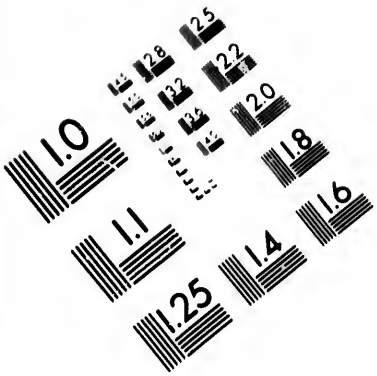

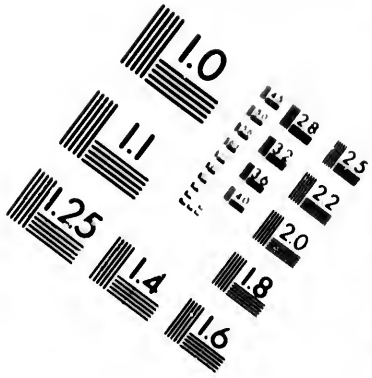

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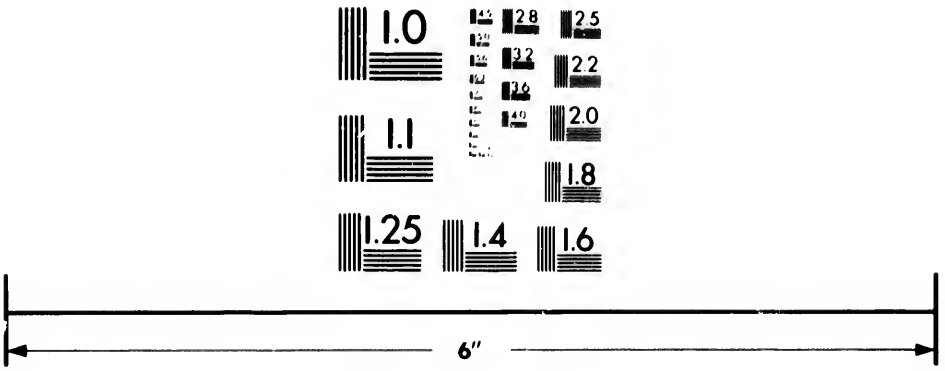

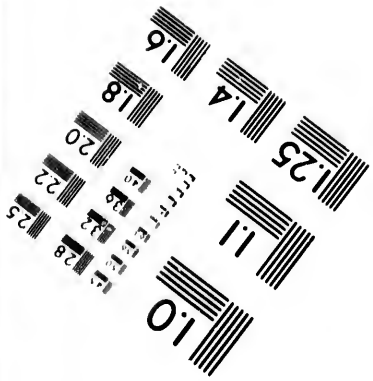

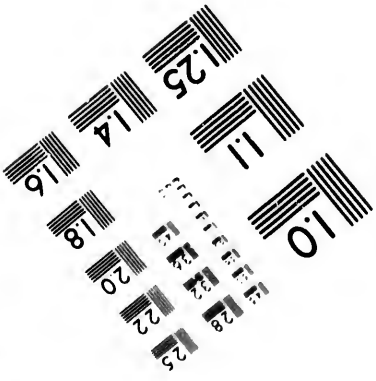

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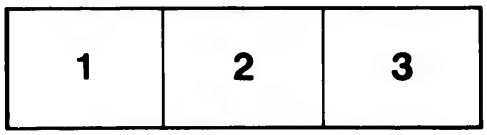

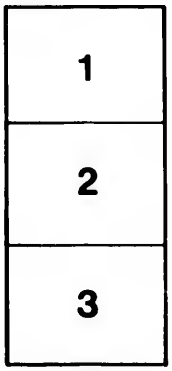

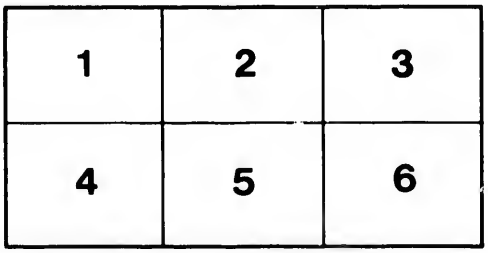

DOMINION ✣ OF ✣ CANADA

PACIFIC RAILWAY

AND

NORTH - WEST TERRITORIES.

1885

TABLE OF CONTENTS.

PAGE

PACIFIC RAILWAY AND THE NORTH WEST, A SPEECH BY MR. A. W. ROSS.. 1

MANITOBA SOILS, BY PROF. GILBERT, A PAPER READ BEFORE THE BRITISH ASSOCIATION IN MONTREAL.....13

NORTH-WEST PRAIRIES, NOTES BY PROF. FREAM.....15

NOTES ON THE CANADIAN NORTH-WEST, BY PROF. SHELDON.....21

ADVANTAGES OF CANADIAN NORTH-WEST, BY PROF. TANNER.....25

PAGE
Ross.. 1
TISH
.....13
.....15
.....21
.....25

Table of Comparative Distances.

	Geographical Miles.
Main Line — Montreal to Port Moody. All Rail Route (under construction.)	2,520
From New York to Port Moody, via Brockville and Can. Pacific R'y,	2,746
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From Liverpool to San Francisco, via shortest connecting lines in the U.S.,	5,680
From Liverpool to Yokohama (Japan), via Montreal and Can. Pac R'y.,	9,546
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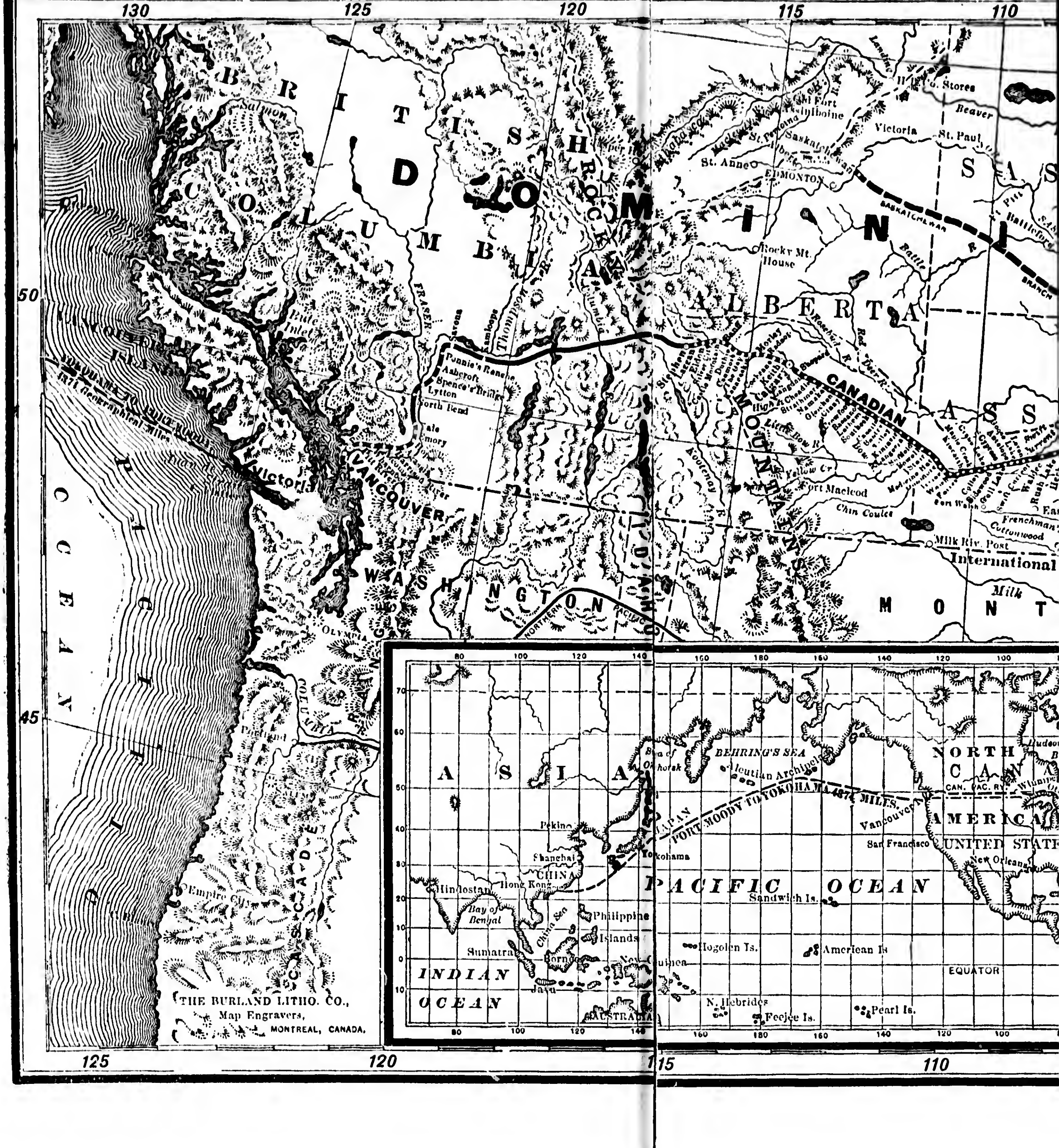
The distances, *via* the Canadian Pacific Railway, are by the Rail and Lake Route.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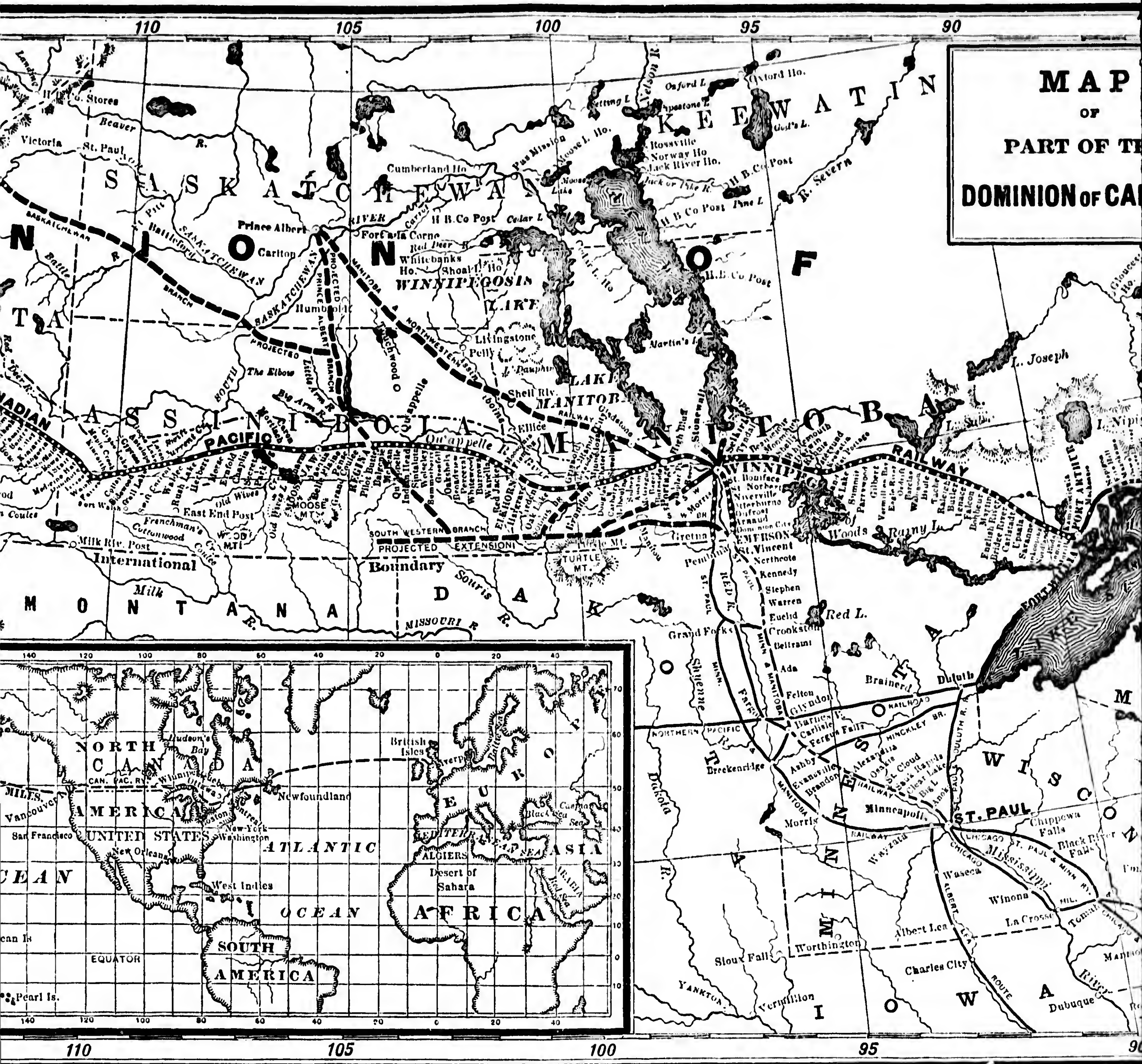
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Lake of the Woods
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Port Arthur
Fort William
Red L.
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Grand Forks
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Dubuque
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Worthington
Sioux Falls
Yankton
Vermillion
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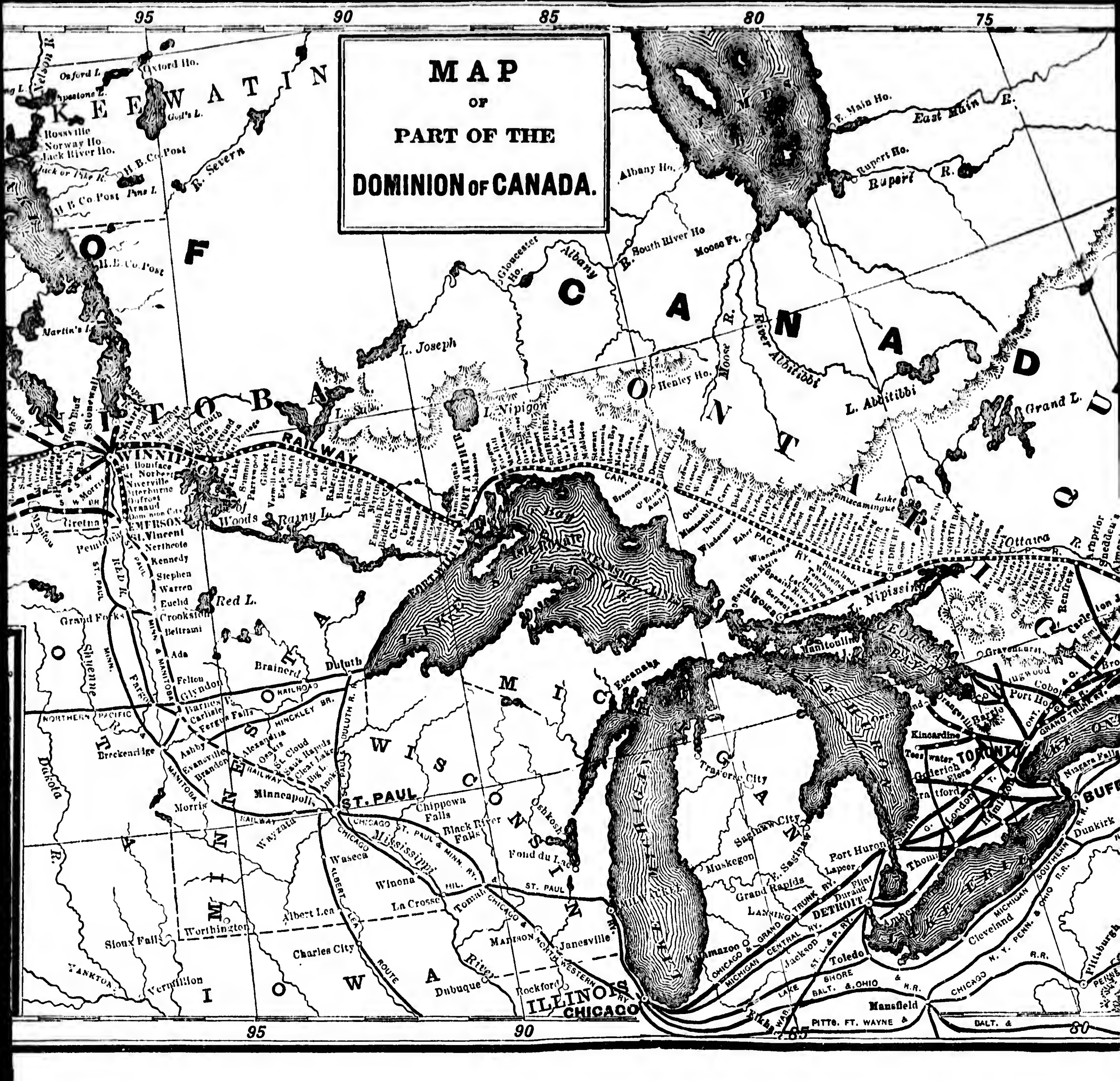
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PACIFIC RAILWAY

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SPEECH OF MR. A. W. ROSS, M.P., IN THE CANADIAN HOUSE OF COMMONS.

