APPENDIX

TO THE

FORTIETH VOLUME

OF THE

JOURNALS OF THE HOUSE OF COMMONS

DOMINION OF CANADA

SESSION 1905

PART III

OTTAWA
PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1907

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REPORT

OF THE

SELECT STANDING COMMITTEE

ON

AGRICULTURE AND COLONIZATION

FIRST SESSION, TENTH PARLIAMENT

1905

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1905

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(HON. THOMAS GREENWAY, *Chairman.*)

Messieurs :

Adamson,
Archambault,
Armstrong,
Barr,
Beauparlant,
Béland,
Blain,
Bland,
Bourassa,
Bourbonnais,
Boyer,
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LeBlanc,
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Lovell,
Macdonald,
MacLaren,
Maclean (*Lunenburg*),
McColl,
McCool,
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McKenzie, (*Cape Breton, N.*),
McLean (*Queen's, P.E.I.*)
McLennan,
Marcil (*Bagot*),
Martin (*Queen's, P.E.I.*),
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Miller,
Morin,
Mulock (*Sir William*),
Oliver,
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Reid (*Grenville*),
Roche (*Marquette*),
Ross (*Rimouski*),
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Taylor,
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Thompson,
Turgeon,
Turriff,
Walsh,
Watson,
White,
Wilmot,
Wilson (*Lennox and Addington*),
Wilson (*Russell*),
Worthington,
Wright (*Muskoka*),
Wright (*Renfrew*),

REPORT

The Select Standing Committee on Agriculture and Colonization present their Seventh and Final Report as follows :—

The investigations of the Committee, during the current Session of Parliament, included :—

First.—Agriculture, in its correlative phases of production and commerce; including the most modern systems of cultivation of crops, and the application of the latest scientific methods to the export and marketing of perishable products.

Second.—Immigration in the various details of the carrying out of the care of arrivals at ports of entry, and expenditure by Canada in immigration operations in Europe, and on the continent of North America to the South.

All the evidence taken by the Committee upon the above subjects is an essential portion of this report.

The Committee recommend that the following evidence be printed in pamphlet form, forthwith, in the usual numerical proportions of English and French, as advance sheets of the Committee's Final Report ; that is to say, 20,000 copies of the evidence of G. H. Clark, Seed Commissioner, and 20,000 copies of the evidence of A. McNeill, Chief of Fruit Division, for distribution as follows, including also the evidence of Elihu Stewart, in the same numbers and proportion for distribution :—16,900 copies of each to Members of Parliament for distribution, 3,000 copies of each to the Department of Agriculture, and 100 copies of each to the use of the Committee.

THOS. GREENWAY,
Chairman.

House of Commons,
July 19, 1905.

THE EVIDENCE

PART I.

AGRICULTURE IN CANADA

DAIRYING, COLD STORAGE, EXTENSION OF MARKETS

HOUSE OF COMMONS,
COMMITTEE ROOM, 34.
TUESDAY, March 28, 1905.

The Select Standing Committee on Agriculture and Colonization met this day at 10 o'clock a.m., the acting chairman, Mr. McKenzie (Bruce), presiding.

The CHAIRMAN.—We shall have the pleasure this morning of an address from Mr. J. A. Ruddick, Dairy Commissioner.

REORGANIZATION OF THE BRANCH OF AGRICULTURE AND DAIRYING.

Mr. RUDDICK.—Mr. Chairman and gentlemen: At this, my first appearance before the Committee as Dairy Commissioner, in fact, in any capacity, I think, perhaps, that a word or two concerning the reorganization of the branch to which I am attached, might be of some interest to the members of the Committee. I presume you are all aware that at the end of last year Professor Robertson, who was Commissioner of Agriculture and Dairying, resigned that position. The branch of the Commissioner of Agriculture and Dairying was made up of seven divisions. There was 'live stock,' 'dairying,' 'fruit,' 'extension of markets,' 'seeds,' 'cold storage' and 'poultry.' It was decided to divide the old branch into three new branches, and what was formerly included in the branch of the Commissioner of Agriculture and Dairying now comes under the Live Stock branch, the Dairy Commissioner's branch, and the Seed branch. The live stock branch includes live stock and poultry. The dairy commissioner's branch has dairying, fruit, extension of markets, and cold storage; and what was the seed division is now a branch in itself.

