. All through here you can strike a plough in immediately—no bust work at all.

The CHAIRMAN.—Did you ever go from Fort MacMurray to the Peace River?

Mr. PAMBRUN.—No, not in a direct line.

The CHAIRMAN.—Now there are two routes from Battleford to Edmonton. You go by the souther Saskatchewan, do you not?

Mr. PAMBRUN.—Yes, either north or south, but it is shorter by the south side.

The CHAIRMAN.—Mr. Marcus Smith's survey in 1880 going back here was from Prince Albert right through to Athabasca Landing, and his survey was in a straight line from Prince Albert to that point. That would be an average of forty or fifty miles north of the regular trail south of the Saskatchewan.

Mr. PAMBRUN.—Yes.

The CHAIRMAN.—I mention that to show that there is a route for a railway going through a magnificent country which would not interfere with the route for another railway to the south. I am merely looking to the capabilities of the country for supporting the population. There is another road I want to point out and that is by the Yellowhead Pass to Tete-Jaune Cache: you have been to the Yellow Head Pass?

Mr. PAMBRUN.—Yes, sir, I went direct to the Yellow Head Pass.

The CHAIRMAN.—And Tete-Jaune Cache?

Mr. PAMBRUN.—No, sir, I did not reach it.

The CHAIRMAN.—When did you get there?

Mr. PAMBRUN.—In 1859.

The CHAIRMAN.—What kind of a country did you find it through there?

Mr. PAMBRUN.—There is not a quarter of an acre of open prairie in any part of that road to go right through between Edmonton and Yellow Head Pass; there is just little Pile Hammocks. I conclude the distance from here to Jaspers House would be about 250 miles: and from there I started with my pack horses to Cowdung Lake, which is the headwaters of the Myette River running into the Athabasca at Jaspers.

The CHAIRMAN.—You have not been there since 1859?

Mr. PAMBRUN.—No, sir.

The CHAIRMAN.—And you were with a party looking for gold mines?

Mr. PAMBRUN.—Yes, sir. You could put your steamer there above Fort St. John and run down the whole way till you come to Fort Vermillion. About fifty miles up there is a water fall on the Peace River, there is just one single break in the whole of that river between St. John till you get all the way down to Fort Smith.

The CHAIRMAN.—It is a healthy country?

Mr. PAMBRUN.—Yes, sir.

The CHAIRMAN.—What do you call the Indians?

Mr. PAMBRUN.—About Edmonton the Chippewyan and along the Peace River the Beaver Indians.

Hon. Mr. PERLEY.—How many are thereabout?

Mr. PAMBRUN.—It is hard to say; I would say between the Chippewyans and the Slavees there are about 3,000.

The CHAIRMAN.—They are growing some crops at Lesser Slave Lake and Dunvegan.

Mr. PAMBRUN.—Yes, sir. There is an Episcopalian Mission at the mouth of the Smoky Mission; they have a mill there, and grind their own grain and grow all the vegetables they want, and they make their own flour there.

The CHAIRMAN.—I suppose you do not know how many cattle are being wintered there now?

Mr. PAMBRUN.—No, sir; all along the Peace River there would be about 300 head wintering there. In going up with a party when I was taken away from Fort Halkett and striking out to the Dease River we came to the mouth of the Dease River, and there was a party of Indians waylaid some of the Indians that belonged to me at Fort Halkett and robbed them of everything they had; they had come down the Dease River. Well, I went up and had a brush with them; they had taken possession of my Indians wares and stuff.

The CHAIRMAN.—You got your stuff back?

Mr. PAMBRUN.—Didn't I? I went for the purpose of getting it. There were four men against one.

The CHAIRMAN.—I suppose you took your furs there and then sent them down —

Mr. PAMBRUN.—Yes, by boat.

The CHAIRMAN.—To the Liard?

Mr. PAMBRUN.—To Fort Simpson.

The CHAIRMAN.—And then which way did they go?

Mr. PAMBRUN.—Right to the Athabasca and through to Prince Albert. The chain of mountains passes here at Fort Halkett; and this is all level country to the west of them. The reason I recommended that the trail should run to the Dease River was having had a brush with these Indians, I followed them up about ten miles inland; they raised camp and struck into the woods and I made a detour around so fashion and took them behind in case they would waylay us if we followed on their trail. I certainly did take them by surprise. It is a pretty high mountain there, and I just examined the country of the opposite side of the Dease River, to find out whether there was any large mountains in that direction; I could find nothing. Now to where I was standing there I was travelling on snowshoes with this party of nine, and we cut right across country here and there; it was hard frost in the spring

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of the year. This was a large hill where I overcame, as it were, these Indians, and from there I noticed some other large mountain, thick wooded mountain; by examining the country upon this side of the river it appeared to be all level all the way to Francis Lake. I was then within 100 or 150 miles of Francis Lake where overcame these Indians, and I noticed all that side of the river was level. I have had a great deal of correspondence since I wrote that report of mine last September from different parties, from Nova Scotia, from Chicago and all different places asking about the best route; but I have always recommended to every one that as soon as they strike the Liard River they were to cross over to the east side all the way till they came to the Francis Lake, and then across the mouth of the river, and travel upon the west side all the way till you come to that divide, and the old stumps of the old buildings where we used to have our shanties would be legible now; there used to be two or three large buildings there; and there is an elevation of I suppose 500 feet, as you just go gradually it is just a level country all the way down to the Pelly Banks. There is a bedding of moss all through that part of the country.

The CHAIRMAN.—The whole of that country is covered with moss?

Mr. PAMBRUN.—Yes, the whole of it; there is hardly a rock or anything in it.

The CHAIRMAN.—There is rock underneath the moss, do you think?

Mr. PAMBRUN.—I cannot say, I never dug more than two or three feet. At Pelly Banks I dug down several feet.

The CHAIRMAN.—And it is soil underneath the moss?

Mr. PAMBRUN.—Good solid soil underneath the moss. At Pelly Banks the first year I was there, being in charge of Fort Halkett, I took up a quart of barley and a quart of potatoes and took them up to Francis Lake. I did not try at Francis Lake but I went over to Pelly Banks and dug a little garden around the establishment and planted my few potatoes. They came about three inches above the ground and when we dug down we found tubers about the size of a musket ball. The barley rose to about fourteen inches high, but there came a frost in the month of June and out of the barley.

The CHAIRMAN.—You did not try it the following year.

Mr. PAMBRUN.—No, I had no more seed. There is one more thing, gentlemen, to be remarked about that country. You will find an extensive prairie, about half a mile in circumference covered with about twenty or thirty varieties of beautiful flowers.

The CHAIRMAN.—Right up at the Pelly Banks?

Mr. PAMBRUN.—Yes. I once took the trouble of gathering twenty-seven different varieties of flowers in that section of country and sent them to my chief, Dr. Rae, in England.

The CHAIRMAN.—It is not such a bad country to live in as people suppose?

Mr. PAMBRUN.—Not at all; there was one time we had excessive cold which lasted about two weeks; for the rest of the climate I did not find it extra cold.

The CHAIRMAN.—Are the mosquitos very bad?

Mr. PAMBRUN.—Pretty bad.

The CHAIRMAN.—How long would they last?

Mr. PAMBRUN.—A couple of months.

The CHAIRMAN.—Some people think it is a dreadful country to go to live in but families that are raised there would not find it a bad country?

Mr. PAMBRUN.—If I was twenty years younger I would head any party through it.

The CHAIRMAN.—You see, Mr. Pambrun, what we want is to get information in consequence of the mining discoveries that have been made there, and knowing that you were an old resident we asked you to come down, and on behalf of the Committee I think I may say that we are very well pleased and very well satisfied with the information you have given.

Hon. Mr. WOOD.—Yes. I must say that the information Mr. Pambrun has given has given me a very much clearer idea of the country than I had before.

The CHAIRMAN.—Your information is first hand, and it has been given in a very clear and interesting form; and I only hope, as a resident of that north-western

country as well as you, that our Government will realize the possibility of developing it by railway communication, so that you and the people up there will not have to be satisfied with only 112 pounds of flour for one year. With railway communication, and cattle being able to be driven in across the places you have told us with good feed all the way, this would bring down supplies to the very lowest point. You have assisted us with your information for our report, which will be for public use as soon as it is published.

The CHAIRMAN (Mr. Wood).—We would like to have a clearer idea from you. When you start from St. John and go across to the Dease River, the mountains are not high; you go over them in an easy manner?

Mr. PAMBRUN.—Yes.

Hon. Mr. WOOD.—You could make a wagon road right over them?

Mr. PAMBRUN.—That is the only point (Fort Halkett) where the chain of mountains are high.

Hon. Mr. WOOD.—Further south they are not so high?

Mr. PAMBRUN.—No. I know nothing of what they are at Fort St. John. They must grow gradually higher. Towards the Porcupine on the Mackenzie they are still lower than Fort Halkett. They diminish in height as they go gradually towards the north; that is the impression all through.