The following speech was delivered by Mr. A. W. Ross, member for Lisgar, in the House of Commons, on June 19th 1885, on the subject of the Pacific Railway in its relations to the Canadian West. It is reproduced as containing matter of much interest for intending settlers:

Mr. ROSS. In rising to speak upon these resolutions, I do not do so with the object of defending the policy of the Government with regard to the North-West country and the policy of the Canadian Pacific Railway Company, but I wish to point out some misstatements and some misapprehensions as to the true position of affairs in the North-West, and also to point out what, in my opinion, is the future of that great country, the future prospects of the Canadian Pacific Railway and hence the future of Canada. When the charter was granted to the present company, and was ratified in this Parliament, we, in the North-West, never imagined that the line was to be built north of Lake Superior, nor were we, in Manitoba, very anxious that it should be built, because we thought it was not so important that that part of the line should be constructed; but recent events have shown us, and we are now convinced, that that line is not only important, but is, in a political sense, the most important part of the line in the whole chain of the Pacific Railway, because it is a link that cannot otherwise be bridged on important occasions. We thought, too, that the road would not be constructed very rapidly by the company. In the past we had seen the action of both Governments, and considered that while they were pledged to push the road on, they had not built as rapidly as we wished, and we congratulated ourselves on the especially rapid construction of the road by this company when they commenced work; but, unfortunately for ourselves, in Winnipeg, and in the vicinity of Winnipeg, we did not anticipate the dire results that would follow from this rapid construction. But the road has been built west of Winnipeg to the Mountains, and now we believe that it is all-important that it should be constructed across the Rocky Mountains, and completed from ocean to ocean. Recent events have further shown that the rapid construction of the road has been of immense service to the country, and the whole Dominion. The following statement has been made, which I read in the Globe of 2nd April:

"The events of the past few days in the North-West prove unhappily too well how great was the folly of hastening the construction of the railroad, and thus causing the people to form scattered settlements along its whole length. If to-day the settlements

extended only a few hundred miles from Winnipeg, there would probably be no rebellion; or if there were, it would not be so formidable."

I simply say that the rapid construction has had as much to do with the war in the Soudan as it has had to [illegible] rebellion in the North West, and that the settlements on the Saskatchewan [illegible] years before a mile of railway was built west of Winnipeg. Some of [illegible], when I was a member in the Local House, left my constituency [illegible] went to settle upon the North Saskatchewan, and [illegible] formed, not because of the rapid construction of the railway, because the [illegible] to the South, and a thin line of settlement had been [illegible] miles south of this district in which the rebellion took place [illegible] had not taken place, how would the volunteers have [illegible] to Fish Creek; how would they have been able to go to Swift [illegible] Battleford, and to Calgary in order to get to Edmonton, to [illegible]? The settlers on the North Saskatchewan [illegible] in order to reach them, the volunteers would have had to [illegible] from Winnipeg, or to wait for the ice to be removed from [illegible] mean about five or six weeks delay. The rapid construction [illegible] financial ruin to many of us in Winnipeg, has been of immense [illegible] West in the light of recent events. It is unfortunate that this company [illegible] ask for more money, but they are here, and now, shall we [illegible]? Some gentlemen say that the Government should take [illegible] I think it would be one of the most disastrous things for Canada [illegible]. The red tapeism and the patronage which would result [illegible] destroy the successful operation of any road with such [illegible] the opponents, how have the company conducted their affairs since [illegible]? Have they managed the road in the interest of [illegible] to entitle them to the consideration of [illegible] I think they have. Notwithstanding their monopoly [illegible] low to the settlers, that I think they do merit the consideration [illegible] of the country. In 1868, when the railways easterly from Chicago [illegible] for years, the charges for wheat to New York, by the all rail [illegible] cents a bushel, while the charges, to-day, from Winnipeg to Montreal [illegible] bushel, showing the relative position of an Illinois farmer then [illegible] now. The Farmers' Union, through their officers, have expressed [illegible] that the company have dealt fairly with the settlers in the North West. That being the case, the question arises: Will this railway ever pay, and, if it will pay, have we [illegible] security for the loan? The question whether it will pay or not depends entirely upon the character of the country through which the road runs, and its speed of development. Let us look at the United States and see what was done there. Between 18[illegible] and 1856 ten great trunk lines from New York to Chicago were completed, and afterwards connections made from Chicago to Louisville, Cincinnatti and St. Louis. In 18[illegible], when the connection was made with Chicago to New York, the total exports of breadstuffs from the United States were only $73,664,431, while in 1880 they were [illegible]. In 1866 the total exports of wheat from the United States only amounted to 10,827,721 bushels, only four years before the first Riel rebellion in the North West. But in 1883 the amount of those exports had risen to 147,093,885 bushels. This was [illegible] due to the development by railway construction of their Great West. More important still is the increase in the internal commerce of the country, and especially of the eight wheat-growing States. Let us take five of the eight wheat-growing States, California, Kansas, Minnesota, Missouri and Dakota, and see what railway development has done for them. In 1876 they unitedly had only 465 miles of railway. In 1884 they had 19,405 miles, and what were the results? They had last year 181,500,000 bushels of grain, or 33,801,315 bushels over the total exports of the whole country. That is what has been done by rapid railway developments in the United States, and hence the rapid development of the western prairies. Out of the total amount of exports in 188[illegible] coming into the ports of Boston, New York, Baltimore and Philadelphia, for foreign shipment, 95 per cent. of the grain, 95 per cent. of the beef, 93 per cent. of the pork, 8[illegible] per cent. of the live animals, came entirely from the western and north-western States of the Union. All this was done since the rapid railway development of those western States. Can we expect to receive similar results from our own North-West? Look at our soil. That soil is not only equal to the best in the United States, but it is superior in extent to that of any part of the American continent,

there being much more good land found there in one solid block. Last year I made some remarks on this point, and in answer to that some statements were made that were not exactly true. I will read a few remarks I made last year about the soil of the North-West? I said:

"There is no line of railway in America of the same length as this 900 miles, from Winnipeg west, which passes through [illegible] through which this line passes. For any 300 miles [illegible] better soil to be found than along any 300 miles [illegible] the soil, sir, is excellent. But here comes the question [illegible] examined the grass in the North West [illegible] grasses that can be grown, though it [illegible] that vast plain, there is moisture [illegible] we wish. People in travelling across [illegible] the grass is short, the country must be [illegible] in the North-West plains is peculiar, and [illegible] is short and apparently withered, the soil is poor. When people [illegible] in August or September, or even in July, [illegible] come to the conclusion that the country is withered up and [illegible] the grass is hay, with its roots attached to the soil, undergoing a curing process."

The hon. member for Marquette (Mr. W[illegible]) [illegible] my statements. He said:

"I must differ a little [illegible] character of the land west of Moose Jaw. [illegible] of very little consequence for the [illegible] myself west of Moose Jaw, [illegible] sources of information as any other [illegible] I had information [illegible] country, and that information was [illegible] many miles west it was a barren country."

The hon. member for South Perth (Mr. Trow) also spoke:

"I do think without egotism I know as much about that country as any hon. member in this House. After leaving Regina and more particularly Moose Jaw, the country is not adapted for successful settlement. It may be, in course of time, but it is my impression that it is barren. It is denuded of its timber. As to the member for Lisgar, his vocation in life did not lead him to travel much through the country. He was principally in the city of Winnipeg."

Now, I do not [illegible] knowledge of the hon. member [illegible] (Mr. Trow). But I am satisfied [illegible] all I have said [illegible] members. Now, sir, I have [illegible] about the country. The one [illegible] Wright), who last year [illegible] Baron Munchausens, [illegible] could be no such country in existence [illegible] the North West country and has seen it [illegible] and he comes back no longer a doubter, but one of [illegible] with regard to our vast prairies. I have another authority, [illegible] the highest in the country, the hon. member for East York (Mr. Mackenzie), [illegible] whose honesty of purpose and clearness of judgment are believed in and accepted by every man in this country. He has gone up to that country. He was not biased in favor of that road south because it followed another route than the one he had chosen. He went into that country and examined it carefully. Some gentlemen who go to the North West have various ways of examining the country. Some go in a Pullman car, and while having good wine and enjoying themselves, they find that everything is all right. Other gentlemen form their opinions from what they learn at a dinner table, or in a club room; while others derive their opinion from their own superior inner consciousness. Some gentlemen go there

with their theories of the country already formed, and if the facts do not bear out the theory and exactly coincide with it, so much the worse for the facts. Some men go to that country who are strong political partisans, and who endeavor to make the country bear some relation to their politics, and still more strongly confirm them in their political opinions. If they find four facts, three of which do not bear out their political opinions, they reject the three facts and keep the one that does. The hon. gentleman from East York did not adopt any of the above courses. He went over the line of railway and examined it carefully and took information from all the farmers that he came in contact with. Here is his testimony, as given by a reporter of the Globe. And I would say further, with regard to that published interview, that I consider his statement a true representation of the North-West and matters there, and I only wish the people of Canada would read and digest it more fully. I have read it over and over again, and in my opinion it is the ablest and truest representation of that country that has ever appeared in print from any of our public men. He was asked:

"Did you observe particularly the capabilities for farming farther east, between Calgary and Manitoba?"

To which he replied:

"I arranged to visit 7 out of 10 excellent farms. I observed throughout the whole length of the road that there was scarcely any poor soil to be seen. In quarters between Medicine Hat and Moose Jaw there was an appearance of dryness in the general aspect of the prairie visible, which was not apparent where the land was ploughed. There is a sort of crispness in the grass in some places that would seem to indicate a prevailing dryness. * * * What is known as buffalo grass, where it has a dry appearance, still continues to preserve its nutritious qualities and cures as well standing as if cut. Generally speaking, the soil is deep and good. As to climate, I am convinced that sowing early and properly taking care of the land will almost invariably ensure a good early crop."

On being asked his opinion on Immigration, he replied:

"Immigration has been stopped largely from Ontario, by reports of complaints coming from the West, and also, I fear, by the action of some portion of the Ontario press in dwelling too persistently upon unfavourable aspects, though no doubt based upon former official reports. I found a general impression to this affect prevailing among intelligent men in the North-West, the general effect of which was prejudicial to the best interests of the settlement."

After his evidence, I think the hon. member for South Perth should throw aside his native modesty and become egotistical. We have another test, and a still higher one as proof of my statements of last year, in the ten experimental farms started west of Moose Jaw for the production of grain. On the whole ten the average yield was 21½ bushels, of wheat to the acre: oats 44½ to the acre; barley 23¼; peas 12½. How many counties in Ontario can show better results, and yet these above results were from first sowing on the sod, not even broken in the proper season, viz., June, but late in September and first week in October. With such a magnificent soil and such produce raised in a portion of the country which has been described in the past as a barren desert, and in the Globe, of June 13th, 1884, described as being such that 400 miles of this part of the line can never earn enough to pay for locomotive tallow, unless alkali should become of great commercial value, what may we not hope from other portions of the country, and what may not the future of the country turn out to be. With respect to climate: Though we may not have the variety of climate they possess in the United States, yet we have a climate which produces a vigorous, hardy, intelligent and enterprising race, samples of which, and in endurance and bravery, have been furnished in the half-breeds on the Saskatchewan and the 90th Battalion of Winnipeg. With respect to the capacity of the soil for wheat growing, the following describes fully the capabilities of soil and climate for growing No. 1 hard wheat:—

"The qualities of climate which bear on wheat raising in the North-West, and contribute more regularly, uniformly and efficiently to the growth of the crop than any

found in more southerly climates, are: more daily sunshine—the days by reason of the higher latitude, being longer—cool nights, which always favour the cereal crops; deep frosts, which gradually melt and supply moisture to the growing plant; less intense heat during the maturing months, fewer injurious caprices of weather at the critical period of growth, and natural climatic conditions, which render possible the production of hard spring wheat—a cheap crop, by reason of its being a quick crop of only about 100 days from seeding to maturity."

This No. 1 hard wheat cannot be produced except in the North-West and in northern Dakota and in northern Minnesota. South of latitude 46, efforts have been made time and again to grow this wheat. Northern seed has been brought south, but it has always failed and turned into soft wheat. Another advantage which our North-West possesses in common with Dakota and Minnesota, is that it is not subject to tornadoes and cyclones, which prevail further south. In Kansas they have had two or three annually for the last 20 years, and they are also subject to them in Illinois, Missouri, Iowa, Indiana and Ohio, while in the North-West we have not been subject to them. Our grazing lands are also going to prove most valuable in future years. Experience is showing that these lands are going to be of large dimensions, especially in southern Assiniboia, which has not been looked upon as a grazing country, owing to the roughness of its surface; but owing to this very character and its climate, it is going to prove among the most important grazing lands in the North-West. The future of our country entirely depends however, upon the outlook of the wheat crop in the world. Is there any other country where wheat can be raised cheaper and of better quality than in the North-West? If the answer be in the affirmative, then the future of the North-West is not assured, the future of the Canadian Pacific Railway is certainly not assured, and the future of Canada is undoubtedly not assured. In looking at the wheat crop of the world I find the number of bushels required for Europe 1,375,000,000, and its production 1,100,000,000, hence a deficiency of 275,000,000 bushels, and the number required for England alone is 210,000,000; the average number of bushels England has grown annually is 60,000,000, so there is a shortage of 150,000,000 bushels. Last year this deficiency was supplied principally by the United States, Russia, India, Germany, Australia, Canada, Chili, Egypt and Turkey, and in the above order according to amount furnished. Our only two rivals are the United States and India. The former furnished England last year with 76,833,720 bushels; India with 20,987,864 bushels. In looking at the wheat crop of the United States, the first State of the Union as regards wheat is California. Last year she grew about 45,500,000 bushels; but this year her wheat crop will not exceed from 18,000,000 to 25,000,000 bushels. The farmers of California are abandoning wheat growing and are entering more into fruit, because they are enabled to make $100 per acre from fruit instead of $10 per acre from wheat, and the fruit crop is a much surer crop than is wheat. In the future, therefore, California will drop out entirely as a wheat competitor, and grow principally fruit and the vine. Kansas last year raised 43,500,000 bushels; this year 15,500,000 bushels, and the prices received last year by Kansas farmers were from 19 cents to 56 cents per bushel. In all the wheat-growing States where winter wheat was sown, the wheat crop is almost an entire failure, and the estimated shortage of the wheat crop of the United States is 150,000,000 bushels. Only two States may be considered as our competitors, northern Minnesota and northern Dakota. Do they possess superior advantages to our Northwest, or are our advantages equal to theirs? In the matter of climate and in soil and in other respects they are very equal. A great deal has been said about our farmers deserting Manitoba and the Northwest and going into Dakota. I find the hon. member for South Huron the other day said:

"But hon. gentlemen opposite, by their sympathy, aid and assistance to the Canadian Pacific Railway, so hampered the Winnipeg and Southwestern Railway that the latter was never able to extend their line beyond 58 miles of Winnipeg. What has been the result of this policy? It is apparent to every body in the country that of the large number of immigrants settled in Manitoba, 50 per cent., I venture to say, have left the country. Why have they left the country?