Now, I am here this morning to tell you something about the work of the Dairy Commissioner's branch, and with your permission I would like to deal with it under the heads of the four divisions into which it is divided. Let us take the division of dairying first.

PROGRESS IN PRODUCTION.

The production of cheese, butter, and condensed milk continues to increase in Canada. The census of 1901 gives the total value of butter, cheese and condensed milk produced in 1900 as $66,470,953. The exports of butter and cheese for the year ending June 30, 1901, were valued at $23,999,614, leaving $42,471,399 worth as the home consumption of these articles. I mention this because I think we very often overlook and underestimate the value of our home market. You can see it is a larger market, according to these figures, than our foreign or export market is. In 1900 the exports of condensed milk were so small that they were not separately enumerated in the Trade and Navigation returns, being included among 'other articles.' Allowing for the increasing home consumption, and adding it to the exports in 1904, we find the total value of dairy products last year must have been approximately $80,000,000. That includes, of course, dairy butter. In the census figures we get the total production. It is the only time at which we do get the total production, because the annual figures that we depend upon and with which we generally estimate the growth of the dairy industry, are simply the exports of butter and cheese. That includes some dairy butter, but does

not include all the creamery butter and takes no account of home consumption; so that it gives us no real estimate of the total production of these articles.

By Mr. Wilson:

Q. I should think your department could gather these figures from year to year and give them to the people?

A. We have no means of doing so. I do not know how we could possibly get the total production of cheese and butter in Canada every year. It would be a tremendous undertaking.

CONDENSED MILK.

The production of condensed milk has increased considerably in Canada during recent years. In 1898 the imports of condensed milk amounted to $59,101, and the exports were practically nil. In 1904 the imports had decreased to $24,222 worth, and the exports had reached the sum of $150,094. So you will see that we are not only supplying more of the home demand, but exporting a considerable quantity, and I think the manufacture of condensed milk is likely to increase considerably.

By Mr. Maclaren:

Q. How many condensed milk factories are there in Canada?

A. There is one at Charlottetown, P.E.I., one at Truro, N.S., one at Huntingdon, Que., and one at Ingersoll, Ont. These are the principal ones.

Q. But the Ingersoll one is the largest?

A. Yes, the Ingersoll one is the largest. It is very hard to get any particulars or figures from them. I tried a few months ago to get some idea of the output of these factories, but they seem to want to keep their business very much to themselves, and they refused to give me any particulars.

Now I believe that this rate of increase in our production of dairy products may be continued for a good many years. The increase in our population provides for a very large increase in home consumption, and we all hope that there will be considerable expansion along that line.

MARKET OUTLOOK FOR CHEESE AND BUTTER.

It is true that the total importations of cheese into the United Kingdom have not shown very much increase for a good many years, and it is also true that we are supplying now about 72 per cent—at least we did in 1904—of the total imports of cheese into the United Kingdom, and about 85 per cent of that kind which we make—the Cheddar cheese. The only competitors that we have in supplying cheese to Great Britain are the United States and New Zealand. They are the only two countries that send the same kind of cheese to Great Britain as we do. The United States exports are falling off every year. Last year they only sent some 14,334 tons. Three years ago they were sending double that quantity. They seem to be consuming more and more of their cheese, and it will be only a few years when the United States will have no cheese to export. This does not mean that the United States has dropped the manufacture of cheese. They are making considerably more cheese than they ever did, but they are eating it at home. They have an increasing population and better facilities for handling and distributing cheese through the south and west, where it is not manufactured to any extent. New Zealand is not likely to be a great cheese producing country. They have not shown any increase in ten years; the output fluctuates from year to year, according to the relative prices of cheese and butter. Many of the factories there are combined factories. Then we have, of course, our foreign markets. We are not only replacing the cheese formerly sent to England by the Americans, but we are increasing our shipments to foreign countries quite considerably. When I say foreign markets, I mean any market outside of the United Kingdom. We have doubled our foreign exports, since 1904, largely to the West Indies.