Hon. Mr. WOOD.—I understood you to recommend going from Fort St. John to the Dease River to up the Half-way River and across there where that red line is on the plan?

Mr. PAMBRUN.—I just recommended a direct line from Fort St. John, striking there on the Dease River, because I was led to believe that the country round here was very difficult. That Cassiar mining country was a high country to get supplies through, which caused many of the Americans to abandon the mines—tools and everything buried up there. By what I mention falling in with that tribe of Indians and examining the country across the river, I could see no chain of mountains south of the river. I could see nothing, but there are two pretty high mountains on the north side. It is a thick forest, heavy timber two or three feet through, pine all round the banks of the river at the mouth of the Deese.

The Committee adjourned.

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OTTAWA, 12th May, 1898.

The Committee met this day.

The Honorable Mr. BOULTON, Chairman.

Dr. WILLS appeared before the Committee and was examined as follows:—

The CHAIRMAN.—You have been residing up at Dawson City for some time?

Dr. WILLS.—Yes, as long as there has been a Dawson.

The CHAIRMAN.—When did you go in there?

Dr. WILLS.—I arrived in the Yukon in July, 1895. With the first expedition of the North-west Mounted Police.

The CHAIRMAN.—And when did you leave there?

Dr. WILLS.—I left Fort Cudahy; we were living at Fort Cudahy for the first two years and this last summer we went up to Dawson—the whole force moved up there, all except one or two men.

The CHAIRMAN.—And built new barracks.

Dr. WILLS.—Built new barracks. I was there during the construction of the barracks most of the time.

Hon. Mr. MACDONALD (B.C.)—Were they built of logs?

Dr. WILLS.—Yes, hewed.

The CHAIRMAN.—And how many men had you up there?

Dr. WILLS.—We had twenty men, just what Inspector Scharf brought in, all our old men left us when their time was up.

The CHAIRMAN.—And went mining?

Dr. WILLS.—Yes, every one of them.

Hon. Mr. MACDONALD (B.C.)—When you are talking about the men do you think there is any necessity for all these men going up there?

Dr. WILLS.—We have never been called upon for any military duties. There were about forty-five at Dawson when I left. Inspector Harper arrived with about twenty-five men late in the fall, or in October.

Hon. Sir JOHN CARLING.—Is that all the police they will have?

Dr. WILLS.—That is all that were in Dawson. We had not sufficient accommodation for them at Dawson and we had to send thirteen to the old barracks at Fort Cudahy.

Hon. Sir JOHN CARLING.—Are there any on the road going down now?

Dr. WILLS.—Yes.

Hon. Sir JOHN CARLING.—Policemen?

Dr. WILLS.—Yes.

Hon. Mr. MACDONALD (B.C.)—Some at the Summit?

Dr. WILLS.—Some at the Summit at Lake Bennett and Taggish Lake.

Hon. Mr. MACDONALD (B.C.)—I think there are 180 policemen in the country altogether.

Dr. WILLS.—Yes, there must be about that.

Hon. Mr. MACDONALD (B.C.)—And 200 troops going in?

Dr. WILLS.—We have never been called upon for any military duties whatever.

The CHAIRMAN.—They have all been civil duties?

Dr. WILLS.—Yes.

The CHAIRMAN.—At the same time, of course, your presence ensured law and order?

Dr. WILLS.—Along with the good feeling of the miners it did. We had the miners at our back. We went through a very serious few days last fall when the riff raff element were holding meetings and were going to raid the stores, and all

the old miners came up to the barracks and told Captain Constantine that any time they were needed they were prepared to come down and help us. They got it into their heads the stores were full of food and that they would not sell it to them, whereas the food in the stores was simply the outfits of the miners that had been put up and left there until the sleighing could start, and the miners could freight them away, because freighting in summer time upon the creeks is about thirty cents a pound, and as soon as the ice comes a miner can freight it up himself in his own spare time at a cost of nothing excepting his own time; so the storehouses are left full of the miners' outfits, and they are put in separate piles and each man's outfit is marked.

Hon. Mr. McCALLUM.—And they fancied it was food?

Dr. WILLS.—Yes, and that the stores would not sell it.

Hon. Mr. McCALLUM.—They were hungry?

Dr. WILLS.—They were not hungry, but had not sufficient provisions to last them over. We had to put guards on the stores. The old timers were at our back, they came to Captain Constantine and said, "All we want is a leader, and if you will be our leader we will stand by you," and then one of the steamers arrived, it was late, the ice was running thickly, and we took charge of one of the steamers; the Alaska Commercial Company handed it over to us and said, "Here, if you will send these people down the river where there is food we will give you the steamer free of charge," and I took charge of the transportation myself, as Captain Constantine was very busy with Justice of the Peace cases at the barracks, and we persuaded about 150 of these chaps to go down to Fort Yukon where the provisions were.

Hon. Sir JOHN CARLING.—That is an American Fort?

Dr. WILLS.—Yes, and they went off down there, and I suppose you have heard about Captain Rae's experience with them there. He had to stand them off. They were going to raid the caches there. Captain Rae had to seize the caches in the name of the United States Government, and stand them off with guns.

The CHAIRMAN.—How did the Mounted Police go in?

Dr. WILLS.—When I went in 1895 we sailed from Seattle about the 5th June, and went round through the Behring Sea to St. Michael's and took the steamer belonging to the North American Transportation Trading Company, and went on up as far as Fort Cudahy.

Hon. Mr. MACDONALD (B.C.)—How long did it take you?

Dr. WILLS.—We were about twenty days from St. Michael's up. It was a slow steamer, and we were heavily loaded.

Hon. Mr. MACDONALD (B.C.)—And eight days from Seattle?

Dr. WILLS.—We started too early; we left on the 5th June, and we were fourteen days in the ice at Behring Sea, and it was the morning of the 3rd July we arrived at St. Michael's.

Hon. Sir JOHN CARLING.—It is about 1,800 miles from St. Michael's to Dawson.

Dr. WILLS.—Yes, it is commonly called 2,000 but is not more than 1,800.

The CHAIRMAN.—And the navigation of the Yukon is all right?

Dr. WILLS.—It is very good for the first trip. The only bad place is in the Yukon flats, and one place about thirty miles below Circle City.

Hon. Mr. MACDONALD (B.C.)—What is the best time for high water?

Dr. WILLS.—June is the best month. June and July are good water. In August it starts to fall off and in September it is low and they cannot bring up a full load in September.

Hon. Mr. MACDONALD (B.C.)—They have lots of mud and sand bars?

Dr. WILLS.—Yes, in the flats, but from Circle City on—

Hon. Mr. MACDONALD (B.C.)—The flats are further down.

Dr. WILLS.—About the centre of the river. The furthest north there, there is about 200 or 300 miles where the river is about twenty miles in width, all cut up in sloughs, and there are one or two bad places there.

Hon. Sir JOHN CARLING.—They expect to have a large number of steamers running up there this year, do they not?

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Dr. WILLS.—I was speaking to a gentleman from the coast and he knows positively of sixty-three that intend going up this year.

Hon. Sir JOHN CARLING.—All good sized boats?

Dr. WILLS.—Yes.

The CHAIRMAN.—Going up the Yukon?

Dr. WILLS.—Yes.

Hon. Mr. MACDONALD (B.C.)—If these steamers make two trips each, there will be lots of provisions up there?

Dr. WILLS.—Yes.

Hon. Sir JOHN CARLING.—They can make more than two.

Dr. WILLS.—They can make one sure trip with a full cargo and the next trip they always get through but not with a full cargo, and the third trip is more or less uncertain, but they generally manage to get through the trip with a very small cargo.

Hon. Sir JOHN CARLING.—There is no danger of starvation up there if the boats all go up?

Dr. WILLS.—If they are all running there is no danger whatever.

Hon. Mr. MACDONALD (B.C.)—The three trips would mean about two full cargoes?

Dr. WILLS.—Yes.

The CHAIRMAN.—Have you any opinion to offer with regard to the route into the Yukon from the coast?

Dr. WILLS.—Well, as far as I am concerned, I am going in the old route the miners have always taken; that is by Dyea and the Chilcoot Pass. There is only a few miles to walk. You can get over that pass in a day. I came over it in less than a day.

Hon. Sir JOHN CARLING.—I understood you to say that there was only a portage of twenty miles?

Dr. WILLS.—A little over twenty miles. A good part of that you can drive with a team of horses. Take from Dyea up to Cañon City; that is a new place just started this winter.

Hon. Mr. MACDONALD (B.C.)—How will those passes be in the summer time—pretty wet?

Dr. WILLS.—Yes, but the Chilcoot has always been the best in summer.

Hon. Mr. MACDONALD (B.C.)—That is further south?

Dr. WILLS.—That is the Dyea Pass.

The CHAIRMAN.—Where is Cañon City?

Dr. WILLS.—That is just up the Dyea River. It is all level up there; it is not until after you reach Sheep Camp that you have climbing to amount to anything at all.