"Mr. WHITE (Hastings). No; they have not.

"Mr. CAMERON. The hon. gentleman says no. I make no statement on the floor of Parliament that I am not prepared to prove, and I am prepared to prove it out

of the mouth of hon. gentlemen opposite, especially the organ published in the city of Winnipeg."

He referred to the paper in Winnipeg supporting the Government. I do not care whether he brings up all the papers supporting the Government and all his friends. I know the statement is not true. I have looked up the report of Mr. Nimmo, a report showing, according to [illegible], the number of immigrants for ten years going into the United States up [illegible] 1884. I find by that report that the number of persons who went from Manitoba into the whole of the United States in that period was: Male, 2,726; [illegible] 2,041; total, 4,767. During the same time I am satisfied that [illegible] settled in the Northwest from the United States [illegible] per cent. of the people that have gone into our country. [illegible] back to Ontario. To satisfy myself [illegible] Statistics at Winnipeg [illegible] the last [illegible] years, because I knew [illegible] Manitoba were larger than in [illegible] the whole [illegible]. In reply, I got this answer: [illegible] 1881, 1,163; 1882, 1,398; 188[illegible] furnished by the Washington authorities [illegible] went into the United States during those four years. [illegible] 40 per cent., and the hon. member [illegible] by furnishing its enemies with such a weapon to fight it. Here is [illegible]. It is from Mr. J. H. Mactavish, and is as follows:

"Crops on experimental farms looking excellent, considerably ahead of last year, same date. Prospects for good crops throughout, from Winnipeg to Calgary, never so good as at present. Confidence of settlers in Regina and Moose Jaw thoroughly restored. Farmers and business men generally throughout Northwest very hopeful."

I am very sorry that any people had to leave the Northwest, and that any went into Dakota, but I strongly [illegible] the facts to the injury of this country. There was [illegible] committed, and it was continued for a year's [illegible] south of the railway belt and the [illegible] no doubt, gone into Dakota [illegible] member for South Huron, published [illegible] advantages to our Northwest, and the people [illegible] on account of a misapprehension of facts, and never went to the Northwest at all. There has never, however, been any moment when [illegible] got in the country, not south of the railway belt during [illegible], but north and northwest of Winnipeg there have always been [illegible] for settlers. In my opinion, in seven years from to-day the great volume of [illegible] to the Northwest is going to be from the United States. [illegible] The [illegible] lands of the United States are being rapidly taken up, and [illegible] who want to go into grain-growing will enter our Northwest, and [illegible] Republic are beginning to appreciate our country, as they will [illegible]. Our great source of immigration, I repeat, will [illegible] years. Seventy five per cent. of the wheat lands of [illegible]. I am backed in this opinion by the United States [illegible] there is no higher authority on the American continent. [illegible] the limit of its wheat production, and its non-wheat [illegible]; hence, year by year its wheat export is going to diminish [illegible] competitor in the English wheat market. The [illegible] member for North Norfolk (Mr. Charlton) [illegible] has always shown a fair knowledge of the [illegible] Canada. The statement he made is not according to the [illegible]. It is as follows:

"The difficulty with the Northwest [illegible] criticism of the Opposition, not that the Opposition has [illegible] that country, but the policy of the Government with regard to the land regulations, the holding lands at a higher rate than they were held in the United States, the placing of inducements for immigrants to go there on a lower scale

than in the United States. While the United States offered him a homestead wherever he could find public land, the homestead grants in the Northwest were restricted to only a portion of the public domain, while the whole public domain of the United States was open to the settler."

Now, what are the facts? In the railway belts of [illegible] States every alternate section is held for homesteads and pre-emptions, [illegible] the price of pre-emptions is the same, viz., $2.50 per acre. Outside the railway belts there is this difference and this much to back up the statement of [illegible] for Norfolk: Outside of the railway belts all the public lands of [illegible] can be taken for homesteads or pre-emptions, but inside the railway belt [illegible] as with us. Now, what is the railway belt of the Northern Pacific [illegible] Dakota, it is 50 miles on each side, or a belt 100 miles wide.

Mr. CHARLTON. There are very few.

Mr. ROSS (Lisgar). In the railway [illegible] as with us. Inside the railway belt the alternate sections [illegible] ads or pre-emptions, and the other sections are railway sections. [illegible] every section can be taken, but in our country the Government [illegible] odd numbered section for railway purposes, to be given for future [illegible] even numbered section is public domain; and all sections taken for homesteads [illegible] belong to the public domain, and if the settler goes to Dakota does he [illegible] away from the railway? He wants to get within reach of the [illegible] y, and 50 miles is too far for that purpose. That is the distance of [illegible] ific, and on the St. Paul and Manitoba it is 20 miles on each side, which [illegible] for the farmer to reach a market. Then he goes on further:

"Then, lands were granted to colonisation co[illegible] ne of those same lands to the settler; they were sold on credit [illegible] this was another cause for discontent."

Now, the pre-emption with us is also a s[illegible] can take a pre-emption and a homestead, and not pay [illegible] four years, and I do not believe there is a case of a man [illegible] pre-emption simply because he does not pay for it in time. As to the [illegible] panies, I do not defend them; I do not think they have done any good [illegible], but I think too much has been made of them. All the other land [illegible] held by colonisation companies in the Northwest amount to little more [illegible] of acres. They are simply as pin points on an elephant's hide; [illegible] the whole extent of that country, and even in the land grants [illegible] the alternate sections are open for homesteads and pre-emptions [illegible] other lands in the Northwest, and each company must settle two [illegible] tion, odd and even, before getting title. He goes on to say:

"If the settler had a choice between Dakota [illegible] Manitoba and the Northwest on the other, he found, on one [illegible] petition in railway rates to bring in supplies and take out the produce [illegible]."

Now, with regard to that, while on our side to [illegible] his grain there is a monopoly in name, on the other side there is a [illegible] y, because the two roads on the other side, the Northern Pacific [illegible] Manitoba, have only two points in North Minnesota or Dakota [illegible] petition, those points being Fargo and Glyndon. The companies [illegible] be their respective fields in that country, and they do not [illegible] points. The St. Paul and Manitoba has one part of the state or territory to [illegible] the Northern Pacific has another part to itself. That is the [illegible] exists there, and does not bear out the statement of the hon. member. [illegible] this point, still further I will read the following report from Robert A. Ewen, [illegible] the Farmers' Alliance of Walsh county, Dakota, sent to the Chicago Board of Trade:

"At a meeting of the Acton district Farmers' Alliance, No. 138, Walsh county, Dakota, held April 13, 1885, a resolution was passed instructing the secretary to communicate with you, with a view of testing the feasibility of shipping wheat from points on the Red River via the Canadian Pacific Railway to Port Arthur, and thence by the lakes to Chicago, and to this end I would call attention to the following facts:

"The expense of extra hauling and Custom dues by the proposed route would be more than compensated for by the cheapness of freight on the Canadian Pacific Railway, and the slight cost of shipping by water, leaving a favourable margin of profit when compared with all-rail routes.

"The superior quality of Red River wheat is well known, and in order to sustain this reputation it is necessary that it should reach the east without filtration through the Minneapolis market.

"The idea suggested above has been operated to some extent last season by the Canadian wheat buyers, who erected a bonded warehouse at Emerson, Manitoba, and bought wheat for export along the Red River at and near the international boundary line. All that is needed is an extension of the system, which would meet with the hearty co-operation of the Red River farmers."

Here are the farmers of Northern Dakota, where they have the competition which the hon. member for Norfolk speaks of as existing to the south they are going to ship their wheat round by the Canadian Pacific Railway, the monopoly road, and then bring it to Chicago, cheaper than they can get it there now. Last winter the farmers of Dakota were actually bringing their wheat across the line, paying duty on it, selling it to Canadian buyers, and then making money by so doing. In a table carefully prepared by the Department of Agriculture for Canada I find that the sum total of the cost of 31 agricultural implements used in the Northwest in Ontario is $3,761; Chicago, $3,875; Iowa, $4,074; St. Paul, $3,856; Winnipeg, $4,301; Brandon, $4,325. Thus Manitoba pays 12½ per cent. over Ontario, 11 per cent. over Chicago, 6 per cent. over Iowa, and 11 per cent. over St. Paul, and not the 38 per cent. as is being industriously circulated to injure our immigration. Now, I wish to repeat again, as I did last year, a comparison between the land laws of the United States and our own, because there is still a misapprehension on that subject:

"The laws of the United States provide that citizens of the United States, or persons who have declared their intention to become such, who are heads of families, or over the age of twenty-one years, can obtain lands as follows:"

Now, it appears that a man in the United States must be twenty-one years of age before he can obtain his homestead or pre-emption. With us, he can take it up when he is eighteen, and by the time when he is twenty-one years of age he has secured a homestead and pre-emption; he has 320 acres of land, paying all round $1.25 per acre for the whole 320 acres, by the time he can begin to take up land in the United States. Now, as to pre-emptions:

"Heads of families, widows or single persons (male or female) over the age of twenty-one years, citizens of the United States, or who have declared their intention to become such, under the naturalisation laws, may enter upon any 'offered' or 'unoffered' lands, or any unsurveyed lands to which the Indian title has been extinguished, and purchase, not exceeding 160 acres, under pre-emption laws. A fee of $3 is required within thirty days after making settlement, and within one year actual residence and cultivation of the tract must be shown, whereupon the pre-emptor is entitled to purchase the same at $1.25 per acre, if outside of railroad land limits, and at $2.50 per acre if within railroad land limits. At any time before the expiration of time allowed for proof and payment, the settler may convert his pre-emption claim into a homestead. No person who abandons his residence upon land of his own to reside upon public lands in the same States or Territory, or who owns 320 acres of land in the same State or Territory, is entitled to the benefits of the pre-emption laws."

Now, under this, a man cannot take up a pre-emption and a homestead at the same time, because he has to live a certain time on each, and he cannot live on both at the same time, and he must not be an owner of lands in the same State or Territory to the extent of 320 acres in taking up a pre-emption. Such a thing as is known to us as a pre-emption in our North-West is unknown in the United States. What is termed a pre-emption in the United States is similar to our homestead, with one year's right of purchase purchase after living on it for one year. Residence on a pre-emption in the United States must be commenced at once after entry. Now, take the homestead:

"Any person who is the head of a family, or who has arrived at the age of twenty-one years, and is a citizen of the United States, or has filed his declaration of intention to become such, is entitled to enter one-quarter section, or less quantity of unappropriated public land, under the homestead laws. The applicant must make affidavit that he is entitled to the privileges of the Homestead Act, and that the entry is made for his exclusive use and benefit, and for actual settlement and cultivation. Within six months the homesteader must take up his residence upon the land, and reside thereupon, and cultivate the same for five years continuously."

With us, a settler must cultivate only three years, whereas in the United States he must live continuously on his homestead for five years. In our country he need not live on it at all, and only within a radius of two miles from it. Four witnesses are required in the United States to prove residence and cultivation, and the law there allows but one homestead privilege to any one person; with us only two witnesses required, and a second homestead entry is allowed. Let us examine our other rival in wheat supply, viz., India. There are certain very serious drawbacks in India which will be difficult to overcome. Railways in the first place must be built, and money must be cheaper than at present, for farmers there are borrowing at the enormous rate of 18 per cent. Railways are more necessary to connect the famine districts and centres of population with centres of food supply than to connect the latter with the seaboard. There must be a sufficient supply on hand for one year in case a famine emergency might arise, and this is equal to from two to three years' accumulated surplus. Drains must be constructed, and at very great cost. One drain alone in India is 502 miles long, and with branches 2,500 miles in length, hence it is very expensive to bring new lands under cultivation. The ryot or farmer has a small holding of from 5 to 15 acres, and hence impossible for him to employ agricultural implements. He plows with a crooked stick, pointed with iron, harrows also with a rude instrument, sows by hand, reaps with a sickle, threshes with a wooden club, winnows by hand, hence wheat is very dirty. He is very conservative and will not migrate to new fields, and white people cannot stand the climate. He will not sell his wheat under 50 cts. a bushel, and therefore laid down in Liverpool it will cost from $1.20 to $1.25. The yield per acre in India is only about 9½ bushels. Her wheat exports are not now increasing, but are less than they were two years ago. I am informed that there must be a combination of circumstances before India can become a formidable rival. There are abundant crops there, and crops in Europe and America below the average; low rates of freight and low rates of exchange, and these must exist together for a number of years. At the best India can do little better than double her present export, thus supplying only one fourth of what England alone requires, and our Northwest can compete with any country for the remaining three-fourths.

In 1869 England had under wheat 4,000,000 acres, and in 1883 she had only 2,750,000 acres. In France there was a like shortage of acreage. The world's crop is about 2,065,000,000 bushels, and in time, we, in the Northwest, can grow one half of this, while elsewhere the demand is increasing and the supply diminishing. With us the supply is increasing much more rapidly, and we have the future wheat fields of the world.