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By Mr. Maclaren :

Q. What about shipments to South Africa ?

A. There have been some shipments to South Africa, but not any great amount. The returns have not so far given us the details of this trade. It is included among shipments to 'other British possessions.'

By Mr. Wilson:

Q. What was the amount we exported to the West Indies?

A. In 1904 we exported to the British Indies alone, $34,568 worth of cheese.

Q. And the year before, what would it be?

A. The year before we exported $44,000, which shows a slight falling off. But to go back to 1900, there was only $13,000, and then it ran down to $14,000, $8,000, and $3,000.

By Mr. Wright (Renfrew):

Q. What was the cause of the decrease to the British West Indies? I thought you had an increase?

A. It is on the increase, taking a number of years together. All these exports show quite a fluctuation from year to year. I would add while we are on this point, that it was my privilege a year ago to visit Bermuda and Jamaica, and I had occasion to look into Canada's trade in dairy products with those two colonies. I am very glad to be able to tell the Committee that I found Canadian butter and cheese were taking the lead. I have found, upon making enquiry, that this is true nearly all through the West Indies and even as far as Demarara and Venezuela. Some of the exporters in the Maritime Provinces who are in direct connection with the West Indian trade in other lines have succeeded in establishing certain brands of butter and cheese and have practically driven out all other competition. They have made considerable increase during recent years, as I shall show when I speak of the butter market down there. It was gratifying to find that Canadian butter was thus displacing even the Danish article in this important market.

By Mr. Cochrane:

Q. Is there any other kind of cheese which is consumed very largely in Great Britain which could be made in Canada?

A. They consume a considerable quantity of other kinds. They import from Belgium 3,000 tons of cheese. That is very largely soft varieties of cheese which we don't make in this country. Then there comes from France nearly 2,000 tons of Camembert, Roquefort, Brie, &c., and then from Holland there is 13,000 tons of Edam and Gouda cheese imported, which is practically as much as was imported from the United States last year. Some of the Dutch cheese is imported for re-exportation to South Africa and other tropical countries. I do not think there is any variety of cheese which we are in a position to compete with except the Cheddar cheese; it is the only variety which is applicable to our factory system. These soft cheeses have not been made successfully under the factory system, where milk is collected from different farms and is brought to the factory in a more or less advanced stage of acidity, which is necessary in the Cheddar system.

By Mr. Wilson:

Q. How do the prices of our cheese compare with the soft cheese?

A. They are quite a different class altogether, and they really do not compete at all. The price is very much higher for the soft cheese. It has occurred to me that for our own consumption in this country some of these soft cheeses might be manufactured on large farms to very good advantage. Take for instance the cheese that is made at Oka by the Trappist Fathers. That cheese is considered by most people who have had the opportunity of sampling it to be a very delicious article. It is being retailed at 30 cents a pound and they cannot make enough to supply the demand.

Q. Is there any place where you can see these varieties you spoke of ?

A. You can find several varieties of cheese in Ottawa groceries.

Q. You will not get through with your address to-day, and the next time you address the Committee you might show the varieties of which you spoke. I think it would be very interesting.

A. I will be very glad to do so. I will send to Montreal and obtain samples there if I cannot get them in Ottawa.

Now we can increase our exports of cheese to a considerable extent by further improving the quality. Those who are acquainted with the trade in the old country say that if we make further improvement in quality there will be a considerable increase in consumption. It is just the same there as it is with us. We know that if we get a good piece of cheese on our tables we eat a great deal more of it than we do of a poor one. That applies to everything. It must be evident, however, that the principal extension in Canadian dairying must be in the manufacture of creamery butter, and it along that line that Canadian dairymen should devote their attention, to promote the future expansion of their business. It is easy to believe this when we realize that in 1904 we supplied Great Britain with only 4 per cent of the total quantity of butter which she imported. One of the most remarkable things in dairy development during the past ten years is the enormous increase in the consumption of butter in Great Britain.