Hon. Mr. MACDONALD (B.C.)—How far is it from Dyea?

Dr. WILLS.—It cannot be more than fifteen miles.

Hon. Mr. MACDONALD (B.C.)—South of it?

Dr. WILLS.—Sheep Camp is about fifteen miles north of Dyea.

Hon. Mr. MACDONALD (B.C.)—Near Juneau?

Dr. WILLS.—Juneau is 100 miles south of Dyea. There is Chilcoot and Chilcat. The Chilcat is further west. The Chilcat Pass is where the cattle go over. That takes you on to the Dalton trail, the cattle trail.

Hon. Mr. MACDONALD (B.C.)—That is longer than the other way?

Dr. WILLS.—No, that is the shortest route.

The CHAIRMAN.—But nobody has ever travelled it?

Dr. WILLS.—Oh, several hundreds of cattle came in. Mr. Bounds was the first man to bring cattle in. He brought them in, in the summer of 1896 and sold them in the winter of 1896-97.

Hon. Mr. MACDONALD (B.C.)—Did not cattle get in all the way from Chilcooten last summer? That is a place just below Cariboo in British Columbia.

Dr. WILLS.—I do not think they ever reached there.

Hon. Mr. MACDONALD (B.C.)—I was told they reached there and sold uncommonly well.

Dr. WILLS.—Not into Dawson City, I do not think.

Hon. Mr. MACDONALD (B.C.)—Did not get that far in?

Dr. WILLS.—No, I do not think so. There were several places on the trail going out where you could buy beef that failed to get it.

Hon. Mr. MACDONALD (B.C.)—At all events they got into the Yukon country, and some fellows who put in a little money made a pot of money out of it, it sold so well.

Dr. WILLS.—Beef was selling at a dollar a pound when I left. If you took a large quantity you could get it at eighty-five cents. At one time during the scare in the fall it was worth a dollar and a half.

Hon. Sir JOHN CARLING.—Is there good fishing up there?

Dr. WILLS.—The fish do not amount to anything, in this way: we only get the king salmon for a couple of weeks in the year.

Hon. Sir JOHN CARLING.—Are there any other fish?

Dr. WILLS.—Not in any amount, and it is hard to get anybody to occupy time catching fish.

The CHAIRMAN.—Did any miners or travellers at all go in by the Teslin Lake route, or come out by it?

Dr. WILLS.—I only met two men and that was at Major Walsh's camp, and they were in a most pitiable condition, and they told us they had come in by that route; they had been three or four months. That was on the ice, in December.

Hon. Mr. MACDONALD (B.C.)—A great number of men are going in this year by the Stikine?

Dr. WILLS.—Yes.

Hon. Mr. McCALLUM.—When beef was a dollar a pound, how did other provisions sell at the same time?

Dr. WILLS.—There is no place where the supply and demand regulates the price as it does in there. When articles are plenty our prices in there, taking all around average, four times your retail price out here; that is, the usual store price is always as much as four times as much as here.

Hon. Mr. MACDONALD (B. C.)—How does sugar sell?

Dr. WILLS.—We paid twenty-five cents for the brown and thirty-five cents for the white.

Hon. Mr. McCALLUM.—I know that at Cariboo at one time everything used to be one dollar a pound, salt, sugar, &c.

The CHAIRMAN.—The first year I went into the prairie country, where I live now, (Russell), we paid \$6 a hundred for flour, \$1.50 a bushel for potatoes, twenty cents for sugar, and twenty-five cents for pork.

Dr. WILLS.—Flour was first \$8, and this year it was raised to \$12 a hundred. It was thought that \$8 per hundred for flour was out of proportion to what they were selling other things at. That was the cut price that the North American Trading Company started in that country; they cut flour down.

The CHAIRMAN.—Competition did that for you?

Dr. WILLS.—Yes, and it came up again to \$12 per hundred; \$12 per hundred is the usual price for flour.

Hon. Sir JOHN CARLING.—Have you ever been up the river from Dawson City towards Fort Selkirk?

Dr. WILLS.—I have been all the way up.

Hon. Sir JOHN CARLING.—Is it navigable for boats?

Dr. WILLS.—It is navigable for steamers of 400 ton capacity to Selkirk.

Hon. Sir JOHN CARLING.—Can they get up the Rink Rapids?

Dr. WILLS.—The Rink Rapids are above Fort Selkirk; no steamer has been above that except a few miles; some of the steamers have wintered at Selkirk; there are some very good sloughs there for wintering.

Hon. Sir JOHN CARLING.—It is said the Pelly River is navigable for some considerable distance.

Routes to the Yukon.

Dr. WILLS.—No steamer has been up.

The CHAIRMAN.—No steamer has been up the Hootalinqua ?

Dr. WILLS.—No.

Hon. Mr. MACDONALD (B.C.)—You will get your supplies up there ?

Dr. WILLS.—If I was a stranger in that country I would have to take my supplies with me; but I made an arrangement when I came out that I would have my supplies for this year, that they would not consider me a new comer. So when I go in I will go in light and carry just sufficient provisions for the trip down.

The CHAIRMAN.—It is almost impossible to travel in the winter time supposing you were going in from Teslin Lake at the terminous of the proposed railway; it is about 533 miles to Dawson and it is pretty difficult travelling on the rivers ?

Dr. WILLS.—It would be impossible to travel, that is to take in supplies more than they would require simply on the trip. That is how it is that people say: Well you can come out; why can we not go in? The reason simply is, that there is food at one end and no food at the other. It does not matter what animal, either reindeer or any other animal—I do not think any animal can carry more provisions than will feed itself and its master. When we arrived at Dyea we simply had enough for one meal for ourselves, and we had not a pound left for the dogs.

The CHAIRMAN.—If you had stopping places every thirty miles provisions supplied enough, that difficulty would be overcome ?

Dr. WILLS.—If they had sufficient provisions in Dawson that you could buy there; but you cannot freight along on the ice it is too rough.

Hon. Mr. McCALLUM.—What is the best time of year to start for that country ?

Dr. WILLS.—If a man is going in with a large outfit he should start in the winter time and get his food over the passes while travelling is good, then simply wait till the ice breaks and float down on the first water.

Hon. Mr. McCALLUM.—If you were going in light, what do you think is the best route ?

Dr. WILLS.—I am going in a few days; although the trail would be a good deal softer than if I had gone a month ago, yet I would have had to wait up there for the ice to break up and I preferred to camp down here.

Hon. Sir JOHN CARLING.—If the river was frozen you would be able to go on the river ?

Dr. WILLS.—I came out on the ice all the way. After you get from the foot of Lake Labarge then the river is very rough indeed. The river freezes below first, and it piles and jams higher than this room a good deal, and to cut a roadway for horses or anything of that sort is simply impossible. To cut a roadway on that ice would cost millions of dollars.

The CHAIRMAN.—Cannot you travel on the banks ?

Dr. WILLS.—We do travel as near the banks as we can, but the banks are all shelving. When the ice first forms there is often a little level ice along the shores, but when the water drops, the ice falls and leaves it slanting along the banks, and I do not know of any more tiresome travelling than traveling or walking on sloping ice. It is most all cut banks, one or two places there is a short portage where the river makes a horseshoe bend, where they will climb over the hills.

The CHAIRMAN.—It is all hilly ?

Dr. WILLS.—Yes, nearly all the banks there are cut banks, and it is impossible to get up on them.

Hon. Sir JOHN CARLING.—You mean the water has cut them ?

Dr. WILLS.—Yes, they are more or less precipitous.

The CHAIRMAN.—What is the height of the plateau above from the river ?

Dr. WILLS.—After you get above Fort Selkirk you get regular steps almost, different plateaus running say from 30 or 40 feet to several hundred feet. Below the Pelly it is a different country entirely. Up above Pelly there you are in the region as Dr. Dawson explained of the great Cordéleren Glacier; but below that to Yukon River it is more of the cañon style; it is generally a steep bluff on this side and goes across with a steep bluff on the other side.

The CHAIRMAN.—What you mean is a rock ?

WILLS.—Yes, great bluffs of rock.

Hon. Mr. MACDONALD (B.C.)—Any salmon in the Yukon?

Dr. WILLS.—Yes, they are not very good, but the salmon having travelled that distance up to Dawson they are spent.

Hon. Mr. MACDONALD (B.C.)—Is there any trout in the Pelly and those other rivers?

Dr. WILLS.—They say so, but I have not seen any. I have seen whitefish up there, the same as in Manitoba.

Hon. Mr. MACDONALD (B.C.)—Many of them?

Dr. WILLS.—No; the fish now-a-days is not a factor in the food supply at all.

Hon. Sir JOHN CARLING.—That is on account of the trouble in catching them, the people would sooner catch gold.

Dr. WILLS.—Yes.

Hon. Mr. MACDONALD (B.C.)—You cannot fish in the winter?

Dr. WILLS.—No.

The CHAIRMAN.—So that any provisions that are ordered for the winter under existing conditions have all to be delivered there before the ice forms.