Mr. ROSS. With regard to the carrying trade of this country in connection with the Northwest it is to be done almost wholly by the C. P. R., and a similar work south is being done by a number of railways and not one only, even if the Hudson Bay railway is built, and proves a success, which I hope it will, there will be more than enough trade supplied by the future wheat fields of the Northwest for both roads; and if other roads are built there will be enough for them, because the carrying trade of the Northwest is going to be immense, but its full extent will depend entirely on the railway development of that country. It has been stated that, in the western part of the Northwest, we can-

not grow wheat, because the distance from the markets and from the seaboard is so great that it cannot be shipped successfully ; and that if we cannot grow wheat west of Moose Jaw or even Qu'Appelle, and carry it to the seaboard at such rates as to enable the farmers to live, then the value of the Pacific Railway and the future of the Northwest will be very greatly affected. But there is a prospect that wheat can be grown there. In looking at the United States, we see that of all the grain receipts at Portland, New York, Boston, Philadelphia, Baltimore and New Orleans, 183,689,576 bushels, or three-fourths of the total quality, has been shipped by all-rail, only 44,946,146 bushels shipped by lake and canal, and 16,058,892 bushels by the Mississippi river. Even during the summer season only one third of the grain and flour shipments from Minneapolis go via Duluth, the balance goes by all-rail. Four years ago an attempt was made to ship wheat from St. Paul to England by the Mississippi river through gulf of Mexico, and only 30,000 bushels were shipped and the effort was never repeated, thus showing that the all rail routes of the United States are able to compete successfully, even where there is so much water carriage as is furnished by the Mississippi running through that whole region. And if that can be done in the United States, why cannot it be done in Canada? I believe it can, that farming is going to pay in the centre of the North-West, and that there will therefore be plenty of traffic for the Canadian Pacific Railway in that country. But there is one feature that is often lost sight of, which is going to be of great importance to the future development of the North-West and of the Pacific Railway, that is, the interprovincial trade of Canada. The internal commerce of the United States is of great magnitude. In Canada it is not yet a great question, and it is only in embryo here today. There are however in Canada varied and distinct natural resources and our products and manufactures will be interchanged to advantage. The completion of the Canadian Pacific Railway will give a new impetus to our internal intercourse, will stimulate the development of our latent resources, which we possess in so great a variety, and increase the home and foreign trade of our people. What is it that keeps men and women at work on the spindles and in the factories of the New England States but the demand of the farmers of the great west? What makes the railways in Massachusetts pay so well to-day but the internal commerce, and so with the other railways in the various states. So it will be in Canada, we, in the North-West, will send the products of our soil to the Eastern Provinces and the people of the East will be sending their manufactures to the North-West ; and this is going to be an important matter, not only for the commerce of Canada, but for the development of the Canadian Pacific Railway, because no other railway can be so constructed in Canada as to carry the produce from one end of the country to the other. Whatever is going to develop the North-West will develop the Canadian Pacific Railway and all the other railroads in the country to the East. The people of British Columbia will be able to send their timbers across the Rocky Mountains to the prairies of the North-West, and the people of the North-West will send to the people of British Columbia their wheat and flour. To-day the people of British Columbia import annually 448 car loads of wheat and flour from the United States ; when the Pacific Railway is completed this amount of flour will be sent there from the North-West. Last year the people of British Columbia shipped 577 car loads of salmon, some to the South and some to England ; but when the Pacific Railway is built, that fish can also be sent over to the eastern part of Canada and England. The shipments on the Northern Pacific for British Columbia alone are three car loads of merchandise per day on an average from the merchants of Ontario and Quebec to the merchants of British Columbia. Here is a traffic that will be diverted to the Canadian Pacific Railway the moment it is completed. British Columbia will also supply the farmer of the North-West with fruit which he cannot successfully grow. The development of the mines of British Columbia, certain to follow railway completion, will be of immense value to Canada, and a large source of revenue to the Canadian Pacific Railway carrying trade. The internal commerce of the United States is estimated to be $1,000,000,000, or seven times its foreign commerce. In 1876 10,000,000 tons of goods were sent over the N. Y. C. & P. R. and N. Y. & L. E. & W. Ry. roads between the West and New York, which had increased, in 1883, to 46,000,000 tons. If our internal commerce bears the same proportion to our foreign trade, the traffic of the Canadian Pacific Railway is going to be immense, and larger than most people, or even any of our people imagine to-day. We are going to have a great through trade for the Canadian Pacific Railway. On the Central Pacific Railway, while the local trade increased between 1880 and 1883 from $15,780,000 to $16,442,000, the through trade has doubled in the same length of time and in 1883 was one third of their total receipts. These are the results, and they

show that through traffic is increasing very rapidly on the Central Pacific, the earning per mile on main line of which was $10,804 for 1883. The statement was made by the leader of the Opposition that "from Callander to Port Moody, 2,500 or 2,600 miles, there is a population of 150,000, perhaps 200,000, white men. Therefore, when you look to those figures of a couple of hundred thousand white men, not all of whom have white souls"—I do not know what he meant by that; whether it is a reflection on the people of the North-West or not I cannot say but if so I resent it. "But the Northern Pacific," he continued, "has about 2,000,000 of people tributary, more or less to its road, while from Callander to Port Moody the Canadian Pacific Railway has about 200,000 people tributary to its road." What are the facts? Take the State of Minnesota, which is one of the largest States touched by the Northern Pacific line, and has over one half of the whole population along the road. The hon. gentleman might as well connect Ontario with the Canadian Pacific Railway, because the road runs to Callander, as to connect Minnesota with the Northern Pacific. Now, in the State of Minnesota, out of a mileage of 4,442 miles, only one-eleventh is owned by the Northern Pacific; the rest of its traffic falls to other roads. I am satisfied that Scotia does not even give a twelfth of its traffic to that company. Take Dakota; the Northern Pacific owns only one-sixth of the total mileage of that State; and I am satisfied it does not get more than one-sixth of the carrying trade of that State. In Idaho, the Northern Pacific has one-ninth only of the mileage. It has the whole of Montana. In Oregon and Washington only one third of the exports are carried by rail and only one tenth of its exports, the balance being carried by sail and steamer, so that out of the total trade only one fourth is carried by rail, and even that is divided between two roads, the N. P. R. and the O. C. L. R. The total population, therefore, that feeds the Northern Pacific, is but 374,095 souls, and this is a very liberal estimate. That is the number that directly feeds the Northern Pacific; while on our road the population is 200,000, and there is, besides, no other road running through our territory, over which the people can get their supplies or send out their produce. Our road is a monopoly, while the Northern Pacific has many roads to compete with for the carrying trade of the country, so that the hon. the leader of the Opposition has based his arguments on false premises. With regard to through traffic, the trade with China and Japan and the Pacific Coast, principally San Francisco, for the year ending 30th June, 1884, was $15,756,846. Via San Francisco, last year, there were shipped 3,080 car loads of flour to China and Japan, and about 1,200 car loads of tea shipped East by rail. It is only of late years that China and Japan have begun to use our wheat flour, and there is no doubt their consumption of it will increase largely, and it is also undoubted that their future supply they will have to get from the North-West, because California is fast becoming a fruit growing country as I have already stated. This will therefore give a large carrying trade to the Canadian Pacific Railway, and furnish another outlet to the people of our North West for their grain. With regard to the traffic east: The people of Eastern Canada alone required 670 car loads of rice and 794 car loads of tea per year which in the past were brought from Great Britain and from the United States principally. In future, nearly all of it will come over the Canadian Pacific Railway from China and Japan. It is bound to largely come this way, because we have all the facilities and advantages in connection with our road by which we can secure the carrying trade from China and Japan. The shortest winter route from San Francisco to Yokohama is 5,258 miles; from Yokohama back to San Francisco it is 4,716 miles; and the summer route to and from Yokohama from San Francisco is 4,428 miles. From Port Moody to Yokohama the distance is 4,200 miles; from Port Moody to Montreal the distance is 2,895 miles; from Montreal to Liverpool it is 3,043 miles. Thus, from Yokohama to Liverpool via Port Moody the distance is 10,138 miles. From New York to Liverpool it is 3,131 miles; from New York to San Francisco, 3,331 miles; and from San Francisco and Yokohama, the average of the three routes between those two points is 4,050 miles. The total mileage, therefore, from Yokohama to Liverpool via the Canadian Pacific Railway, is 10,138 miles; while via San Francisco it is 11,411 miles, making a difference in favor of the Canadian Pacific Railway route of 1,273 miles. The figures I have given are from the office of the Pacific Mail Steamer Navigation Company. Even from New York, via the Canadian Pacific Railway to Port Moody, and thence to Yokohama, the distance is 623 miles in favor of the Canadian Pacific Railway route. The exports from China to England in 1883 were $50,188,655; imports from England, $21,121,270. Exports from Japan to England were $3,315,460; and the imports $11,382,865; total, $86,511,290, and part of this trade we can secure. Some hon. gentleman have stated it is no advantage to have through traffic, that it is no advantage

to have a number of cars passing our doors. I hold it is a great advantage to have as many cars as we can get to pass over the road. They ask: What advantage is it to have a man go over our road from England to Australia or to India? But there are always advantages to be derived from men of means going over our road and seeing our country. What is the tendency of such travel? Many of these travellers will be men of means, inclined to make investments, or who may have friends in the old country with capital to invest; and I may say that a very large amount of the foreign capital that has been invested in the United States has been invested in the beginning, simply owing to the fact that people who were travelling for pleasure or health at leisure over the American railways, visiting Colorado and other States, and seeing what the country was like, began to put their money in it or induced friends to do so. This was the beginning of the investment of the very large amount of foreign capital that is invested in the United States, and the same result will, no doubt, follow in our country, under similar circumstances; and we should by every means possible invite foreign capital to develop our country, and it certainly cannot be done by hiding or decrying it. It may be asked: If the North-West, which is to supply in the future the greater part of the carrying trade for the Canadian Pacific Railway, is as represented, how comes it to be in its present unfortunate condition? The following are the chief reasons: Over-trading and over-speculation amongst ourselves, producing dissatisfaction, discontentment and disappointed hopes; the prostitution of farmers' meetings, led by demagogues, to the basest of political purposes, that of villifying their country; visitation by Providence, in the shape of early frost and followed next season by a wet harvest; low prices for wheat in the markets of the world; mistakes made by both Government and Opposition as to the true character of the country and its requirements. Both political parties are to blame for the manner in which they obtain their information about the country. Only such information is sought for which comes filtered through partisan channels. It would seem that political refugees and partisan parasites have more influence in moulding the views of the two parties about the North-West than men with sound judgment and non-partisans, who know the country from years of actual experience, and what its true position is, and what is required for it. The people of the North-West object to having their country used as a foot-ball by the two parties, with the Treasury benches as the goal. The country has, therefore, been kept back and immense injury has been done to it, but its progress cannot entirely be retarded. There were two important factors which made the adjoining Republic advance so rapidly during the past eighteen years. They were, first, the sinking of the question of States' rights from its prominence, and the consequent obliteration of Dixie's line by their civil war. Then the immediate following of this by the people unitedly pushing forward railway construction through their great west, and thus securing its speedy development. Our country is too much divided and hedged in by sectional feelings. In fact, there is a Dixie line around each Province, and even we, in this House, are making these lines broader and deeper by the class of motions and amendments proposed. While believing fully in provincial rights, yet I consider it to be the duty of this House, as far as possible, to crush out all sectional feelings, and obliterate our various provincial lines, and to endeavor in every way to make our people united, by animating them with one common sentiment of Canadian unity and a great future destiny, and hence drive away some of our extreme pessimism. Our press is thoroughly sectional and provincial, and we have no papers that have yet been able to write for the whole Canadian people. Take the two leading papers in Canada, and along each column of their various editorials the water lines read: Ontario, Ontario. While we do not seem to be able to rise to our duty in this respect, our volunteers are unfortunately doing it for us in the west. The men of Nova Scotia, Quebec, Ontario and Manitoba, are offering up their lives with patriotic devotion for their country, and to maintain the integrity of Confederation, are cementing, with their blood, the various component parts of Canada; and while returning to their homes to do the work of immigration agents for our fertile praries, they are also going to perform a higher and nobler duty. For in their baptism of fire they have risen from the battle-field politically born again, animated with a strong love and a new faith, that of their country and its future. They will then go forth into the benighted parts of Canada and with zeal and a worthy cause endeavor to instil into others the teachings of their new birth. May this present unfortunate trouble in the North-West perform for us what the civil war did for the United States. If we vigorously and unitedly take up the building of railways over our extended prairies and develop our vast heritage there, then we may expect somewhat similar results. The first step in this work is the completion of the

Canadian Pacific Railway, uniting our people by an iron band and developing our resources, which are so vast and varied. When the history of this country comes to be written, and the part the Right Honorable the First Minister has acted in it, nothing will be placed higher to his credit than the part he took in Confederation and the construction and completion of the Canadian Pacific Railway. At the same time, credit is due to the honorable member for East York for carrying on the work of construction undertaken by the Right Honorable the present First Minister. Believing in this road as a political and national necessity, also a commercial necessity for our people, and also knowing the country along the line of railway from Montreal to the Pacific Ocean, and having unbounded confidence in its future successful development, and in the great part that the western country is to play in the material progress of our country, and from opportunities of observing and comparing our western country with countries to the south along similar lines of railway, and after seeing what has been done there in the development of those countries by railways, and what the countries are doing in return for the carrying trade of the railways, I have much pleasure in supporting these resolutions to secure the speedy completion of our national highway.

MANITOBA SOILS.

PAPER READ BY PROFESSOR GILBERT BEFORE THE BRITISH ASSOCIATION, MONTREAL, SEPT. 2ND, 1884.

The organic richness of the prairie soils of Manitoba is a subject of great Canadian importance, and it is, therefore, that the following report of a paper of an authority so eminent as Professor Gilbert, read at the meeting of the British Association of Montreal last year, is of interest:

Dr. Gilbert read a paper, which had been prepared by himself and Sir John Lawes, "On some points in the composition of soils, with results illustrating the sources of fertility of Manitoba prairie soils." This paper was a continuation of one given at the meeting of the American Association in Montreal two years ago, entitled "Determinations of nitrogen in the soils of some of the experimental fields at Rothamsted, and the bearing of results on the question of the sources of the nitrogen of our crops." After referring to the results shown in that paper, Dr. Gilbert went on to say that they had made a large number of new experiments. They had found very much more nitrogen as nitric acid in soils and subsoils to the depth of 108 inches where the leguminous than where the gramineous plants grew. The inference was that under leguminous growth the conditions are favorable for the development of the nitrifying organism, and if this view were confirmed an important step would be gained towards the more complete explanation of the sources of the nitrogen of the LEGUMINOSÆ. Again the result showed that the soil contained less nitrogen as nitric acid after the growth of good crops of VICIA SATIVA than where the shallow rooted TRIFOLIUM REPENS failed to grow. This was further evidence that the LEGUMINOSÆ took up nitrogen as nitric acid. Another experiment afforded an illustration of the loss of nitrogen that the land may sustain in a wet season, and to the benefits arising from the ground being covered with a crop which takes up nitric acid as it is produced; and obviously the effect will be the greater when that crop is a leguminous one. It may be considered established that much, at any rate, of the nitrogen of crops is derived from the stores of the soil itself, whilst it is highly probable that much, if not the whole, of the nitrogen so derived is taken up as nitrates. This led to the consideration of the second part of their subject, namely, the sources of fertility of the soils which were examined from Portage La Prairie, the Saskatchewan district, and from Fort Ellice. They proved to be twice as rich in nitrogen as the average of arable soils in Great Britain, perhaps about as rich as the average of the surface soils of permanent pasture. Four other Manitoba soils were examined in greater

detail. One was from Niverville, 44 miles west of Winnipeg, the second from Brandon, the third from Selkirk, and the fourth from Winnipeg itself. These soils showed a very high percentage of nitrogen; that from Niverville nearly twice as high a percentage as in the first six or nine inches of ordinary arable land, and about as high as the surface soil of pasture land in Great Britain; that from Brandon was not so rich as that from Niverville, still the first twelve inches of depth is as rich as the first six or nine inches of good old arable lands. The soil from Selkirk showed an extremely high percentage of nitrogen in the first twelve inches, and in the second twelve inches as high a percentage as any ordinary surface soils. Lastly, both the first and second nine inches of soil from Winnipeg were shown to be very rich in nitrogen, richer than the average of old pasture surface soil. The question arises how far the nitrogen in these soils is susceptible of nitrification, and so becomes valuable to vegetation. The soils and subsoils were submitted in shallow dishes under proper conditions of temperature and moisture for specified periods and then extracted from time to time and the nitric acid determined in the extract. The periods were never less than 28 days and sometimes more. The rate of nitrification declined after the third and fourth periods. There was a very marked increase in the rate of nitrification in the subsoils over the eighth period compared with the seventh, there having been only as much as a gram of garden soils containing nitrifying organisms added. This result is very striking and of much interest, affording direct evidence that the nitrogen of subsoils is subject to nitrification if only in suitable conditions, and the result lends confirmation to the view that deep-rooted plants favored nitrification in the lower layers. The public records show that the rich prairie soils of the North-West yield large crops, but under present conditions they do not yield amounts commensurate with their richness compared with the soils of Great Britain which have been under arable cultivation for centuries. That the rich prairie soils do not yield more produce than they do is partly due to the climate, but largely to scarcity of labor, and consequently imperfect cultivation, thus leading to too luxuriant a growth of weeds; and until mixed agriculture and stock feeding can be had recourse to, and local demand arises, the burning of the straw and deficiency and waste of manure are more or less an inevitable but still exhausting practice. So long as land is cheap and labor dear, some sacrifice of fertility is inevitable in the process of bringing the virgin soils under profitable cultivation; and the only remedy is to be found in increase of population. Still the fact should not be lost sight of, that such practices of early settlement do involve serious waste of fertility. A table was hung up showing the comparative character of exhausted arable soils, of newly laid down pastures, and old pasture soils at Rothamsted, and also of some old arable soils, of Illinois and Manitoba prairie soils, and lastly of some very rich Russian soils. From these results there could be no doubt that the characteristic value of a rich virgin soil, or of a permanent pasture surface soil, is a relatively high percentage of nitrogen and carbon. On the other hand, a soil that has long been under arable culture is much poorer in these respects, whilst the arable soils under conditions of known agricultural exhaustion show a very low percentage of nitrogen and carbon, a low relation of carbon to nitrogen. In conclusion, he said, it had been maintained by some that the soil is a laboratory and not a mine, but not only the facts adduced by the authors in this and former papers, but the history of agriculture throughout the world, so far as we know it, clearly shows that a fertile soil is one which has accumulated within it the residue of ages of previous vegetation; and that it becomes unfertile as this residue is exhausted.