By Mr. Maclaren :

Q. Are you on the butter question?

A. Yes

Q. I want to ask one question with regard to butter coming in from New Zealand and Australia to this country. Is there any large quantity of butter from those countries, and what is the quality ? And how did it pass customs? I have seen some correspondence in the papers with regard to the whole matter. Can you give us some light on that subject?

A. I am interested especially in New Zealand butter, as I happen to be personally acquainted with the creameries out there. I made it a point when in Montreal the other day to look the matter up and examine some of this butter. There was not a very large quantity brought in and there will not be any more, because prices have gone down now so that it could not be brought in and sold at a profit. There was probably somewhere in the neighbourhood of 1,000 boxes of New Zealand and Australian butter brought to Montreal. They were just able to sell it at 30 cents a pound.

Q. Fifty-six pound boxes?

A. Fifty-six pound boxes. You can understand that when the butter costs 30 cents, or nearly 30 cents, to lay down here, there is not likely to be any very great amount of New Zealand or Australian butter brought into Canada.

By Mr. Wilson :

Q. How does the quality compare with ours ?

A. It compared very well with the quality of our winter butter, because it is full grass butter, made in midsummer and shipped as soon as it was made. The butter which I saw was made in December.

By Mr. Maclaren :

Q. Where did you see it—in Montreal?

A. Yes. Then there has been a small importation of New Zealand butter into British Columbia.

By Mr. Wilson:

Q. Compare that with butter made at a like season of the year in this country.

A. The brands which I saw would compare very favourably. I do not think there is any butter made in Canada which would excel it, but I think we have just as good.

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I am very familiar with New Zealand butter; my experience of one and a half years as dairy commissioner in that colony gave me many opportunities of studying it. New Zealand butter is not any better made than ours, but they have this very decided advantage over us, the butter is nearly all made in large creameries. One of the brands which I saw in Montreal is made where they make a carload of butter every day, and it is a great advantage to dealers to get that large quantity of butter of a uniform make. The system followed in that creamery is to make every box of that butter exactly alike. That is a great advantage, and it is one which they have over us with smaller creameries, so that a carload is of half a dozen different makes. It may all be good, but lacking in uniformity.

By Mr. Herron:

Q. I would like to ask if you know what price that butter was sold for in British Columbia, or what they could sell it for at a profit.

A. It cost about 7 cents to lay it down, that is including duty. Butter was selling in New Zealand during the early part of the winter at nine pence to ten pence; that is eighteen or twenty cents a pound. The butter was retailed in British Columbia at 35 cents.

By Mr. Derbyshire:

Q. There were some 15 packages of that butter brought to Brockville for comparison. It cost us 28½ cents and we sold it for 30 cents. There were only a few packages, which were sent for curiosity to give us a chance to try it.

A. There never can be any trade in butter between New Zealand and Australia and Canada, owing to the duty and the excessive freight rates.

By Mr. Maclaren:

Q. What is the duty?

A. Four cents a pound.

By Mr. Wright (Renfrew):

Q. How can they make so much butter at one creamery in New Zealand?

A. They have skimming stations and take the cream to the central factory.

By Mr. Derbyshire:

Q. They ship it?

A. The conditions in the great dairy districts of New Zealand are very different from what they are here. There, the farmers are occupied solely in producing milk. They may have 300 or 400 acres with a fence around it, and in that they keep enough cows to keep the grass down. They never turn a furrow.

By Mr. Maclaren.

Q. What do they do with the buttermilk?

A. They generally return it to the farmers.

By Mr. Derbyshire:

Q. How did you find the flavour of this butter in Montreal?

A. Some of it was a little stale.

Q. That is what we got.

A. Other brands again were nice and fresh.

Well, now, I said there was plenty of room for expansion by shipping butter to Great Britain if we could replace the butter which is being brought from other countries. In that connection, we have a very much more difficult task before us than we have in supplying Great Britain with cheese. As I have shown you, we have practically no competition in supplying cheese to Great Britain, but when we come to send butter we have the very keenest of competition. Then, there is this difference, we de-

veloped our cheese business before the manufacture of cheese and butter had been brought to its present high perfection—before there was as much skill applied to the art as there is now. Our dairymen have not given the same attention to butter-making as they have to cheese, and the consequence is they are working at a disadvantage. But I believe there are great possibilities in our butter trade. We have other markets besides Great Britain which are of considerable importance. We shipped last year to the British West Indies alone butter to the value of $127,790. We have trebled the shipments of butter to foreign countries since 1898, a very large quantity of which has gone to the West Indies.