Dr. WILLS.—Yes; provisions could be had if they reached Fort Selkirk by rail. The dog teams could carry sufficient in case of necessity in winter, as Dawson is only 173 miles from Fort Selkirk. I know that freighting has been done there and I have met teamsters who have gone up there and brought a load of stuff down. With a few stopping places between Fort Selkirk and Dawson traffic could be kept up all winter.

The CHAIRMAN.—If we could send in some horses by pack trail up the Liard to the headwaters of the Pelly? can feed be put up there for horses?

Dr. WILLS.—Feed can be put up at different hay lands along.

The CHAIRMAN.—There are hay lands?

Dr. WILLS.—Yes, but the trouble is to get anyone to look after them.

The CHAIRMAN.—If a man could take a couple of teams of horses up there—

Dr. WILLS.—Every summer we have quite a number of horses in Dawson and Forty Mile, but they slay them and feed them to the dogs in winter. There are one or two teams left in Dawson where the men were fortunate enough to get sufficient hay, and bought up what little feed was brought in, but the rest of the horses had to be shot.

The CHAIRMAN.—But there is plenty of hay if you could only put it up?

Dr. WILLS.—It is difficult to get it; you would probably have to go for a long distance up the river from Dawson, and strike little marshes here and there and then build a raft and raft it down the river; and then it is very risky landing your raft; many a raft has gone by Dawson not being able to make a landing. It has to be handled very skillfully.

Hon. Mr. MACDONALD (B.C.)—The current is very strong is it?

Dr. WILLS.—Yes, there is an eddy in front of Dawson, but it requires skill to land a raft in the eddy.

Hon. Mr. McCALLUM.—How deep does the ice form there on the water in the winter?

Dr. WILLS.—From four to six feet. The first winter I was in there, we had it extremely cold, the average temperature in the month of January was 47 below, and the ice in the water hole which we cut to dip the water out was a little over seven feet.

Hon. Mr. McCALLUM.—And in those rivers where the water is so shallow, they talk about two feet; it must freeze to the bottom?

Dr. WILLS.—The Yukon is not a shallow river; the Yukon in front of Forty Mile and at the boundary line runs from 20 to 25 feet in depth, that is at low water in winter time in the centre.

Hon. Sir JOHN CARLING.—Have any of the miners been able to get through the frost in their mining?

Dr. WILLS.—No. There was a well sank at Sixty-Mile 90 feet and they did not get through the frost. It is likely the frost goes down probably a couple of hundred feet the same as it does in the same latitudes in Siberia.

Routes to the Yukon.

Hon. Sir JOHN CARLING.—Then the water you get is from the river ?

Dr. WILLS.—Yes, the water in the Yukon is very clear in the wintertime but very muddy in the summertime.

Hon. Sir JOHN CARLING.—The fuel that the miners use is wood altogether.

Dr. WILLS.—Yes.

Hon. Sir JOHN CARLING.—For melting the frost in the mines.

Dr. WILLS.—Yes.

Hon. Sir JOHN CARLING.—And how much a cord is that wood.

Dr. WILLS.—It is worth at the mines \$25 a cord.

Hon. Mr. McCALLUM.—Is the wood soft or hard ?

Dr. WILLS.—It is nearly all spruce, very little poplar.

The CHAIRMAN.—Is it a good place for a centre at Fort Selkirk ?

Dr. WILLS.—I say there is no place for a centre unless there is going to be some population there, because the place is perfectly inaccessible for several months in the year, and if a man has business at the Capital he cannot go there certain months of the year, and there would be nobody living there, only government officials.

Hon. Sir JOHN CARLING.—What about railway, of course a railway would make it accessible.

The CHAIRMAN.—Is not mining going to be developed there ?

Dr. WILLS.—Mining camps will always be in the most convenient places, and in the most immediate vicinity to the mines.

The CHAIRMAN.—But the Klondike is not the only place where we hope mining will be developed.

Dr. WILLS.—But we have to deal with conditions as they are, we don't know of any gold in paying quantities around Selkirk, and even if there was, people are going to go to richer places just the same as they did at Forty-mile and Fort Cudahy, which at one time was very well inhabited but now is almost entirely deserted. We cut hay in streets of Forty-mile last year. There is scarcely a house inhabited there now. That is the nearest place to the mines on Miller or Glacier Creeks. The miners follow the richest finds.

Hon. Mr. MACDONALD (B.C.)—I suppose there is gold to be found at Fort Cudahy.

Dr. WILLS.—There are mines in the vicinity, that is the old mining camp, but it is not so rich as the Klondike and the people left it. It may be worked again.

The CHAIRMAN.—As soon as you get railway communication and cheaper labour can go in and out, then conditions will change.

Dr. WILLS.—They will to a certain extent. They had very good mines in Circle City down in Alaska but as soon as the Klondyke mines were found the people moved in there.

Hon. Mr. MACDONALD (B.C.)—Where should the militia be ?

Dr. WILLS.—Up where the centre of population would be, that is at Dawson, to be of any use at all. Take this month for instance, the month of May, and it is practically impossible to go to Selkirk; during this time of the year the river is liable to break every day and the ice is flooded in many places. Then again in the fall, take the month of October where the river is running full of ice and it does not unite until the first week in November, and is not fit to travel on till the end of November, and it is probably four months of the year in which it would be almost impossible to reach the Capital if you had it at Selkirk. It would be a long hard trip to go there; it takes about 8 days to make that 173 miles because in summer you would have to pole up.

The CHAIRMAN.—The alternative would be to build a railway to the point where the largest amount of trade is developed.

Dr. WILLS.—A railroad to Fort Selkirk would answer all purposes, because there would be good navigation, and a few good steamers could make trips quickly and could carry an enormous amount of freight. A steamer from Fort Selkirk to Dawson might make two round trips a week and carry four hundred tons a trip.

The CHAIRMAN.—In the same way it could go up to the head waters of the Hootalingua?

Dr. WILLS.—Yes, but look at the great length of time it would take. It would take two weeks to make a round trip from Teslin Lake, and it would be a very small steamer and a very powerful one. I doubt if any steamer larger than 75 tons could travel the Hootalingua. That would be 75 tons in two weeks, as against 1,600 tons in two weeks from Selkirk for one steamer; and your season of navigation would be somewhat shorter from Teslin, because the lakes don't break out till after the Yukon is open. The lakes are the last to break up. They won't break up till the last of this month; but the Yukon will break up in a few days now, so that there is half the month of May.

Hon. Sir JOHN CARLING.—You think the vessels that go up the Yukon from Behring Sea could go up to Fort Selkirk.

Dr. WILLS.—Yes I know, because they ran there. Capt. Constantine has been up on the steamers as far as Selkirk. There is good navigation as far as Selkirk, but none of those steamers could attempt to go farther than that, that is on the Yukon and when you go beyond that you are either on the Lewes or the Pelly River and the two together form a good navigation.

The CHAIRMAN.—The Rink and Five Finger Rapids are a barrier.

Dr. WILLS.—The Rink Rapids and the Five Fingers. I do not see how they could get up the Five Fingers unless they warp up. If you will look at Ogilvie's map you will see the Lewes River is a very crooked stream, it seems to be a continuation of horseshoe bend.

The CHAIRMAN.—Selkirk is on the Lewes?

Dr. WILLS.—It is just at the mouth. Fort Selkirk is not on the Lewes, because it is more on the Yukon, where the buildings are.

Hon. Sir JOHN CARLING.—Have you known any men that have gone from Edmonton through the country there up as far as Dawson?

Dr. WILLS.—Nobody that has ever started from Edmonton has reached that country yet. A party started over a year ago and nothing has been heard of them. We heard they were down as far as the mouth of the Mackenzie and they were going in by the mouth of the Porcupine. That is an enormous trip.

Hon. Sir JOHN CARLING.—There was quite a number left Edmonton this spring to go up.

Dr. WILLS.—Mr. Ogilvie went that way up the Porcupine and portaged over to the Peel River and then from the Peel to the Mackenzie and up. He was over a year making the trip.

The CHAIRMAN.—You might tell us a little about the mining. That is a very interesting subject. Are all the accounts that come out from there reliable or are they simply boom accounts?

Dr. WILLS.—Some of them are boom accounts there is no doubt about it. There is certainly, however, some very rich mines there indeed, but the whole country is not that way by any means. Take the whole class of mining and it is really low grade gravel. These rich spots like we get on the Eldorado that Mr. Ogilvie speaks of give one a false idea of the country entirely, the mining there is the slowest and most expensive mining in any part of the world on account of the frost. It is not the labour of men it is the work of fires; and wood at \$25 a cord the mines must be very rich in order to pay. Very often a man will start in on very good pay, and after he is gone a short distance he finds that his claim is a little bit spotted, and the first thing he knows he has run off the good pay.

Hon. Mr. McCALLUM.—How much ground would a cord of wood thaw, how many yards of earth?

Dr. WILLS.—It would thaw about three or four yards.