THE NORTH-WEST PRAIRIES.

NOTES BY

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THE YOUNG CITIES OF THE PRAIRIE.

The proximity of a railway is an important factor in the marketing of agricultural produce, and it is not surprising to find that towns have sprung up all along the line of the Canadian Pacific Railway, but it is surprising to reflect on the rapidity with which some of these towns have grown in size and importance, and how neat, business-like, and well laid out many of them appear to be. As some are the centres of leading agricultural districts, it appears desirable to give a brief account of a few of the leading ones, taking them in the order in which they are reached by the traveller in his journey westward from Winnipeg. The municipal organization of some of these towns is very complete, and remarkably so when it is borne in mind that most of them are not more than two or three years old; they afford a strong testimony of the energy and capacity for business which characterize the dwellers in the North-West.

Fifty-six miles west of Winnipeg the town of Portage La Prairie is reached. It lies near the western boundary of the first steppe, and occupies the central position of the richest wheat growing land in the Province of Manitoba. It commands a very advantageous position, for, besides being on the main line of the Canadian Pacific Railway, it is the south-eastern terminus and head quarters of the Manitoba and North-western Railway. This line is projected to run in a north-westerly direction to Prince Albert, on the Saskatchewan River, a distance of 430 miles from Portage La Prairie; about 80 miles of the track are now in operation, the stations proceeding from Portage La Prairie being Macdonald, Westbourne, Woodside, Gladstone, Neepawa, Bridge Creek, and Minnedosa. The last named place is about 30 miles due north of Brandon, a rising town on the Canadian Pacific Railway, and is situated on a tributary of the Assiniboine River. The Manitoba and Northwestern Company has a land grant from the Dominion Government of 2,750,000 acres of farming and timber lands along its line of route, and cheap warrants for 160 acres or more, to be selected by the settler, may be purchased at any of the offices of the Allan Royal Mail Steamship Company. In addition to its position with reference to these two railways, Portage La Prairie possesses a further advantage in that it lies on the north bank of the main Assiniboine River; it is therefore likely to become an important industrial centre, and it already possesses paper and flour mills, and a biscuit factory. The population is between three and four thousand.

Between Portage La Prairie and Carberry, fifty miles to the west, the line ascends the gentle slope of the first escarpment, and Carberry, 106 miles from Winnipeg, is near the eastern border of the second prairie steppe. It is the county town of Norfolk, and is the centre of a fertile wheat-growing area called the "Beautiful Plains." Although the building of the town was only commenced less than two years ago, it now has a population of over 400, and is already an important centre for the shipment of wheat.

Twenty-seven miles beyond Carberry the traveller arrives at Brandon, a beautiful town situated at the crossing of the Assiniboine River. Its fine buildings and broad regular streets cannot fail to impress the visitor, and it strikes one at once as a town in which it would be pleasant to dwell. It is the market centre for a considerable area of country, extending northward as far as Minnedosa, and southward to Turtle Mountain, and there is much excel'ent land in the neighborhood. Near the railway are several large elevators for the reception of wheat grown in the district.

Brandon is 133 miles west of Winnipeg, and 47 miles farther on the rising town of Virden is reached, whence a further run of 39 miles places the traveller at Moosomin, 219 miles from Winnipeg, the line leaving the general trend of the Assiniboine River valley in the vicinity of Virden. West of Moosomin, near Wapella, the track crosses the Indian trail from Moose Mountain in the south-west to Fort Ellice, on the Assiniboine River, in the north east. Moose Mountain forms part of a group of drift hills known as the Weedy, Wolfe, and Squirrel Hills, and is a favorite place for settlement; Fort Ellice, as has already been stated, is the point up to which steamers from Winnipeg can navigate the Assiniboine river. Favorably situated between these two points, and in the midst of a promising country, Moosomin appears to have a bright future before it. The Scotch crofters sent out last year by Lady Gordon Cathcart are established in the district about ten miles south of Wapella. Each crofter has a homestead of 160 acres, and the settlement is already on the high road to success.

Broadview, 164 miles west of Winnipeg, and 45 miles beyond Moosomin, is another well laid out town, and the commercial centre of an excellent farming country. It occupies a pretty situation near the head of Wood lake, and workshops of the railway are established here.

Proceeding westward the line skirts the southern boundary of the Qu'Appelle Valley, and 48 miles from Broadview the traveller comes to Indian Head, the station of the famous Bell Farm, which is 312 miles from Winnipeg. The town of Indian Head, which takes its name from the fact of the Indian Agency for the Qu'Appelle district being situated here, rejoices in a charming situation, possesses excellent natural drainage, and is the site of the finest brick hotel in the North-West. Eight miles north of the town are the fishing lakes of the Qu'Appelle River, and a beautiful lake may be visited in a journey six miles south of the town. The Bell Farm affords a notable example of the capabilities of the prairie soils, and a full description of this remarkable feature in the agricultural enterprise of the North-West is given later on.

The town of Qu'Appelle is only 8 miles beyond Ind an Head, and is situated south of the fort of the same name. The Qu'Appelle river is exclusively north of the railway track, and it flows from west to east, pouring its waters finally into the Assiniboine River near Fort Ellice. The town of Qu'Appelle was, until recently, called Troy, and the local authorities, in adorning its streets with poplar trees, have set an example which deserves imitation in all the prairie towns. The Government Immigration Buildings are at Qu'Appelle, and in the neighborhood of the town are numbers of excellent farms, both large and small.

After leaving Qu'Appelle, the next place of importance is Regina, 32 miles to the west, and 356 miles from Winnipeg. Regina is not only the Capital of the Provisional District of Assiniboine, but it is the metropolis of the North-West Territories. It is the head quarters of that fine body of men, the North-Western Mounted Police, who are entrusted with the maintenance of law and order over an enormous area, and, as the seat of government of the North-West, there may also be seen at Regina the Indian and Departmental Offices, and the residence of the Lieutenant-Governor. The Wascana River, or Pile of Bones, as it is also called, flows across in a north-westerly direction, and supplies the town with good water, Regina possessing the largest and best constructed reservoir in the North-West. A scheme is under consideration for constructing a railway from Regina in an almost directly northern direction, past Long Lake to Prince Albert, the town on the North Saskatchewan River which, it will be remembered, has also been chosen as the northern terminus of the Manitoba and North-Western Railway, which joins the Canadian Pacific Railway at Portage La Prairie. Regina is in the midst of the Great Plain of Regina, one of the largest continuous tracts of wheat-growing land on the prairie, the soil being a rich, dark clayey loam. With its public buildings, substan-

tial houses, and wide, open streets, the town cannot fail to impress favourably anyone who may visit it, and it is likely to undergo rapid development. And yet, less than three years ago there was nothing to mark the site of this rapidly rising city save a few canvas tents, and the silence and solitude of the Great Plains of Regina had never been disturbed by the shriek of the locomotive.

Journeying along westward, some choice farming land is entered upon after leaving Regina, and here the traveller commences the ascent of the second prairie escarpment, the Missouri Coteau, marked by gently undulating land. At Moose Jaw, 42 miles beyond Regina, and 398 miles from Winnipeg, a very popular town is reached at the confluence of the Moose Jaw and Thunder Creeks, tributaries of the Qu'Appelle River. The town is neat and trim, its streets and avenues are well planned, many of its buildings are handsome and substantial, and the growth of its population has been remarkably rapid even for a prairie town. Fifteen miles to the north is Buffalo Lake, formed by the expansion of the Big Arm River on its way to join the Qu'Appelle; the banks of this lake are about 300 feet high. From the town of Moose Jaw an Indian trail leads northwards to the Temperance Colony, about 160 miles distant, where the settlers occupy a rolling prairie, well watered and fertile. Saskatoon, the capital of the colony, is on a wooded bluff, overlooking the broad Saskatchewan River.

Beyond Moose Jaw the railway track follows Thunder Creek, and continues to ascend the slope of the Grand Coteau of the Missouri. There are good pastures in this district, and the land looks well adapted for sheep grazing. Twenty miles west of Moose Jaw the line passes the southern shore of the long, narrow Pelican Lake, which abounds in duck, geese, and pelican. The summit of the Missouri Coteau is reached at a point 45 miles west of Moose Jaw, and 443 miles from Winnipeg. At this point, called Secretan, the third prairie steppe is reached, and Secretan is further of interest in that the most easterly of the 10 experimental farms of the Canadian Pacific Railway is situated here. The most westerly of the ten farms is at Gleichen, 351 miles beyond Secretan, and the history of this and other farms will be found detailed later on. The railway track through the Coteau passes over some thirty miles of rolling or broken country, consisting of successive ridges and mounds, diversified with swales and alkaline ponds. To the south are the Old Wives' Lakes, with Chaplin Station, nine miles west of Secretan, at their northern end. The lakes, fifty miles long, and six to ten miles broad, swarm with wild duck. Going on westward the train passes Rush Lake, and arrives at Swift Current, 511 miles from Winnipeg. This small town is not far from the South Saskatchewan River, as it bends southward on its way to join the main stream. Forty-four miles further on is Cypress Station, lying to the north of the Cypress Hills. Around this spot is a considerable tract of bare, and apparently barren land, but as there appears to be plenty of useful clay resting on sandy subsoils, it is very likely that good agricultural soils may here be worked up, and the success of the experimental farms at Swift Current and Gull Lake gives support to this idea.

Forty-two miles west of Cypress is Maple Creek, 597 miles beyond Winnipeg, and more than 1,000 miles from the shores of Lake Superior. The creek takes its name from the quantity of ash-leaf maples which clothe its banks, and it is not unlikely that a considerable town may arise at this spot, inasmuch as the ranchers of Montana, the nearest of the states of the Union, find that they can save both time and money by taking their cattle through Canadian territory, driving them first to Maple Creek, whence they are taken by rail to Winnipeg, and then sent southward to Chicago. About thirty miles south-west of Maple Creek an Indian trail leads to Fort Walsh, one of the chief barracks of the North-Western Mounted Police.

Medicine Hat, 63 miles west of Maple Creek and 660 miles from Winnipeg, is beautifully situated on the east bank of the South Saskatchewan River, a short distance north of the point where this river receives the waters of its tributary, the Seven Persons River. With a present population of less than half a thousand, it is nevertheless a town which seems bound to make rapid progress, for it is the centre not only of an agricultural area but also of what in the near future bids fair to become an important coal mining district. It occupies a great amphitheatre surrounded by low Cretaceous hills, the effect of which rising abruptly from the dead level of the prairie is very marked. Medicine Hat is at a height of 2,100 feet above the level of the sea, and the magnificent river which adds

so much to the natural beauty of the locality has here carved out for itself a channel, the banks of which rise nearly 300 feet above the water level. Immediately on leaving Medicine Hat for the west the train passes over a very fine iron railway bridge, which here at a great height above the water spans the gorge of the South Saskatchewan. Away to the north-east of Medicine Hat this river is joined by the Red Deer River, while much farther in the same direction, on the banks of the Northern Saskatchewan, is the town of Battleford, between which and Medicine Hat communication is kept up along the Indian trail. Battleford is the centre of a picturesque region occupied by many thriving settlements.

And north-west of Medicine Hat and as far as Calgary, a distance of 179 miles, the route lies through the last stretch of genuine prairie land prairie land, too, of the most typical character, one sky-bound grassy plain, unbroken either by tree or shrub. Blackfeet, Crees, and parties of other tribes of Indians are here met with. Beyond Medicine Hat a broad table-land extends between the Bow River on the south and the Red Deer River on the north, and at Langevin, 35 miles west of the banks of the Saskatchewan a recent boring for coal resulted in the tapping of a highly combustible gas which was ignited as it issued from the earth, and the heat evolved was, in September last, being utilized for driving the steam machinery employed in the boring. Crowfoot Crossing, 106 miles from Medicine Hat, takes its name from a well-known Indian chief; a few farms are established here, and there is also a large Indian reserve. Nineteen miles further on is Gleichen, in the midst of a promising agricultural district, and almost on the direct north and south line between the important centres of Fort Macleod and Edmonton, the former lying amongst the foot-hills southward on the banks of the Old Man River before it flows into the Belly river, a tributary of the South Saskatchewan, and Edmonton being far away to the north on the banks of the North Saskatchewan. Here, on a clear day, the lofty, snow-clad peaks of the Rocky Mountains, more than a hundred miles distant, may be seen glistening against the western sky. Beyond Gleichen is a fine expanse of unoccupied grazing land which, till recently, was the home of buffalo and antelope. Passing Cheadle, which is named in honour of the intrepid traveller who made the "north-west passage by land," the western boundary of the third prairie steppe is attained near the banks of the beautiful Bow River, penetrating the outer valley of which the traveller pushes on to Calgary, the most westerly of the genuine prairie towns met with along the track of the Canadian Pacific Railway.

Calgary, 179 miles from Medicine Hat, 839 miles west of Winnipeg, 1,268 miles from Port Arthur, Lake Superior, and 2,280 miles west of Montreal, is more than 3,000 feet above the level of the sea. A small town as yet, it nevertheless possesses capacities for great and rapid development; the centre of a broad and fertile agricultural district, the head quarters of the large cattle ranches to the south, the future commercial centre for the mining enterprise which will ere long develop the country to the westward, and, above all, the natural beauty of its situation, these are some of the factors which will help to insure a great future for the town of Calgary. Eastward is the prairie, and the town itself is on the prairie; but to the north, to the south, and to the west, the foot hills of the Rocky Mountains break the monotony of the scene, and are themselves thrown into relief by the loftier summits in the back-ground, and these in turn present a wonderful contrast with the white peaks which tower above and behind them in awful grandeur.

Through the plain of Calgary flow the clear waters of the Bow River, which a short distance from the town is joined by its tributary, the Elbow. The excellence of the land in this district is testified by the number of flourishing farms on Pine Creek, on Fish Creek, and on the banks of the Elbow River, and the plentiful supply of good water, the abundance of fuel, and the kindly climate must continue to make this an attractive region to settlers. A journey northward by stage, occupying five days, is necessary to reach Edmonton, the head quarters of the Saskatchewan trade of the Hudson's Bay Company.

West of Calgary the prairie continually narrows as it follows the course of the Bow River over which the railway is carried no less than four times.

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THE SCENERY OF THE NORTH-WEST.