By Mr. Wright (Renfrew):

Q. What shape did that butter go in?

A. Put up principally in hermetically sealed tins, something like this (sample tin shown). Then a quantity has been shipped in 50-lb. kegs.

By Mr. Wilson:

Q. Are those one-pound tins?

A. Yes; but other sizes are also used. We shipped some butter to the Orient, and I am given to understand that the Japanese are beginning to consume butter, and if that be true then there is a large market there, and a prospect that we may have a considerable trade with that country. We have increased our shipments to Japan from the government creameries of the Northwest Territories, which averaged about 2,000 pounds a year previous to 1903, to over 40,000 pounds in 1904. Then we have succeeded in getting back that trade in the Yukon which has been going to the United States, and we are told that if we can supply butter as we have been doing the last few years up there we shall capture that trade, and there is no reason why we should not.

DAIRY PROGRESS BY PROVINCES.

Just a word or two about our progress by provinces. The most marked progress in the production of butter and cheese has been made in the province of Qubec and I think I am safe in saying that at the present day the combined value of cheese and creamery butter is greater in Quebec than it is in Ontario.

By Mr. Maclaren:

Q. The great trouble down there is over weighing cheese. A great many shippers have the cheese tested and the weights tested in the cars. Up in the west we generally test it in the cars, and it is the final settlement. But here in Montreal they have all kinds of rows and fights over weights. Has that been adjusted satisfactorily to the people down there?

A. I do not know there is any difference in the manner in which the weights of the cheese from Quebec and those from Eastern Ontario are tested. There have been complaints. I have not had anything to do with that question.

Q. Have the government got a man there who settles these disputes?

A. No, no man for weighing.

Q. No talk of doing anything of the kind?

A. I have not heard any.

By Mr. Maclaren:

Q. With regard to the quality of the Quebec cheese, is the quality tested at the factory or at Montreal?

A. That is all according to the bargain betwee nthe buyer and the seller.

By Mr. Derbyshire:

Q. It may be at Montreal.

A. Quite a number at Montreal, but in some districts all the cheese is inspected at the point of shipment. It depends entirely upon the arrangements between the buyer and the seller.

APPENDIX No. 2

I was speaking of our progress by provinces, and had referred particularly to the province of Quebec. The province of Quebec has led for a good many years in the production of creamery butter, and I must say, because I suppose you want to know exactly what I think about these things, that it has not only led in the quantity of butter produced, but also in the quality. There is no doubt about that. This is partly owing to the fact that certain districts are devoting their attention almost exclusively to the manufacture of butter. The Eastern Townships have been known for many years as butter-producing districts, and I think they should stick to that. They have made a name for that product and are getting a premium for the reputation which they have won. Then there is a district in north-western Ontario, in the counties of Bruce and Grey, which is now developing into a butter section, and I would like to see them take up that industry there and make nothing but butter. Eastern Ontario is a cheese making district.

PROGRESS IN THE MARITIME PROVINCES.

The Maritime provinces are making some progress in dairying; not as much as their natural adaptation would allow them to make, but still they are making considerable progress; and they are able by their position and the direct means of communication to take advantage of a good market in the West Indies. Owing to the extremely dry weather which has prevailed in Prince Edward Island during the last two seasons, the production has fallen off, but only temporarily, I hope. Indeed, the drought has affected the production of dairy products throughout the whole of Nova Scotia as well as in Prince Edward Island.

Q. How far have they gone back?

A. I am not prepared to say, but I know there has been a falling off in that time.

Northern Alberta is a promising dairy district and I believe it will become a great dairying centre.

Q. To what part of Alberta do you allude?

A. To all that section beginning, say 40 miles north of Calgary and going as far north as settlement goes at the present time, at any rate. Dairying is not making any progress in the wheat growing districts, and never will under present conditions, because where a man can grow wheat successfully he is not a very enthusiastic dairyman as a rule.