Hon. Mr. McCALLUM.—Then you must have your wood so that it will burn, you have to go out and get it ready; you cannot cut it and burn it right away, there is sap in it?

Dr. WILLS.—Yes, but we have to have a certain amount of dry wood and we use a certain amount of green wood. We do not want it to burn away all at once.

Routes to the Yukon.

It is the slow continuous fire and not the quick fire with all the flame that does the work.

The CHAIRMAN.—Why don't you adopt the blast?

Dr. WILLS.—Then you are liable to have your roof caved in.

The CHAIRMAN.—Are you undermining?

Dr. WILLS.—Yes, it is all underground. People have the idea that we start in and burn it from the surface. These fires are in great chambers underneath the ground and the roof is composed of frozen muck, and you don't want to blow that up. Then, with regard to blasting, there is another difficulty. Our powder costs a dollar and a half a pound, and I don't suppose there are 200 pounds in the country because the steamers are not allowed to bring any quantity and carry passengers. The same way they cannot bring gasoline and carry passengers.

Hon. Mr. McCALLUM.—You cannot thaw the ground with steam of course?

Dr. WILLS.—No, the steam would condense and you would not be able to work underground.

The CHAIRMAN.—If you could get your supplies down to reasonable price—

Dr. WILLS.—I know, as a matter of fact, when the stores have sufficient food in there, a man's outfit does not amount to very much. A man can get a very good outfit that will last him a whole year for four or five hundred dollars, Five hundred dollars would amount to only fifty days' wages.

Hon. Mr. McCALLUM.—How do you stand the cold weather? Is not it very severe?

Dr. WILLS.—I do not think it is as severe on a fellow as it is in Winnipeg, because we do not get the wind there, and on the gulches, no matter how the wind would be blowing on the Yukon, up on the gulches there is never a breath of air.

The CHAIRMAN.—The miners are very happy in there?

Dr. WILLS.—Yes, some of them.

Hon. Mr. McCALLUM.—I would think that the fuel used to thaw the ground would cost a great deal and would be a great deal of trouble?

Dr. WILLS.—It is slow and expensive, and although there are lots of suggestions that there will be important changes in mining, still we know that sort of mining has been going on in Siberia for many years, and many eminent engineers have attempted new ideas, but they have always to go back to the old thawing by fires.

The CHAIRMAN.—It is a question of labour.

Dr. WILLS.—And the work of fires.

Hon. Mr. McCALLUM.—You must have water to wash it. Where do you get that?

Dr. WILLIS.—In summer time we wash and in winter time we take the gravel out, and that is piled in a dump, hoisted in buckets and dumped, and in summer time we wash it.

Hon. Mr. McCALLUM.—Where do you get the water to wash it?

Dr. WILLIS.—In the creek. These are all in gulches. There are always creeks in the gulches.

The CHAIRMAN.—Have you any idea of quartz mining up there?

Dr. WILLS.—Yes, there are a great number of quartz veins have been located, but I have not seen anything very rich, although I have seen some wonderfully rich specimens of quartz, but it is very difficult to prospect for quartz there, because the whole country is covered with moss, and though we can find croppings of quartz, it would mean a tremendous amount of stripping to find a vein, and I think there will be some very rich quartz found there eventually, but they will be found by accident.

Hon. Mr. McCALLUM.—It is all covered, you cannot see it; you have to strip the moss away.

Dr. WILLS.—You will find croppings that roll down, but it is hard to trace them.

The CHAIRMAN.—Have you any idea how much gold will come out from the winter's work?

Dr. WILLS.—From the reports I have heard lately, I think there will be in the neighbourhood of ten millions—close on to that; it wont all come out from there, it will mostly remain in there for re-investment.

Hon. Mr. McCALLUM.—But they will take that much from the ground?

Dr. WILLS.—Yes.

The CHAIRMAN.—How do you mean, not come out?

Dr. WILLS.—It will come out eventually. If I had \$100,000 I would not ship it out here. I would re-invest it.

The CHAIRMAN.—There are good openings to buy if you understand it?

Dr. WILLS.—If you understand it.

Hon. Mr. McCALLUM.—You think there is; it is a matter of speculation?

Dr. WILLS.—Yes, it is a matter of speculation. A man wants to be prepared to lose his money.

Hon. Mr. McCALLUM.—He might make a million and might lose his hundred thousand?

Dr. WILLS.—Yes. If a man is willing to take his chances and gamble on it, and if he loses say nothing.

The CHAIRMAN.—If there is \$10,000,000 comes out, the government will get a million.

Dr. WILLS.—If they collect it.

The CHAIRMAN.—I would like to know whether the government are going to collect that million.

Dr. WILLS.—If they would make somebody else in the country pay that—as it is these companies pay no taxes, they get a large portion of the money; the saloon keepers pay no taxes; the gamblers pay no taxes, and all the parasites, so to speak, pay no taxes, and it is the miner who has to stand everything.

Hon. Mr. McCALLUM.—And the people who do not pay the taxes give you the trouble, I suppose?

Dr. WILLS.—The people that cause the trouble pay no taxes.

The CHAIRMAN.—And the industrious miner has to foot it all?

Dr. WILLS.—Yes.

The CHAIRMAN.—That is the way they are running things at present, and I am trying to persuade some of these gentlemen to change that.

Dr. WILLS.—The miners feel it is a hardship, and that causes a good deal of hard feelings. The miners are not averse to paying taxes at all, but the miners always says they like a square deal.

The CHAIRMAN.—If the conditions were reduced as to cost of supplies and everything of that kind, then it would become profitable to handle this low grade gravel?

Dr. WILLS.—Yes, if you could reduce the labour, and if you got in tools and machinery and everything.

The CHAIRMAN.—And do everything on a more scientific scale.

Dr. WILLS.—Yes.

The CHAIRMAN.—And an enormous area in that country would be made valuable?

Dr. WILLS.—Yes, we know of creeks with five and ten dollar diggings, which cannot be touched now, but which eventually, if worked on a large scale will produce a large quantity of gold, in fact, it is the large areas of low pay that produce more than these rich spots like the Eldorado. They will produce more in the long run.

Hon. Mr. McCALLUM.—You have to take out a large quantity and work it well?

Dr. WILLS.—Yes, it has got to be handled well and in large quantities.

The CHAIRMAN.—Have you come across coal up there?

Dr. WILLS.—Yes, there is coal there.

The CHAIRMAN.—How far?

Dr. WILLS.—About eight and three-quarter miles up the Coal Creek. That is four miles below Fort Cudahy.

The CHAIRMAN.—Where is that?

Dr. WILLS.—It is at the mouth of the Forty-mile Creek, fifty-three miles below Dawson.

Routes to the Yukon.

Hon. Mr. McCALLUM.—Have you been in the coal mines?

Dr. WILLS.—Yes.

Hon. Mr. McCALLUM.—What quality of coal is it?

Dr. WILLS.—Lignite.

Hon. Mr. McCALLUM.—That is a good quality of coal?

Dr. WILLS.—In order to get at that mine you have to have tramway for eight and three-quarter miles to get to the Yukon.

Hon. Mr. McCALLUM.—We will get that by-and-bye if there is enough coal there?

Dr. WILLS.—Yes.

The CHAIRMAN.—There are a large number of American miners there. Most of them are Americans?

Dr. WILLS.—Yes, but most of them are what we would call Castle Garden Americans. A large number of them are Scandinavians; they make good citizens, quiet chaps, good hard workers, suitable for the country. Although they have lived in the States, they have landed at Castle Garden and taken out their naturalization papers, I think there are more Canadians than true-born Americans, but they are mostly foreigners.

The CHAIRMAN.—But they make good citizens?

Dr. WILLS.—Yes, very good, straight fellows, hard workers. Those Swedes and Norwegians are splendid fellows in that country, and a man owning a claim will hire those men in preference every time, because they know what work is, and they will do a good day's work. Of course, up there with the miners, the nationality does not cut much figure.

Hon. Mr. McCALLUM.—A miner is a miner.

Dr. WILLS.—Yes, and it makes no difference. We got a bad element in there. They came up late in the fall in these sweepings from the Sound, and there were certainly a number of toughs came in there.

The CHAIRMAN.—And they seemed to complain that they could not form a municipality?

Dr. WILLS.—Not the toughs. Those men were educated chaps, but they wanted to run things a bit, and when they saw they could not do it, they simply backed out and never said a thing more about it, when they saw they could not take a hand in it, not being British subjects.

The CHAIRMAN.—Do not you think it would be advisable to give those people a vote? Supposing a man comes and locates in a town or place like Dawson City, and although he is not a Canadian citizen, do you not think it would be a wise thing to give him a vote for municipal matters without being obliged to take out his papers?

Dr. WILLS.—If he is a bona fide miner or property owner there.

Hon. Mr. MACDONALD (B.C.)—You could not make a particular regulation for those people?