It would be a hopeless task to attempt to convey any adequate idea of the scenery of the Rocky Mountains. In approaching this superb range from the east the traveller experiences a succession of surprises, each one more novel than its predecessor. All the splendid and magnificent effects which Nature can produce when she works with such materials as massive rocks and yawning chasms, lakes and streams and waterfalls, dense belts of dark green forest trees, dazzling snow fields, and lofty ice-clad mountain peaks glistening in the blue vault of heaven, are here combined to form a glorious panorama which must linger in the memory of him who sees it forever. Dwellers on the prairie need never be more than a day or two's journey from regions where Nature may be seen in her grandest and wildest moods. To the south, and more particularly to the north of the railway belt, scenery widely different from that of the prairie may be enjoyed; mind and body may alike be refreshed in the wild recesses of the Rockies, the Alps of the North-West; and the country east of Winnipeg, between Lake Superior and the Red River Valley, presents another complete change of scenery from that of the prairie. At Rat Portage, for example, 132 miles east of Winnipeg, the lovely Lake of the Woods is bound ere long to become a great place of resort in the summer season; not only are its surroundings in the highest degree picturesque, but the surface of the lake itself is dotted with innumerable islands of every variety of shape and size. These islands, tree-clad or grass covered to the water's edge, are like

"Summer isles of Eden lying in the dark purple spheres of sea,"

and upon them, and in the waters around them, the tired worker will find rest and enjoyment. More to the east, about the shores of Lake Superior, are many of the scenes of Hiawatha.

CLIMATE OF THE PRAIRIE.

Nothing in connection with the North-West is, perhaps, more misapprehended at home than the nature of its climate. Old notions, and particularly erroneous ones, die hard, and the idea, that up to fifteen or twenty years ago was still current in England, that North-West Canada was a cold, desolate, inhospitable region, with its soil frost-bound nearly the year round, and fitted only to be the home of fur-bearing animals, still lingers in the minds of many people. That in the North West the thermometer as a rule gives higher readings in the summer and lower in the winter than we are accustomed to in the old country is perfectly true, but in estimating the character of a climate it is wrong and misleading to be guided by the thermometer alone. The atmosphere possesses other properties besides temperature; it can tell a tale to other meteorological instruments besides the thermometer. The hygrometer, an instrument for indicating the amount of moisture in the air, should be observed in conjunction with the thermometer, or the same information may be gained by comparing the readings of a wet bulb and a dry bulb thermometer. It is thereby ascertained that the air of Manitoba and the North-West is usually drier than that of the British Isles, and to comprehend the significance of this fact it is necessary to bear in mind the well-known physical law that water is a better conductor of heat than dry air. The presence in the atmosphere of moisture—and atmospheric moisture is merely water vapour, often containing minute particles of water—renders the air a better conductor of heat the higher the percentage of moisture. Hence, in cold weather, moist or damp air will conduct away heat from the animal body more rapidly than drier air, and thus arises the pronounced feeling of discomfort which in the British Isles is often associated with cold, damp weather, and probably much more frequently experienced in Britain than in North-West Canada. Dry air is a bad conductor of heat, so that, even with a very low temperature, such air really plays the part of an insulator in preventing the escape of warmth from the body. Let it, however, become saturated with moisture, and it would at once, by conducting the heat away from the skin, produce a sensation of cold and discomfort. On physical grounds, then, it is easy to understand how the dwellers in the North-West can endure a winter temperature which in our own climate would be intolerable—the dryness of the atmosphere is their protection. To explain why the atmosphere is so much drier there would involve too great a divergence into physiographical details.

Moreover, the frost which locks up the land for months in the winter is really a serviceable friend to the prairie farmer. The moisture which permeates the soil

expands in the act of freezing, and this causes a minute separation or disruption amongst the particles of ploughed earth, so that when the thaw comes they fall apart in a desirable state of tilth, which it is well nigh impossible to bring about by the work of any agricultural implement. Frost is a good servant to farmers, and one that works without pay. At home a winter without frost is regarded by farmers of arable land, particularly of heavy clay soils, as a misfortune; they know well that it means much extra work on their fallow lands for both men and horses, and that with all their pains they cannot produce so effective a result as frost is capable of bringing about.

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THE PRAIRIE AS A HOME FOR SETTLERS.

What advantages or inducements does the North-West offer to settlers? Part of the answer to this question must be sought in the foregoing pages, but I will enumerate here some of what I consider to be the chief attractions. Grants of land within convenient distance of the railway may be obtained either free from the Government, or at very cheap rates from the Canadian Pacific Railway. These may be selected from the richest prairie land at the choice of the settler. No clearance of timber is required, there is no severe labor with the axe, nor any patient waiting for years in order that tree stumps may rot to facilitate their removal. The prairie sod can be laid under a plough for the first time and a crop harvested all within the space of the first twelve months. The country is well watered, for, from what has already been said, it is evident that rivers and lakes and creeks abound, and where running water is not conveniently near, good water can be got within moderate distance of the surface. The prairie is healthy to dwell upon, the climate is more genial than is generally supposed, and settlers who go out in robust health will find the country is not only tolerable, but enjoyable to live in. Weak or delicate people should not go there, for they might find the air too bracing. Idlers and loafers should not go there, because the prairie is in need of thrifty workers. Men who want to acquire wealth without working for it should not go there, because they will be disappointed. Thomas Carlyle once wrote, "Two men I honour, and no third-first, the toil-worn craftsman that with earth-made implement laboriously conquers the earth and makes her man's." Men of this type will find on the prairie a wide field for conquest, and I believe they may feel more certain of a reward, and of a speedy reward, than in nine cases out of ten they could hope for in the old country.

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The nutritive value of the prairie herbage is sufficiently proved by the fact of its having sustained the vast herds of buffalo which for ages have made the prairie their home, but which are now disappearing before the advance of civilisation. Nevertheless, the introduction of cultivated grasses would in all probability be a step in the right direction, and the attempt would most likely be justified by the success which would follow it. Although much of the land appears capable of growing wheat for an indefinite period, yet those settlers whose means would allow of it would I think do well to sow a portion of their land with good English grass seeds after the third or fourth year. Such grasses as cocksfoot, foxtail, meadow fescue and timothy, together with white and purple clover and a little black medick suggest themselves as desirable, but every effort should be made to secure clean seed. It is an interesting fact that there are no true clovers native to the prairie, although many species of the milk-vetch, Astragalus, are met with.

The more mixed farming extends on the prairies the more interesting will the settlers find it, and the less dependent will they be upon the prices they will from year to year secure for their wheat. The establishment of flour mills in the North-West will lessen the cost of flour and oatmeal, while the facilities afforded by the railway must continue to enable them to compete on favourable terms with the other wheat-exporting countries of the world. Artificial feeding stuffs, like artificial fertilisers, belong to a future period.

There is no scarcity of timber or fuel, for vast forests are at different spots touched by the railway. Moreover, it is absolutely certain that extensive coal-bearing regions

exist in many easily accessible points of the North-West, some of the coal, as in the Saskatchewan valley near Medicine Hat, being obtainable by open workings, the coal cropping out at the surface. Not only will the North-West continue capable of meeting its own demands for mineral fuel, but in a short time it will probably be in a position to export coal.

Though the prairie is destitute of trees it is not destined to remain so. Every settler should plant belts of poplar and other trees about his homestead. They will break the force of the wind, afford grateful shelter to live stock, and do much towards relieving the monotony of the plain. The work might be progressive, a few trees being planted each year, but it is a detail that should not be neglected. In the rolling country beyond Calgary, and in the foothills of the Rockies, where pastoral farming will probably constitute the main industry, much ground shelter is available for live stock.

As to the prospects of the Great North-West, it is only the poet who can say :

> "For I dipt into the future, far as human eye could see,
> Saw the Vision of the world, and all the wonder that would be;"

but if its development in the near future may be at all gauged by its progress in the immediate past, then will its growth be rapid indeed. Men who go out there determined to work will, as the years roll on, find themselves in a much better position than they can hope to secure in the old country, and when the time comes for them to enjoy a well-earned rest in their declining years they will find that they have got the means to enable them to do so. And the children who are born and bred in the happy prairie homes, who will see around them on every side the triumphs of man's industry, who are reared in the bracing atmosphere of a northern sky, they cannot fail to be healthy and vigorous.

> "Iron-jointed, supple-sinew'd, they shall dive, and they shall run,"

and, true "prairie flowers," they will grow into men and women possessed of a physique which could never have been acquired under the sunnier, more southern, and more enervating climes whither so many efforts are made to attract British settlers,—scions of the nation which has conquered and colonised a larger portion of the earth's surface than all other nations taken together.

NOTES ON
THE CANADIAN NORTH-WEST.

EXTRACTED FROM A REPORT BY J. P. SHELDON, PROFESSOR OF AGRICULTURE, AT THE WILTS AND HANTS AGRICULTURAL COLLEGE, DOWNTON, SALISBURY, ENGLAND, IN 1884.

The Province of Manitoba—so well known by repute in Europe—is just now emerging from depression caused by inflated speculation in real property. This was a bubble which, by opening up the vast territory to the west, the Canadian Pacific Railway was sure to burst. Land has now come down to its legitimate and intrinsic value, or has even sunk below that level for the time being. Confidence, however, which never ought to have been lost to the extent it was a year ago, is now being restored, and enterprise will proceed at a regular rate, so that now is the time for emigrants to go out. The province, which has been greatly enlarged of late, has now an area of 123,200 square miles. It is one of five sister provinces in the North-West, the others being: Assiniboia, containing 95,000 square miles; Alberta, containing 100,000

square miles; Saskatchewan, containing 114,000 square miles; and Athabaska, containing 122,000 square miles. Manitoba has therefore an acreage of 473,088,000, of which a considerable portion is water. In many parts of the province the soil is of surpassing richness, producing excellent crops of wheat, barley, oats, turnips, potatoes, carrots, onions, etc., etc., the wheat particularly being of very superior quality, hard and dry, and much sought after by American millers for grading up the softer wheats of southern districts. An important natural principle in respect of the North-West must be borne in mind, viz., that wheat grows in a manner most nearly approaching perfection, so far as milling properties are concerned, AT THE NORTHERN LIMIT OF ITS SUCCESSFUL GROWTH. This matter stamps for ever the North-West Territory as perhaps the best wheat-growing region in the world—better by far than any which the United States possess, for Alaska is outside the limit of successful wheat production. Fall ploughing for wheat is done as extensively as time permits, and it must be remembered that the severe winters of Canada do a great deal of the farmer's work for him, in the way of pulverising and mellowing the soil, so that harrowing in the seed is a simple operation, quickly performed, on fall-ploughed land.

A great deal of swampy land, which is excellent for crops when drained, occurs here and there in Manitoba; elsewhere there are lighter soils, some of which are unsuitable for agriculture; and there are patches of alkaline land which, until a few ploughed crops have been taken, are more or less detrimental to the growth of grain and grass. Timber and water are very unevenly distributed, and generally occur in company with each other. Water, however, can usually be obtained anywhere by boring for it, and windmill pumps ought to be of great service to the Manitoban farmers. Water is sometimes conserved for stock by throwing a weir across a slough, and basin-like hollows, or "meers," scooped out in the prairie clay, are found to answer fairly well as reservoirs. It is tolerably certain that properly constructed meers, as we have them on the Derbyshire hills, lined with concrete first, then with four inches thick of well tempered clay firmly beaten together, and lastly, with well packed stones for protection, would answer well in Canada.

Trees, indeed, are found on the prairies, but chiefly on the banks of the rivers and in the swampy lands, and it is to the recurrent prairie fires that the scarcity of timber on the great plains may be attributed. Wherever the fires have found a natural check, as by the rivers and swamps, we find trees for the most part; and chiefly on the eastern banks of the rivers which, by affording a boundary, have continued to check the fires that are driven onward by the prevailing west winds. At various places along the road through the North-West, at the Bell Farm, at Portage la Prairie, and elsewhere, trees which have been planted are growing apace. The practice of planting trees on the prairies should be encouraged by Government subsidies or rewards, for, apart from the questions of an increased rainfall, of fuel and of shelter, nothing can possibly adorn those great plains like trees. Trees, indeed, are the greatest natural ornament any country can possess, not excepting even water and mountains, and they would tend to embellish the life of a man on the prairies.

The grain-growing capacity of the soil is the leading criterion of its value, probably, in Manitoba and the North-West generally, and most likely will continue so for some time to come, because that region will become the chief granary of the American continent and remain so; but it is none the less true that its ability to produce excellent roots and green crops is a factor which will be utilised extensively in years to come. A purely grain-raising region is an agricultural anomaly which cannot last, and it is a fact of great potential value to this vast territory that its soil will produce all the crops which contribute to the plenary welfare of both men and animals. Cattle, horses, pigs and poultry are inseparable from the comfort of man in all agricultural communities, and the same may also be predicated of sheep; but all of these demand arrangements and provisions more or less intricate, in the form of shelter and food, provisions which can in a great measure be dispensed with while the land is devoted to grain-raising only. The process of populating the North-West with domesticated animals will be contemporary with the provision of shelter, water, and suitable food; and though the process may be a slow one, it will be perfected in time. In the foothills of the Rocky Mountains it will be much more rapid, for there exists in that region a rich natural herbage, a good supply of water for the most part, and abundance of "land shelter" among the hills and dales.

We passed along through the Provinces of Assiniboia, containing 95,000 square miles, and Alberta, containing 100,000 square miles, at least fifty per cent. of which is said to be good land available for agriculture. We saw several of the experimental farms which have been established by the C. P. R. Co., and found various cereals, roots and garden vegetables growing successfully on the new prairie soil. The soil varies from a dark-coloured clay to strong loams, and light sands, and affords scope for all kinds of agricultural fancy. But the handsomest country we saw was from Calgary up the slopes of the Rockies. This is the great ranching country, and we saw many cattle roaming about the pastures which adorn this undulating district—a district which stretches a long distance to the north and south of the railway. It must be admitted that the advantages which this country affords for cattle-raising are very extensive and important; for, as the isothermal line runs in a north-westerly direction along the prairies, the climate at the Rockies is habitable and even genial in a degree of latitude which is desolate on the Atlantic side of Canada. At a point five thousand feet above the sea level, in the Rocky Mountains, we found the air so mild that no overcoats were wanted, even at five o'clock in the morning, although we had come up the mountains in a snow-storm the previous evening. Above this point, which is the highest the railway attains in the Kicking Horse Pass, the unnumbered snow-clad peaks of the mountains shoot up into the clear air ten or twelve thousand feet above us, forming a spectacle grand, sublime, magnificent, and well repaying a thousand miles' journey over the prairies! The splendid pine trees with which the mountains are adorned creep up the peaks until they are stopped by the glaciers and the eternal snow, and there is abundant interest for the lovers of botany and geology. One magnificent day spent among the crags and ravines of British Columbia, brought us to the beginning of the return journey, many of us carrying away specimens of rocks, ferns and other flora, including even the wild gooseberry, which we found flourishing not far below the snow level.

The eastern slopes and foothills of the Rockies and the adjacent prairies are destined soon to resound, as indeed they already do in part, to the lowings of herds and the bleatings of flocks, and they will become one of the most important cattle-raising districts on the American continent. But ranching has various disadvantages in its present condition, and cannot well prosper save under the personal supervision of an owner or owners. Hired men are apt to render only such an amount of work and care as they deem themselves amply paid for, and absentee ownership is not calculated, as things are, to meet with much success. A fruitful source of loss occurs in calves when branding time comes round, many of them passing then into the ownership which happens to be most vigilant; for, until they are branded, who can say to whom they belong, where cattle roam in common over millions of acres? Cattle that are out of condition when winter comes on are apt to perish in the cold, unless they are carefully fed and sheltered, and the Cochrane Ranching Company suffered severely one winter in this manner, with cattle that were out of condition after being driven northward from Montana, too late in the autumn. I am assured, however, that cattle in good condition to start with will stand the winter bravely, keeping on their flesh till long after Christmas. Grass, water, forage for hard winters, and shelter both natural and artificial, are indispensable to the continued success of a ranche. The winters vary in severity, so that the amount of provision to be made for stock, in the way of food and shelter, is always problematical; but the safe thing is to provide enough for any probable or possible contingency of weather, for an early winter and a late spring. It will thus be seen how necessary it is that an owner should be in residence at a ranche.

I am assured on good authority that fine crops of roots and oats can be grown with very crude cultivation, and that, even where the land in its natural state appears barren, maize and cereals prosper amazingly. The ranchers depend a great deal on the hay, which is self-curing, that is, on grass curing as it stands, to be consumed IN SITU; and it is a peculiarity of the native grass that it should cure in this way, providing frosts do not cut it down before it has had time to do so. Generally speaking, the cattle subsist very well through the winter on this self-cured hay, for the winds as a rule blow it bare of the dry snow; but when it happens to be deeply buried in snow, and remains so until the snow is frozen so as to resist the wind, then the cattle are in danger of perishing for want of food: and here it is that a supply of forage is so necessary and beneficient. Dairy farming, in connection more or less direct with ranching, will probably open out in Alberta, where, it is asserted, and I think not unfairly so, that the country possesses

all the natural conditions essential to that business. A young English rancher of two years' standing, informed me that he contemplated forming a herd of dairy cows to let out to a dairyman on the "half-sales" system. This, however, necessitates the fencing of land and a provision of buildings and forage, and so can hardly become general for a long time to come. It is an item of some significance, however, that such an idea should already be entertained in the neighbourhood of the Rockies, and it serves to illustrate the speed at which things are moving in that region since the advent of the railway.

The North-West has very large deposits of coal, it is known, in places, and there is reason to suppose that there are many others awaiting discovery. In some of the banks of the rivers coal is seen protruding in seams many feet thick, and we brought with us specimens of apparently excellent coal, which was quarried in the Medicine Hat district. At Langevin, 30 miles west of Medicine Hat, and 695 miles west of Winnipeg, we saw a gas well, which was then driving a twelve horse-power engine; the gas had been struck at 800 feet deep, while boring for water, and is now being used to bore another well for water. It is indeed impossible to say what may not be in store in this land of wonders.

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My impression is that the North-West of Canada presents an opening for pushing young men of good conduct, healthy, sober, thrifty and industrious. An extensive knowledge of British agricultural practices is not necessary to a farmer in the North-West, where farming is of the simplest imaginable character where ploughs are used at all. Capital is most useful in Canadian agriculture, and finds a better reward than in England, when it is in the hands of men who know how to use it. But even men of capital, and of experience in British farming, will be well advised not to embark at once in farming on their own account, but rather to hire themselves out to farmers already established, and thus to pick up tuition and cash at the same time. There is an old adage to the effect that "a man must pay for his learning." This, however, is not true in Canada, if men will hire themselves out as I have advised, for there A MAN IS PAID FOR HIS LEARNING, and does not pay for it himself. He should also look around the country, north and south, and east and west, before he finally decides where to locate himself. Where land is so splendidly abundant, it is hardly worth his while to take hold of the first block he comes across. A new beginner in the North-West must make up his mind to "rough it" for a time, until he can get his domestic surroundings fixed up properly, to which end the energies of a wife would be well directed. He must also be prepared to work hard, be steady, and be content with sparse society. Loungers find no congenial home in that country.

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The following is Dr. Cheadle's account of the horses, taken from pp. 167-8 of the sixth edition of the "North-West Passage by Land:" "We now prepared to leave our winter quarters. The first thing to do was to find the horses, which had been turned loose at the commencement of winter. We had seen them or their tracks from time to time, and knew in what direction they had wandered. La Ronde followed their trail without difficulty, and discovered them about eight or ten miles away. We were very much astonished at their fine condition when he drove them back to La Belle Prairie. Although very thin when the snow began to fall, they were now perfect balls of fat, and as wild and full of spirit as if fed on corn—a most unusual condition for Indian horses. The pasture is so nutritious that animals fatten rapidly even in winter—when they have to scratch away the snow to feed—if they find woods to shelter them from the piercing winds. No horses are more hardy or enduring than those of this country, yet their only food is the grass of the prairies and the vetches of the copses. The milch cows and draught oxen at Red River and in Minnesota, feeding on grass alone, were generally in nearly as fine condition as the stall-fed cattle of the Baker Street Show." The district between Battle River and the Saskatchewan, lat. 53° and long. 112° and 113°, is marked in Dr. Cheadle's map as possessing "rich soil and fine pasturage."

Many progressive towns are rising up along the line of the Canadian Pacific Railway. Portage la Prairie is an important place, situated in the centre of the richest grain-growing plain of Manitoba, and having grain elevators, flour and paper mills, a biscuit

factory, many hotels, and other well-built edifices, and a population of some 4,000. Brandon, too, 133 miles west of Winnipeg, is a flourishing town, with mayor and corporation, and a population of over 3,000 though only three or four years old. It has a fine situation in the Valley of the Assiniboine, and four large grain elevators. At these two places we received addresses and the hospitality of the people—at the latter place in the middle of the night, and at the former in the early morning. Virden, Moosomin, Broadview, Indian Head, Qu'Appelle, Regina, Moose Jaw, Medicine Hat and Calgary, are also incipient cities, and already important centres of trade.

Winnipeg, however, is the capital of Manitoba and the commercial capital of the North-West. It is the great distributing point for all of the country between the Red River and the Rocky Mountains. In 1870 it was a hamlet, with a population of 250 souls. In 1874 it was incorporated as a city, with an assessment roll of $2,076,018; in 1882 it could boast of 25,000 inhabitants and an assessment of $30,432,270, and its population is now about 30,000. It has broad and well laid out streets, lined with handsome stores and warehouses, private residences and public buildings. The city is lighted by electricity and gas, street railways are in operation, a fire brigade has been organized, and all the advantages and conveniences of an old established city are enjoyed by its inhabitants. The offices and plant of the western division of the Canadian Pacific Railway Company are situated in Winnipeg, and a fine station has been built.

THE CANADIAN NORTH-WEST

AND

THE ADVANTAGES IT OFFERS

FOR

EMIGRATION PURPOSES.

BY PROF. HENRY TANNER, M.R.A.C., F.C.S.,

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(*Report of* 1885 *published January* 1886.)

Under this title we include the Province of Manitoba, and the North-West Territories. The more complete political organisation of Manitoba, and her more advanced settlement, distinguish her from the general group of rising Provinces in the Canadian North-West. As a first step, it is very desirable to realize something of the magnitude of the country we are about to notice. The Province of Manitoba is rather larger than Great Britain with Ireland added, and to the West of Manitoba four other Provinces have been formed, each being somewhat about the same size. After these lands have thus been cut out of the North-West Territories, we have a tract of country remaining rather larger than the total area of Russia in Europe with the German

Empire added. Hence it will be seen that under the title of the Canadian North-West we are dealing with an enormous tract of country, and a very important portion of the Dominion of Canada. Lord Dufferin, in speaking of this district, said: "From its geographical position, and its peculiar characteristics, Manitoba may be regarded as the keystone of that mighty arch of sister Provinces which spans the continent from the Atlantic to the Pacific. It is here that Canada, emerging from her woods and forests, first gazed upon her rolling prairies, and unexplored North-West, and learnt that her historical territories of the Canadas, though themselves more extensive than half-a-dozen European kingdoms, were but the antechambers to that till then undreamt of Dominion, whose illimitable dimensions alike confound the arithmetic of the surveyor, and the verification of the explorer. It was hence that, counting her past achievements as but the prelude to her future exertions and expanding destinies, she took a new departure, and felt herself no longer a mere settler along the banks of a single river, but the peer of any power on the earth." Four years then elapsed, and at the same point of the Canadian North-West, his successor in the office of Governor-General, the Marquis of Lorne, in an address which he delivered in Winnipeg, in 1881, most warmly supported these views. He said: "Unknown a few years ago, we now see Winnipeg rapidly lifting itself to the front rank amongst the commercial centres of the Continent. We may look in vain elsewhere for a situation so favourable and so commanding—many as are the fair regions of which we can boast. There may be some among you before whose eyes the whole wonderful panorama of our Provinces has passed—the ocean garden island of Prince Edward, the magnificent valleys of St. Johns and Sussex, the marvellous country, the home of 'Evangeline,' where Blomidon looks down on the tides of Fundy, and over tracts of red soil, richer than the weald of Kent. You may have seen the fortified Paradise of Quebec; and Montreal, whose prosperity and beauty are worthy of her great St. Lawrence, and you may have admired the well-wrought and splendid Province of Ontario, and rejoiced at the growth of her capital Toronto, and yet nowhere can you find a situation whose natural advantages promise so great a future as that which seems ensured to Manitoba, and to Winnipeg, the Heart City of our Dominion. The measureless meadows which commence here, stretch without interruption of their good soil westward to your boundary. The Province is a green sea over which the summer winds pass in waves of rich grasses and flowers, and on this vast extent it is only as yet here and there that a yellow patch shows some gigantic wheat field. There was not one person who had manfully faced the first difficulties—always far less than those to be encountered in the older provinces—but said that he was getting on well, and he was glad he had come, and he generally added that he believed his bit of the country must be the best, and that he only wished his friends could have the same good fortune, for his expectations were more than realized."

Another period of four years passes by, and in the interval we find the Canadian Pacific Railway completed from the Atlantic to the Pacific. In October, 1885, the Governor-General of Canada (His Excellency the Marquis of Lansdowne), received a right loyal welcome in Winnipeg on his return from a tour extending through the Canadian North-West to British Columbia, and on that occasion he said:—"It is impossible to travel from this city to the Western Ocean without feelings of admiration for the courage, both of those who first conceived, and of those who have carried to a successful consummation, this great national work. The construction of the Canadian Pacific Railway stands alone in history of great achievements in railway building. The physical difficulties which had to be overcome, the shortness of the time in which the work was carried out, the small numerical strength of the nation for whom the work has been done, are without parallel in the history of similar undertakings. * * * There was another thought which forced itself upon my mind during my travels. All this country over which we have been passing, its natural resources, and physical beauties belongs to the Dominion of Canada. * * * * It is impossible to look upon this Continent, now sparsely inhabited by a few millions of human beings, without reflecting how small are the interests of the present, compared with those of the future which lies before us. Let us keep our vision fixed upon that future, and let us remember how vast is the load of responsibility involved by the ownership of this great country. If I could venture to give you advice I should say, let the Dominion Government at Ottawa, the Provincial Government in each Province, the municipal authorities in your cities, let every citizen in his own place, let them bear in mind that they are trustees for those who will come after them, for the millions who will one day replace the thousands now

upon the soil, that when they are gone their successors may say of them, that in the early days of the history of their country, those who were in the position to mould its young destinies, used with wisdom and foresight the tremendous opportunities which Providence placed within their reach." These remarks which have fallen from the lips of three successive Governors-General constitute a great and glorious tribute to the unequalled conditions of prosperity existing in the Canadian North-West, and they give clear indications as to the great developments which await it in the early future.

THE PROVINCE OF MANITOBA.

This Province—the eldest sister of the North-West group—may be fairly considered as having been released from the parental care of the Dominion Government, and as having surrounded herself with a thoroughly complete establishment of her own. Whether we direct our attention to the work done in her Parliament, or to the administration of her laws, or to the development of her internal wealth, she stands unsurpassed for their excellence. Amidst so much that is well organised, it is still necessary for me to make special reference to the work done under

THE DEPARTMENT OF AGRICULTURE.

Their work would be highly commendable in any country, if only for the fact that their annual reports are of the highest excellence, and their crop and live stock bulletins are of immense practical value. The care taken in obtaining accurate information is worthy of all praise, and it is a matter for warm congratulation that the example which Manitoba has set is very likely to be followed throughout the Dominion of Canada. The work of the Department as now organised goes far beyond this, for it embraces the oversight of all matters relating to agriculture—such as the establishment and assistance of local boards of agriculture, and local agricultural societies—the management of the Provincial Agricultural Exhibition—the establishment of schools for agriculture and for instruction in veterinary science—the enforcement of laws relating to the diseases of animals, coupled with providing professional assistance in cases of exceptional difficulty—the enforcement of the laws having reference to noxious weeds—the management of experiments on crops, live stock, fruit, forestry, etc., etc. I have noticed the work of this Department somewhat in detail, because I think that it should be more generally known, that these farmers who settle within this Province have a guardian care over them and a strong and willing hand ready to help them in any difficulty. The Government of Manitoba recognises this great truth—that the prosperity of every individual settler is a matter of public importance, because of its influence upon the general welfare of the Province. Men are not left here to become martyrs to circumstances which are beyond their control, neither are they permitted to feel that they are uncared for, whether they succeed or fail. There is a jealous protection extended towards them, because every successful farmer is a producer of wealth, and being such it is considered to be both economical and desirable to encourage all his efforts. I must not, however, be supposed to suggest that any Government care can convert our "ne'er-do-weels" into prosperous men of business, but, notwithstanding this, immense help can be given—and is given—to those men who understand their work, and who have the capital to enter into their business under conditions which are consistent with success.

THE CHARACTER OF THE SOIL.

The character of the soil of any country necessarily exerts a commanding influence upon the commercial success of those who cultivate it, and the natural fertility of the soil consequently becomes a matter of very great importance. This is a truth which is more perfectly known in England and Scotland than in any country in the world, for here the greatest efforts and the heaviest expenditure have been made, in keeping up the fertility of our soils by the aid of artificial manures. The soil of Manitoba differs very greatly in different parts, for we must not forget that we are speaking of a tract of country larger than Great Britain and Ireland. No one need be surprised at the fact that we find in Manitoba soils which are good, bad, and indifferent, and yet experience justifies the Indian title it bears as "The Land of the Great Spirit or God's country," for this is the literal translation of the word "Manitoba." One man may truthfully

describe the soil of his neighbourhood as being most fertile in its character, whilst another man may with equal truth describe some land he has discovered as being of little agricultural value. No one knowing the country can honestly deny these facts, but it does not matter to us as men of business whether or not it is possible to find poor soils in Manitoba. The practical question we have to deal with is this: Can we find plenty of very good land throughout the Province? I have not the slightest hesitation in saying that land of very high fertility may be most easily obtained there by any man who knows his business, and who can tell the difference between good and inferior soils. I am bound even to go beyond this, and state that although we have hitherto considered the Black Earth of Central Russia (Tchornoi Zem) the richest soil in the world, that land has now to yield its distinguished position to the rich, deep, black soils of Manitoba and the North-West Territory. Here it is that "The Champion Soils of the World" are to be found, and we may rejoice that they are located within the British Empire. Take as an illustration of their powers of fertility the simple fact that on the Kildonan Farm near Winnipeg, belonging to Mr. Robert McBeth, on which land I saw their 50th crop of wheat growing in 1884 crops which had followed each other year after year, and had maintained their full yield from first to last without the soil losing any portion of its productive power. Year by year had the winter frost renovated that soil with fresh stores of fertility, from its rich reserves, and thus the land became better prepared than ever for its work. It may appear to a stranger to this country a bold statement to make, but with full knowledge of the responsibility which attaches to it, I do not hesitate to say that there are millions of acres in the Canadian North-West, not only fully equal to the Kildonan soil in fertility, but that these lands are still remaining as uneared-for wastes only requiring the plough to prepare them for the reception of the seed. If we descend in the scale of fertility and take those soils which are fully equal to the richest soils in Great Britain and Ireland, even when these possessed their most luxuriant powers, soils of this character and quality exist in still larger quantities. Manitoba possesses her full share of such lands, but these rich soils overspread her boundaries, and are well distributed throughout her sister provinces, and thence they extend onwards and onwards through much of the outer territories. The opportunities therefore which exist for capital and labour being profitably employed in the production of food, sufficient for millions of British subjects, and for supplying them with happy homes surrounded by every comfort, these opportunities, I say, are simply boundless.

"*There* a man is a man if he's willing to toil,
And the humblest may gather the fruit of the soil.
There children are blessings, and he who hath most
Has aid for his fortune, and riches to boast.
There the young may exult, and the aged may rest,
Away, far away, in The Land of the West."