The CHAIRMAN.—There are a number of people who go in there and locate in Dawson City or will form a municipality somewhere else; a man has not a vote in the election of a member of parliament, but he may not want to change his nationality. At the same time he is interested in improving the place he is in. What I was asking was whether it was desirable to give that man a vote, so that no trouble would arise such as arose in the Transvaal; there they would not give the Uitlanders votes until they had complied with the conditions. That is what led to the trouble. They taxed them but would not allow them to have votes. It is simply to avoid trouble of that kind or dissatisfaction that I am asking the question.

Dr. WILLS.—Of course, my idea is I think that most of them would become British subjects. There are a few, of course, that would still remain American subjects, just the same as there are a number of us who go to the United States will remain British subjects, but I think the majority, if it were necessary and we wanted them to take a hand in the thing, the miner would not object at all to becoming a British subject. When Mr. Livernash was mentioned as one of the delegates coming out here, I was the only one that spoke of him being an American, and I said, would it

not be better if there were three Canadians and no Americans coming out, and they simply pooh poohed the matter and said I was taking a very narrow view of the thing, and it was altogether likely that Mr. Livernash's nationality would never be questioned, and he would not be asked at all. The idea of nationality never entered their heads at all.

Hon. Mr. McCALLUM.—But it did here.

Dr. WILLS.—Yes. I was the only one in the whole place that ever mentioned it, so that it shows you that as to the nationality there is no such feeling in there at all.

The CHAIRMAN.—To make a political point they will take up anything?

Dr. WILLS.—There is a certain rough element in the way of gamblers who come in, and those chaps require looking after.

Hon. Mr. BERNIER.—Would it not be better to refuse them a vote even in municipal matters, so as to induce them to become British subjects?

Dr. WILLS.—These Norwegians and Swedes would probably just as soon be British subjects as American subjects, and they form a considerable number of our population and are very good citizens now.

The CHAIRMAN.—Over the boundary line in Alaska there is an enormous territory, and is it likely to develop well?

Dr. WILLS.—Just as likely as the Klondike. The latest reports from there say that Minook Creek is turning out just as good as Bonanza or Eldorado.

The CHAIRMAN.—So that if we were to build a railway up there we would afford facilities for a very large tract of country, and concentrate a large amount of traffic.

Dr. WILLS.—Yes, because it would supply not only British Yukon but would supply Alaska Yukon. There is an expedition started out from Seattle in which I was told Mr. Bartnole is connected, and there are some forty men sent up with an outfit of mules to find a road which will be all American starting from some place near Mount St. Elias.

The CHAIRMAN.—Copper River?

Dr. WILLS.—I do not think it will be Copper River, but in that part of the country so as to tap the Yukon somewhere in the neighbourhood of Circle City, between Circle City and the boundary line, because when they get to Circle City there is splendid navigation from there up. It is below Circle City the troublesome part of the Yukon is.

The CHAIRMAN.—The only thing is that those barboours going west are not so accessible, I fancy, in the winter time.

Dr. WILLS.—Oh, yes; they would be accessible. All that coast is quite warm along there.

Hon. Mr. McDONALD (P.E.I.)—Is there much of a population between Dawson City and Port Yukon along the river?

Dr. WILLS.—There is "Circle City" and "Fort Cudahy" and "Forty Mile." There are a very few Indians in Circle City. Circle City was a place with about 1,500 but since the Klondike has been discovered it has windled down to about 300. There were about 1,000 of them come up over the ice to the Klondike.

The CHAIRMAN.—Is it your opinion that if this railroad was built to Teslin Lake as compared with the route coming out over the Chilcoot or White Pass, that that route would be used very much in winter time?

Dr. WILLS.—The route could not be used in winter time to Teslin Lake.

The CHAIRMAN.—It could not.

Dr. WILLS.—It would not be, because you would be going miles out of your way. It is just as easy to walk to Dyea as the head of Teslin Lake, and when you get to Dyea you get an ocean steamer all the year round, and when you get to the head of Teslin Lake in winter time you have 150 miles to go and then you have ice again on the Stikine, and it is impossible to land from steamers as they found this winter at the foot of the ice on the Stikine River, because the conditions of the climate are very gradual. You come from the ocean and you go up the Stikine a little way, and then you will find skimmy ice, and that gets a little thicker, and a steamer gets stuck. It gets thick enough to stop the steamer and not thick enough to land on,

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and the consequence is they could not land any stuff or anything until—in fact, I do not know that they have got any landed yet. I do not know of anybody getting up the Stikine yet.

Hon. Mr. McCALLUM.—It is no use in winter?

Dr. WILLS.—It is no use in winter time. Of course they could land lower down and build a wagon road round for a way until they would get up to solid ice, but then you would be in United States territory, and a wagon road in United States territory is not navigation.

The CHAIRMAN.—And of course it is a very arduous trip?

Dr. WILLS.—Yes, it means walking. It means hard travelling of 150 miles more than is actually necessary, and men are not going to do that simply for patriotic purposes. A man is going to take the shortest route.

Hon. Mr. McCALLUM.—He is going to take the shortest route to get there?

Dr. WILLS.—Yes.

The CHAIRMAN.—Don't you think that country is worth a railroad?

Dr. WILLS.—Yes, but that railroad should have a port of good navigation on the Yukon as its terminus.

The CHAIRMAN.—On coming from the east as a direct through line?

Dr. WILLS.—Of course that Edmonton route would be a very good route indeed, provided it ran into Selkirk. I think Selkirk should be the terminus. There is a terminus that is available practically at all times of the year, because it is only 173 miles from Dawson, and if the necessity arose to freight stuff down in winter time they could always do it sufficiently to prevent starvation, or if they could not freight it down, it is not so much a trip if necessity compels it for them to travel to it.

Hon. Mr. McCALLUM.—Do you know what extent of coal there is?

Dr. WILLS.—There is a seam in sight, right on the cut sloping bank, and then there is also another seam, and between them there is a wedge of clay. I think they will eventually run together. That coal is exposed in spots at different places, showing that it is a perfect blanket right along there over a quarter of a mile. Each of these seams are four feet in thickness. Mr. Ogilvie estimated there was about 300,000 tons of coal in sight.

Hon. Mr. McCALLUM.—And you would have to build a tramway before you could get to the river?

Dr. WILLS.—It is eight miles up the Coal Creek. Then the same seam of coal runs through the country and cuts into Twelve Mile Creek, and coal has been found there; and the same way it came down, and is found again on a little creek below Coal Creek, a little nearer to the Yukon. It will eventually have to be opened, because the fuel along the rivers—won't get exhausted exactly—but the handy fuel will. The steamers now find it rather difficult to get wood handy, and if there is a large number of steamers, then it is going to use up all the wood that can be got at.

Hon. Mr. McCALLUM.—And make it still harder for the miner?

Dr. WILLS.—The trouble in regard to using coal in the mines is that you would have to freight your coal to the mines, and the freighting is going to cost you so much per pound in the winter time according to the distance, cost you from five to fifty cents a pound. To many creeks it would be perfectly impossible to take coal because the coal would cost so much that it would be too expensive.

Hon. Mr. McCALLUM.—Still you have it there?

Dr. WILLS.—Yes.

Hon. Mr. McCALLUM.—When you get to the river what depth of water is there in Coal River?

Dr. WILLS.—It is just a little stream. It is a regular torrent in Spring, lots of water in it, but it is a succession of rapids.

The CHAIRMAN.—Dr. Wills, I must say on behalf of the Committee we thank you very much for the interesting information which you have given us.

Dr. WILLS.—I am glad to tell anything I can about this country which is so greatly misunderstood.

The Committee adjourned.

OTTAWA, 16th May, 1898.

The Committee met this day.

The Honourable Mr. BOULTON, Chairman.

COL. LAKE, Quarter-Master General appeared before the Committee and was examined.

By the Chairman :—

Q. We have a Committee to inquire into the routes to the Yukon, to make some inquiry about the new country which is opened up and creating such a furore. You are the Quarter-Master General?—A. I am.

Q. You are supposed to keep yourself posted upon the topography of the country?—A. Yes, so far as I can.

Q. The routes and everything of that kind?—A. Yes.

Q. I thought probably as you had charge of sending up our Contingent force you would be able to give us a little information as to what route they were taking?—A. They are going from Vancouver, via the Stikine River (transhipping their stores at Fort Wrangel) as far as Glenora, or, should they find it advisable when they get there, to Telegraph Creek. From there they are going to proceed through to Teslin Lake, along the route of the projected railway, and on Teslin Lake they will build boats for the conveyance of themselves and their stores and pass down the Lake, down the Hootalinqua River and the Lewes River to Fort Selkirk. Present orders are that, if they are met there by either Major Walsh or a person deputed by him, they will take his orders as to where they fix their permanent station. But in default of that—and probably even if he meets them—the permanent station will be fixed at Fort Selkirk. There they are to build barracks and house themselves for the winter, keeping in view the fact that very possibly that place may be made the eventual centre for the government of that part of the country. It will be more or less a fortified post, and will include Government buildings, bank offices and so on.