AGRICULTURAL CAPABILITIES.

These results will take us beyond the enquiry as to the quality of the soil, and will bring us into contact with the surrounding circumstances which enable us to make use of a good soil in a more or less successful manner. Here we have to deal with two very clearly defined seasons the summer or the period of growth, and the winter, or the period of rest. At the present stage our enquiry will be limited to the former of these, for this demands our consideration by reason of its special influence upon our crops and live stock. Every farmer knows that if he is to obtain an abundant crop he must not only secure a fertile soil, but be favoured by a good season and a suitable climate. Happily for the Canadian North-West good seasons are the rule, and bad seasons are extremely exceptional. The conditions of climate are definite and settled, for the frost and snow having left the surface, the land is soon ready for tillage, the seed is sown, and the rapidity and luxuriance of growth is simply incredible to those who are accustomed only to the growth of crops under the British climate. This variation will be easily understood if we remember the clear, bright sunshine, and the steady stimulating warmth which distinguish the climate of the Canadian North-West. The rapidity of growth we observe may be traced to the fact that there is an abundance of plant food in the soil, and that the stimulating influence of warmth and sunshine impart to the plant a great energy of growth, whereby that food is rapidly made use of. In these cases such rapidity of growth is free from the objections which too often accompany it in Great Britain, for the simple reason that the plant-food in the soil in Manitoba and in her

sister provinces is not only abundant in quantity, but it is also perfect in its composition. If these facts are remembered they will go far to show to any intelligent individual, that in the Canadian North-West we are dealing with conditions which to the British farmer are most unusual, if not practically unknown. To illustrate this most important set of conditions, let us suppose that a manufacturer has a very good machine, which, being abundantly supplied with all the materials which are needed, the use of steam power enables a rapid production to be secured without any sacrifice of quality. All of these three conditions, however, are necessary for success, for a weak point in either would soon make itself evident. So also in the growth of crops in that district, the clear, bright sunshine, and the warmth, act as the motive power. The perfect character of the sunlight makes growth exceptionally rapid, and as the supplies of food in the soil are also complete, the excellence of the crop is practically regulated by the ability of the seed for the discharge of its duties. If this vegetable machine be not thoroughly effective, the abundance of motive power, and an unlimited supply of raw materials, are not sufficient for securing a success. In no part of the world have well trained farm seeds equal opportunities for giving their best results. We shall subsequently refer more fully to the important influences exerted by the seed; but when these are equal to their duties the trio is again complete, and very magnificent results are within command. Bearing all these facts in mind, I trust that the reader will not be disposed to condemn an accurate statement of facts as being too highly coloured, or as exaggerations. In any case my duty is clear, and the risk must be run, for I cannot follow the example of a settler in the North-West, who, having explained to me how surprised and delighted he was with the happy circumstances surrounding his new home, I naturally expressed to him the hope that he had written home and told his friends all about it; but he gave us this significant reply:—"Why, Sir, if I only told them one-half they would never believe me again." I have gone out of my way, therefore, to preface some of the details of my report by showing that the conditions of the district are perfectly exceptional, and for this reason no one should feel surprised if the results obtained are exceptional also.

MANITOBA WHEAT.

This is a most valuable wheat for milling. It recommends itself from a miller's or baker's point of view in all points, a type of the perfect. More desirable wheat than samples of Hard Fyfe Canadian for the British miller could not be found. It is simply magnificent. There can be no better quality of wheat used for mixing purposes, both for strength and quality of flour produced—superior even to No. 1 Minnesota wheat. It would prove invaluable to millers in this country where home-grown wheats frequently come to hand in damp condition in consequence of the humidity of the climate. It possesses splendid quality and value for mixing with English wheats; but can we get a regular supply of it? I am afraid the American millers are too 'cute to allow this quality to come here in any quantity, if they can possibly prevent it. If such wheat can be put on our markets at a reasonable price it must meet a ready demand at 3 or 4 shillings per quarter over the best Indian Red wheats. No doubt it would do for mixing in some districts, but I would most certainly grind it alone, and it would make flour of the finest quality. Could we get such quality regularly we should have no fear of any American competition in the point of quality of flour. It is just what we want, and what we cannot buy. The value and quality of Manitoba wheat lies in the fact that it is grown on almost virgin soil. Makers of best flour are, or should be, anxious as far as they can to get their supplies of wheat that they depend on for strength, from those parts of the North-West of America where wheat is a new crop to the land. No. 1 Duluth is not in any way fit to compare with the best Manitoba wheat, especially not in its working qualities. It is certainly as beautiful wheat as ever I saw, and particularly well adapted for millers in this country. Surely some agency can be devised for getting more easy access to these hard wheats which are never seen in commerce in purity. If the English miller could only get a good supply of such wheat at a moderate price fine Hungarian flour would stand little chance in this country.

I may now state that although I most fully agree with this very high commendation of Manitoba wheat, I have in this statement literally quoted the published opinions of 14 of our largest firms of millers in this country, and I have simply grouped these opinions together—such opinions coming from men of extended experience, and they too buyers

who cannot even be suspected of giving any over-commendation—these opinions are of far more value than anything which can be said by those who are not in the trade. If those statements mean anything they prove that the wheat of the Canadian North-West has a special value upon the British markets, and that larger importations are eagerly desired. The fact of Manitoba wheat being thus sought after by millers cannot fail to encourage its production, and this demand will help to maintain its market value. The increased production of wheat will be materially assisted as the means of transport to the British markets are improved, and as the costs are decreased. It is, however, most important that the farmers of the Canadian North-West should have increased facilities for selling direct in the British markets, because it will give them a free choice between the local buyers and an export of their wheat, thereby securing a fair competition. I am glad to be officially informed that such arrangements are daily becoming more within general command.

The increase in the number of flour mills in Manitoba is very marked, for whilst the cost of grinding profitably economises the cost of export, much valuable food is also taken back to the farm, and given to stock, which would otherwise have been sent away in the unground wheat. Each year also shows increasing accommodation alongside the railways in the form of elevators for storing wheat. At the end of 1884 these gave accommodation in Manitoba alone for one and a half million bushels. And in addition to this there was storage at Port Arthur for another half a million. As these elevators give a cheap and good storage for wheat whilst it is being held over for sale, the convenience to farmers is very great. Closely associated with the value of the Manitoba wheat is the question of its cost in production. I see no reason to modify the cost I have already given for each acre under wheat, as a first crop after breaking the prairie, viz.: £2 (or say 10 dollars). As regards the cost for the cultivation of subsequent crops, as there will be tillages on the summer fallow to provide for, it is fair to calculate upon somewhat similar expenditure. The cost per bushel will of course vary with the yield of the crop, but it is no uncommon thing to find 40 bushels produced at just the same cost by a good farmer, as twenty bushels are obtained by one who is "too late" in all his operations. I am not disposed to quote a very low cost for production, but it may be safely calculated as averaging about 20 pence per bushel, and in ordinary seasons it will leave a margin of profit ranging from £2 an acre downwards, according to the character of the management and various local conditions. The expenses incurred in the delivery of wheat to the railway station vary considerably, as will be evident if it be considered that some has to be drawn three miles and other wheat will require perhaps thirty miles carriage. This represents so much additional cost per bushel, and so much less profit to the grower, which he would do well to take into his calculations in selecting his land.

During the last three years (1883-4-5) the growth of wheat has been interfered with by summer frosts. I am perfectly satisfied that any injury which has arisen has been improperly magnified by two classes namely those who have opposing interests, and those who want to lower the market price of wheat. These reports are also remarkable for the fact that, generally speaking, whilst they refer to any damage done in the Canadian North-West in very exaggerated terms, they are remarkably silent about other districts in the States which may have suffered far more severely. Having visited the Canadian North-West during each of these three harvests, I have had very fair opportunities for learning the opinions of farmers in various parts of the district, and for personally inspecting the crops. Putting aside all exaggeration we must face the fact that much damage has undoubtedly arisen, and it is in the highest degree important for us to determine how far we can lessen or prevent these losses. I have not the least doubt on my mind but that the danger may be very greatly decreased by a better system of management, and I base that opinion upon facts which have come under my observation in this district. It may, however, be desirable to state at this point, that if the growth of the wheat crop has been unduly delayed by any cause, and frost (not necessarily severe frost) strikes the ear when in a milky state, considerable damage arises, but the liability to injury decreases just as the grain becomes firmer and more solid. The testimony of many of the oldest residents, and notably that of the Hudson's Bay officers, tends directly to show that these frosts are perfectly exceptional. This is satisfactory so far as it goes, but it is still very desirable to enquire fully into the facts of the case. Personally, I am satisfied that by such an enquiry we shall scatter our

fears, and correct those errors on the part of many growers of wheat, which have so largely contributed to any loss which has arisen. In fact it very largely rests with each farmer to determine whether he will make himself safe or run the risk of a loss. A more perfect cultivation of the wheat crop may be regarded as the first and best protection against frost, or any other injury. By this I mean that the soil should be brought into a thoroughly friable condition—that a healthy, hardy, and quick growing seed of good and suitable quality should be sown—that early sowing and thicker sowing should be the rule—that the lands chosen for wheat should be free from the watery vapour arising from lakes and ponds—and that reasonable protection from strong winds should be provided. Each and all of these conditions are obviously desirable as a means for securing the most successful cultivation of wheat, and they constitute a chain of which it may be said, the weakest link indicates its strength. Whether there are frosts or not, these are the requirements for success. If they are adopted the farmer may be assured that he has done his part, and so far as he is personally concerned we shall hear no more of injury from the frost. But when a farmer has been content to sow his seed wheat upon a roughly ploughed turf which is as tough as a rope, or when he has even ploughed that turf over a second time, and left the soil beneath too hard for the roots of the wheat plant to enter, can it be any cause of wonder if that wheat crop makes a slow growth, and that it remains green and full of sap when it ought to have been cut, and ready for going into the stack. If, again, some farmers will continue sowing the seed wheat which year after year they have thus brought into a slower and still slower habit of growth, can it cause surprise that the crop does not ripen early. Nature has done very much for the Canadian North-West, there are soils there unequalled in the world, there are sunshine and warmth capable of aiding those soils to produce wheat of a most desirable character, but these advantages must be prudently used if we would secure the desired result. The fact that the soil and climate of the district so powerfully favour a rapid and perfect growth makes it the more necessary that we should give the wheat plant every chance for utilising these powers.

The selection of healthy, hardy, and quicker growing seed involves much skill and good management, but they will yield a rich reward. Here is a work in which I venture to believe the Department of Agriculture will soon take action. The commendable energy already shown by that Department is a guarantee that this also will be carried out. The fact is that much of the Red Fyfe wheat needs a prudent change of treatment to give it greater energy of growth, but let the wheat growers of Manitoba think well what they are about before they set that wheat aside. If the land is better prepared for the seed the Red Fyfe will have a better chance, and an improvement in the seed will soon follow. Early sowing is very generally acknowledged to be necessary, but it is not sufficiently recognised that thicker sowing equally saves time. If the seed wheat is sown moderately thin—say at the rate of from 1½ to 2 bushels per acre—as soon as the young plant has fixed itself firmly in the soil, it commences throwing out a number of additional seed stems, and making a thicker plant. If that thicker plant is provided by a more liberal seeding it is more than probable that fully two weeks will be saved, and the crop will be ready for harvest that much sooner. I saw an excellent example of this on Mr. Jas. Findley's farm, on the north side of Shoal Lake. He sowed 3 bushels of seed wheat, and he not only reaped a crop of fully 45 bushels of first-rate wheat, but no injury was done to it by the frost, because it was two weeks more forward than other corn sown at the same time. The Hon. J. C. Aitkins, Lieutenant-Governor of Manitoba, also drew my attention to a case which came under his observation in 1884, in which fully 10 days had been gained by thicker sowing. Neither must we overlook the fact that the extreme fertility of these soils has rather a tendency to encourage a long continued growth of straw, and thus time is needlessly lost. Thicker sowing, however, tends to divert the energies of the plant in the direction for forming its seed more quickly, and it certainly favours an increase in the yield of the wheat crop.

Much that has been said respecting wheat culture applies equally to oats, barley, peas, and other farm crops. The bounties of Nature must not be made a cover for negligent arrangements, and the responsibility for success must in any case rest upon individual management, and not upon the country, for a proper rotation of crops, the use of suitable farm seeds, and a thorough cultivation of the soil, are most desirable even in this fertile district. In these various farm crops there is a steady increase, year by year, Thus, in the Province of Manitoba,

the growth of wheat increases 55 per cent. annually.
" " oats " 50 " "
" " peas " 46 " "
" " barley " 34 " "
" " potatoes " 34 " "

It will also be interesting to notice the average of the earliest and latest sowings and harvestings, as also the highest and lowest average produce on entire farms, with the average produce generally. The most recent returns of the Manitoba Department of Agriculture enable this to be done with every confidence.

Crop.	Seeding,		Harvest.		Average on One Farm.		Average of all Farms
	Began.	Ended.	Began.	Ended.	Highest.	Lowest.	
					Bush.	Bush.	Bush.
Wheat...	April 22	May 19	Aug. 28	Sep. 19	40	15	23.7
Oats.....	" 25	" 23	" 28	" 21	70	15	44.
Barley...	May 8	" 30	" 19	" 8	55	15	30.
Potatoes.	" 14	" 31			425	100	234.

In reference to the results given above, showing the farm averages of various kinds of grain, it is desirable that they should be clearly understood. In the case quoted showing the highest produce it represents that on the farm referred to, the entire growth of wheat averaged 40 bushels per acre, and that on another farm the entire growth of oats averaged 70 bushels per acre, and so on with the other instances named. When we speak of the average of all farms, it must not be forgotten that inexperienced and unsuccessful farmers pull down the average greatly. A good farmer having an average yield of 40 bushels of wheat, may have two neighbors producing an average of 16 and 15 bushels respectively, and this would reduce their general average to about 23 bushels as in the above table.

In all newly settled districts which are favourable for the growth of wheat, oats, and barley, these naturally command the first attention, because their cultivation gives the quickest return for the capital expended. As those settlers accumulate additional capital they naturally supplement this tillage work by stock-keeping. Some who can command sufficient capital, commence with a system of mixed husbandry. Manitoba has been no exception to this general rule, and here we find a remarkable increase taking place in the live stock of the province, and following rapidly upon the successful growth of grain. We have a large number of very useful Horses and Cattle reared in Manitoba, and some of these are bred from the richest gems which England and Scotland have produced. Pigs are being very extensively introduced, and although there are very few pig breeding establishments on the American system, pigs are still largely produced by many farmers who keep from four to ten sows each. Sheep thrive well in most parts of Manitoba, and the number is steadily increasing, for the soil and climate are very suitable. Difficulty has been experienced in some neighbourhoods where the "Spear-grass" (Stipa spartea) is abundant. This is sometimes also known as the oat-grass, and as the wild oat. The seed of this grass is shaped like a spear, and it has the power of working itself through the fleece, and it can penetrate the skin of sheep, causing them much suffering and loss of condition. Breeders find that by keeping their sheep for three or four weeks in the early autumn, upon land which has been mown, or in fields which are free from this grass, they are able to avoid all trouble from it. If by any means the sheep can be protected whilst the ripening seed is being separated from the seed stem, all difficulty is overcome, for the seed soon worksits way down into the soil, and there it is safe. This plant yields one of the earliest and sweetest grasses on the prairie, and it is in consequence very highly valued as food. On small farms this grass is easily held under control, and the sheep breeders can make use of it with safety. The real difficulty is felt when sheep are kept on ranches, but even here it is being successfully overcome by care and attention.

CANADIAN GOVERNMENT AGENCIES.

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