Q. And that work they are going to do themselves?—A. That work they are going to do themselves. They are transported by Canadian Pacific Navigation Company's steamer from Vancouver to Glenora, and from there the Hudson Bay Company and they themselves are going to pack the stores across from Glenora to Teslin Lake.

Q. Will they walk across—march across?—A. Yes. Of course it entirely depends upon what they find there. As you all know, all the information we have about the whole of these routes is, in most cases, one man information, not based upon a number of reports so that you can get an average clear statement of what you are to expect, but mostly on what one man has seen in his journey across. Therefore they have to be prepared for a great many eventualities; but that is the general outline of what they propose. They will work to a certain extent side by side with the pack transport which the Hudson Bay Company are providing.

Q. You mean to say they will march with about fifty pounds on their backs?—A. About seventy pounds.

Q. How many days do you calculate it will take them?—A. The orders to the officer commanding give him a great deal of latitude. I should state that the seventy pounds includes their own clothing as well. It is not a net burden of seventy pounds; it is a gross burden. But if he finds he can more expeditiously and conveniently pass through with lighter loads and a smaller party to start the work on the Lake, he will do it. He is to be guided entirely by the circumstances he finds on arrival.

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Q. Does the Hudson Bay Company find wagons or anything of that kind?—
A. No. I understand there is no trail fit for a wagon at all at present. One is being opened up, and they may find the first thirty, thirty-five or forty miles ready.

Q. So that it is purely a pack trail?—A. Purely pack trail.

Q. And do you know anything about whether that saw-mill got started or not?
—A. On Teslin Lake?

Q. Yes?—A. There are statements that it has been. We have also had statements that it is not. It is scarcely possible to tell which to believe. We have heard statements to that effect.

Q. So that they really may have to whip-saw?—A. There is no doubt a saw-mill on the Lake, but in what state of completion or what it is able to do, no one can say at the present moment. The machinery is being packed across and it may have reached there.

Q. You do not know that it has reached there?—A. No. We have got all the tools. We are prepared to whip-saw lumber and all that.

Q. And how many boats do you calculate to take?—A. Well, according to the size of the timber they have to deal with. It is a comparatively easy matter to calculate the displacement you want in water for a certain number of pounds weight, and they will be guided by that, and they will also be guided to a certain extent by other circumstances, possibly they may find it a good thing to cut down a good deal of lumber and make rafts, and they may transport a good deal of their stuff on rafts.

Q. Have you any accurate information at all as to what the class of navigation is from the south part of Teslin Lake to the Hootalinqua?—A. We have got the report of the Government Civil Engineer, Mr. Jennings, and Mr. St. Cyr, who was acting under him. You have no doubt got the blue books. I had also a long conversation with Mr. Jennings himself and took notes of that conversation and Mr. St. Cyr is going with the party; so that we have all the information he derived from his journey, and we have also with us a civil engineer who has had a great deal to do with railway engineering work in British Columbia lately, Mr. Carry, and he is to a great extent, acting as pionner, for the party. We have also artificers, two or three practiced men from here, men who have been in the habit of working in the lumber camps and building boats, and we have a considerable number of men who were either artificers by trade before they enlisted or are handy men and good at that kind of work.

Q. You are taking tents, I suppose?—A. We are taking tents. We hardly propose to use them much before we get to Fort Selkirk. We have a certain number of canvas sheets which we are using for packing purposes as far as Glenora, after which they will serve as rain shelters.

Q. Tentés d'abri?—A. Yes. Instead of unpacking the tents each day and putting them up, we propose to use these canvas covers to a great extent simply as shelters. When the expedition was first ordered it was early in March, and the first orders given, were to be ready to start at very short notice. That was on the earlier information regarding the state of the trail and the probabilities of getting through, but it soon became apparent from futher reports that it was hardly possible to get through without been able to rely to some extent on finding forage along the trail, and therefore it was decided to wait until there was some chance of getting forage for the animals on at any rate or part of the journey.

Q. This is a pioneer force, I suppose, as much for assisting to open up the country as anything else?—A. To a very great extent no doubt. They are primarily of course, as a support to the police in the maintenance of order. They will have their own head quarters, practically take no part in the management of the country, unless called upon as the reserve force; but they will, no doubt, be used a great deal for pioneer work in opening up the country.

Q. And how long are the men enlisted for?—A. They are all liable to serve for at least two years from this date. You are aware that militia enlistment is a three years enlistment, but every man who had less than two years of his original enlistment still to run was called upon to re-enlist for a fresh term of three years before starting, so that no man has less than two years still to serve.

Q. So that, at the end of two years they can take their discharge or remain up there, just as they please?—A. Yes, on the expiration of their enlistment.

Q. Do you know what the strength of the Police force is up there?—A. I understand it is in the neighborhood of 200.

Q. What supplies have you sent with the men through to Teslin Lake?—A. With the men we are sending six months supply of food and a fairly complete supply of clothing, including winter clothing. We cannot make sure of any stores—absolutely sure—of their arriving by the other route. We have taken all precautions, but we are not absolutely certain. And so the force has six months supply of food, in the shape of preserved meats, and so on, and a supply of winter clothing; at the same time we got the amount of stores to be transported by that route down to the lowest safe limit.

Q. Do you expect the Hudson Bay Company will supply you with enough mules to make one trip, or will you have to make more?—A. Trip after trip. I do not expect the last of the force will get away from Teslin Lake for three months, June, July and August—that is the whole force; but of course the artificers, the boat builders, the barrack builders, will get on ahead. We shall use all our efforts first to push through the boat builders to Teslin Lake and supply them with stores, and having got our boats built, we shall then use our efforts to push on the pioneer party again down the river to Selkirk, to start the building of barracks. Our stores amount really, at present, to the neighbourhood of 100 tons, but they use something like half a ton a day on the way, to feed the force, so you will see it will rapidly diminish, and what they will take on from Teslin Lake is not likely to exceed seventy to eighty tons.

Q. And that is going to be pretty hard work for them?—A. I think it is. I think they are prepared for it.

Q. If they are three months on the journey?—A. Yes.

Q. Well, then, the other stores—what stores did you send round by the other way?—A. There is a reserve supply, going round by the Yukon, of food to the extent of nearly 200 tons—in fact quite 200 tons and about fifty tons of other supplies such as clothing, ammunition, and various stores for building purposes and things of that kind. We have rather more than we really want there, but we were informed by the Interior Department that it was likely that there would be a large population there wanting supplies in the winter and there was no harm in our filling up whatever tonnage we could get, with food, and we did so accordingly.

Q. And that went round by St. Michael's?—A. That is due to be delivered either at Seattle the day after to-morrow, or at Vancouver about a week's time—a little less, perhaps, and I do not quite know how it is divided between the two ports. It depends upon the contractors and the arrangements which have been made between the contractors, the railway companies and the shipping company. It is divided between the two ports, and the agreement is that it shall be sent up the Yukon by the first steamers that start up the river; and it shall be delivered at Fort Selkirk not later than the end of August.

Q. And what companies have you sent it up by?—A. The Boston and Alaska Transportation Company.

Q. Over the Grand Trunk to Seattle, a portion of it?—A. A portion of it by that route and a larger portion by the Canadian Pacific Railway. I do not know whether they will deliver all that they are taking by the Canadian Pacific Railway at Vancouver, or not, or part in Seattle. It is going in two steamers, the "Brixham" and the "Lanoadá."

Q. Where were these supplies purchased?—A. From Bate & Son, Ottawa, and from the Hudson Bay Company.

Q. Is there a Canadian company running to St. Michael's?—A. I believe so, yes.

Q. But no Canadian company running on the river?—A. Not that I am aware of.

Q. This was the lowest cost of transportation?—A. Yes; but officially I am not concerned really with the tenders. The civil branch of the department make all contracts. My share in it was, that where companies tendered for the transport, I

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was employed to ascertain what they proposed to do, how far they knew what they were about, in overcoming the difficulties we knew to exist on the Yukon River, and how far they were likely to be able to carry out their contract, and my report on those matters would guide the Minister a great deal.

Q. And what was the price per ton from Seattle or Vancouver?—A. The same from either place, \$300 a ton.

Q. \$300 from Vancouver or Seattle?—A. Yes, to Fort Selkirk.

Q. Was that as cheap, do you think, as sending in by the Skagway over the passes?—A. Oh, I fancy so—a good deal cheaper if I may judge from what I read in the newspapers—in fact, I do not think anybody could have undertaken to get it over the passes.

Q. Such a quantity?—A. Not such a quantity. We were guided a great deal by the practice of the North-west Mounted Police on this question. They are the only people who have carried stuff up there systematically and we were guided a great deal by what they considered the best means of proceeding.

The CHAIRMAN.—This force is to support the Mounted Police and to develop the country?

Col. LAKE.—Yes.

Q. In the winter time, of course, the only immediate communication will be by Skagway, as usual?—A. I understand that is not quite so. Assuming that a wagon road is made through from Glenora to Teslin Lake, I understand that it is not at all impossible that we may find the much longer route up the Teslin River to be the best way of doing it. It is one of those open questions on which there are different opinions. I have heard a good many opinions.

Q. The letters we have seen in the public press, especially Mr. Way and others who were there, say it is utterly impossible in the winter time for any horse or dog or any other animal to convey any more than what would keep them on the journey?—A. That is presuming that no depôts of stores are made meanwhile, but I understand that the Hudson Bay Company are going to establish a depôt on Teslin Lake, and when on Teslin Lake, they are only 300 miles from Fort Selkirk, but there is nothing whatever to prevent another post being established on the McClintock River. I can imagine—I am not speaking of what I know by personal experience—that it may be quite possible and very desirable to establish certain posts of that description.

Q. You never, I suppose, inquired into the routes on the east side of the mountains?—A. The inquiries we made went to show that nobody was fully aware of what route there was. I was very anxious to get information. I understand a party of mounted police were actually employed in passing through by a route on the east side of the mountains and making some explorations.

Q. As a matter of fact, you are able to deliver provisions at Fort Liard, north-west of Edmonton?—A. Yes, I understand that is the case.

Q. Which, I think, would be within 300 miles of Fort Selkirk? I am not quite sure of the distance?—A. I think it is about that.

Q. I suppose provisions could go from Edmonton up the Mackenzie and then in the same way that the Hudson Bay Company have, for a very great number of years, delivered provisions, and I should imagine that supplies could be delivered much cheaper by Fort Liard than by Teslin Lake under existing circumstances—however, that was not before you in any official shape?—A. I could not discover that there was any route from either of those rivers, by either Fort Liard or the Dunvegan way, that was known. We had got reports fairly recent and fairly definite as to the other routes, but we had no report of that last 300 miles which you mention, and it did not seem safe to enter upon an absolutely unknown route. As to this other country, we have some knowledge from people who have been up there recently, for instance, Jennings' report, a recent report made with the direct object of ascertaining the feasibility of communication.

Q. It seems to me that it would be very desirable to establish a depot of supplies at Fort Liard as a support to the force you have in there, which is locked in from the coast except over very difficult passes?—A. That is true.

Q. Have you ever given it any consideration to the advisability of putting a small detachment on Peace River?—A. I have to a certain extent. I take it that as we get more knowledge of that part of the country and the routes there, it would be advisable to consider opening it up in that way, but I think under our present knowledge it is hardly advisable. I entirely agree that we ought to accumulate as much knowledge as possible of these routes from everybody we can get.

Q. Then you are dependent entirely upon the Teslin Lake route for your communication?—A. Yes.

Q. And also for your source of supplies?—A. Yes; of course, presuming the supplies we have sent up arrive, they are very well provisioned for two years.

Hon. Mr. POWER.—Do you know what route the Mounted Police took; I mean the detachment that went from Edmonton?—A. No.

Hon. Mr. WOOD.—You do not know where they are?—A. No. Of course one of the routes from the Peace River runs according to the map (which does not take account of the mountains), pretty directly into the Teslin route; but with the range of the Rockies in between, no one can say what feasibility there is of getting there at the present time.

Hon. Mr. POWER.—Are you aware of any party, or any single explorer, having gone from the head waters of the Peace River, the Omenica country, from where the Peace River passes through the Rockies to Dawson City, or anywhere in the vicinity of Dawson City?—A. Yes, I understand, from reading only, that a party did, one of the first exploring parties who discovered gold in that district—somewhere in the early seventies, I think—pass through by that route.

The CHAIRMAN.—Have you made any arrangement about postal communication?—A. I made inquiry about that; I understand the police have that matter in hand, and that they propose to arrange that.

Q. Will they make any stopping places between Teslin Lake and Telegraph Creek?—A. Probably; I think they will probably establish posts of their own on their own account just to help themselves with the packing across. Of course, 200 men can pack a good deal if they do it systematically, and they will do a certain amount of road making too.

Q. It will be a very valuable force in the opening out of that country. I would only like to see it supported from the interior by another detachment of fifty men on the Peace River.—A. It would be a good thing to open the country up by degrees.

The Committee then adjourned.

Mr. FRANK OLIVER, M. P. was re-examined by the Chairman of the Committee as follows:

Q. Do you know anything about the Mounted Police party that went up through this country?—A. Yes.

Q. What route did they follow.—A. They took the route from Edmonton by way of the mouth of McLeod River, Sturgeon Lake, Grand Prairie, Spirit River, Fort St. John on the Peace River. From Fort St. John they went north westerly up Halfway River, a branch of Peace River, and crossed the Rocky Mountains at the head of Halfway River then turning south-westward to Fort Graham on Findlay River, where they wintered. My recommendation to the department was that from Fort St. John the mounted police should proceed north-westerly to Nelson River, follow that River down the Liard up to Frances Lake and then cross the Divide to Pelly River, that being the course that was taken by the different Government exploring parties in that country, and also the route travelled by the Hudson Bay Company in establishing and in carrying up their trade at Fort Selkirk. It was therefore known to be a practicable route. I do not know why the party crossed

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the mountains at the head of Halfway River, unless it were on instructions from Ottawa to attempt to make an exploration of a direct line from Fort St. John to Telegraph Creek. The principal reason of the failure of the party to get through was their taking this course, which on account of the much deeper snowfall occurring west than east of the mountains and on account of the more heavily timbered nature of the country rendered travelling in winter impossible, whereas travelling on the route sketched east of the mountains to the Liard River would have been entirely practicable as was proven by the trip of a party led by one Jack Graham who left St. John for the Liard River by way of the Nelson last summer, and after reaching the Liard returned to St. John in the month of June, using pack horses both ways, and bringing all his horses but one through in good condition. Graham was travelling from the Liard to Fort St. John at the same time that Moody's party were travelling from St. John to Fort Graham, showing that if the Fort Graham route was impracticable, that by the Nelson and Liard was not. The failure of Moody's party only occurred when they left the suggested pack trail route beyond Peace River, and crossed to the west of the mountains in the apparent effort to reach Telegraph Creek instead of keeping east of the mountains with a view of reaching Pelly River by way of the Liard. Had they followed the course originally suggested, there is no reason to believe that they would have failed to make the trip.

Q. Have you seen the diary of Mr. Moody's party published.—A. Yes, that was on the way to Fort St. John.

Q. No, but I mean to Fort Graham.—A. No I have not. He published a diary from Edmonton to Fort St. John. That appears in the police report, but there is nothing from St. John to Fort Graham.

SUPPLEMENTARY TO THE EVIDENCE OF MARCUS SMITH.

538 BANK STREET,
OTTAWA, 6th May, 1898.

Col. BOULTON,
Chairman of Committee *re* Edmonton and Yukon
Route for Railway or Wagon Road.

SIR,—The last question I was asked by the Committee was: What is the distance from the nearest point on the projected line of railway by the Pine River Pass to Fort St. John on Peace River?

Ans.—Under fifty miles (probably forty miles).

This brought out a point of vantage for the line to Pelly River which I had not fully considered.

1. Assuming that the Trans-Canadian Railway Company could make such arrangements with the Government that the construction of that division of their line from Prince Albert westwards should be commenced as soon as possible and in two years afterwards completed as far as that point convenient for a branch to St. John. That would be a trunk line common for two routes. One crossing the Rocky Mountains by the Pine River Pass, thence westward to join the proposed Government line from a point on the Pacific coast (probably by the Nass River up to near its source), thence on to Telegraph Creek and Teslin Lake, to serve the mines on the watershed to the Pacific. The line up to a point opposite Fort St. John would traverse a rich, agricultural district and bring the products of the territories of Saskatchewan and Alberta (centring in Prince Albert and Edmonton) several hundred miles nearer the Yukon gold fields than they are now.

2. The Northern line starting from the said point near St. John by the most practicable route to the head waters of the Pelly River to serve the district on the watershed of the Mackenzie basin.

It is difficult to estimate distances, even approximately by scaling from the map when the line of the route has not been laid down from surveys or explorations—but as it will have to pass through the Rocky Mountains by the Liard and thence follow other river valleys leading to the Pelly River, the line will be much longer than commonly estimated. Still the distance to the head of the Pelly River as compared with a parallel point on the other route (which would be near the middle of Teslin Lake) would be fully 100 miles shorter than the latter. It is, however, evident:

1. That the districts on both these watersheds cannot be properly or economically served by one line from St. John westward. The line by the Pine River crosses the southern part of the American gold district and is much wanted.

2. That a wagon road or cart trail to the head of the Nelson River would afford great facilities at small cost for prospecting the northern district in the Mackenzie basin, and if gold were found in profitable quantities a railway could be constructed to any point required and the route to Pelly River decided.

3. All the information acquired this far by the inquiry of the Committee appears to me of great value both to arrive at present needs and preparing for future developments.

Yours most respectfully,

MARCUS SMITH.