Q. Do you attribute that to the fact of money being made more easily in growing wheat than in dairying.

A. Perhaps not that so much as that it is an easier and freer life. In wheat growing a man has several months in the year in which he is not tied down, whereas dairying ties him down every day in the year. But in northern Alberta they are making great progress in dairying. The creameries are successful and are turning out a good article of butter for which they are finding a market at good prices in British Columbia, the Yukon and the Orient. That market in British Columbia is a growing one and the local market also is a growing one. A large quantity is now required in the various parts of the North-west Territories where they are not producing enough for their own use. This year there will pobably be fifteen creameries in operation in northern Alberta. The lower mainland of British Columbia is developing as a dairy country, rather slowly and not like northern Alberta, owing to the difference in the country, but there are large stretches of country which are better adapted for dairying than for fruit growing, and the fruit growing is now being left more to the 'upper country,' which has the advantage of being nearer to the markets and is also a better fruit growing district. We may expect to hear that dairying is making considerable progress in that part of British Columbia and on Vancouver Island. There are reported to be fourteen creameries in that province.

By Mr. Jackson (Selkirk):

Q. I was in northern Alberta two years ago. I have a friend there and I believe that for the last two years he has not fed a mouthful to one of the animals in the

winter time, and you can imagine the advantage he has there for dairying. He has 200 head of stock. He is located about 125 miles south-east of Edmonton.

A. I may say that dairymen in Alberta were getting good prices for their products last year, the average price at the creamerise being 20·98 cents a pound.

By Mr. Wright (Renfrew):

Q. Have they a good enough water supply there for washing butter and making it?

A. There is no difficulty about water; they have good water there and they make first class butter.

IMPROVEMENT IN QUALITY.

A word or two about the improvement in the quality. There has been a steady improvement in the quality of dairy products. We hear at times something about the quality deteriorating and all that, but we forget that it is a matter of comparison very often—that certain districs may not make as much progress as other districts, so that they get a little behind. But looking back as a practical cheese and butter maker for many years, I say there has been a steady improvement in the quality of Canadian cheese and butter. We cannot judge altogether by the complaints we get, as a man is not so apt to find fault with the quality if he is making a little money out of the goods. It is when there is a declining market that we are apt to hear most complaints about the quality. We very often get a very wrong impression on that account.

We have been making great improvement in our cheese during the last year or two, and there has been less complaint about the 'heated' cheese than there was a few years back. The improvement of curing rooms and better transportation facilities are having a marked effect.

COOL CHEESE CURING ROOMS.

Before I conclude to-day's evidence, I want to say a word or two about the government cool cheese curing rooms. Let me point out first, that these central curing rooms were not established with a view of encouraging the general adoption of that system. The advantages of the cool curing of cheese had ben well known for several years. The cool curing rooms were intended simply to illustrate the advantages of cool curing, on a scale sufficiently large to put the work on a commercial basis. During the three years that the curing rooms have been in operation, a total of 119,832 boxes of cheese from seventy different factories have been received at the four curing rooms. This means that a large number of dairymen have had a direct interest in the results obtained, and the quantity of cheese has been sufficient to attract considerable attention from the trade and to make it a quotable feature of the markets. Cool-cured cheese are now frequently mentioned in the market reports as a distinct class or grade, for which the highest price is paid. If this work had been undertaken at the ordinary cheese factories, it would not have attracted nearly so much attention and would not have been as far-reaching in its results. We have specially qualified men in charge at these curing rooms, whose business it is to give full information to all inquirers and to keep the matter prominently before the dairymen of the country. When the cheese from these curing rooms have been shipped to the Old Country, we have been able, through our various agencies, to draw special attention to them and secure careful attention from the trade in Great Britain.

By Mr. Maclaren:

Q. With regard to the arrival of cheese and butter in the Old Country, they used to arrive and be left on the wharves and got into bad condition. Are there any improvements on those wharves now?

A. Yes. I intend to go into that fully.

APPENDIX No. 2

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
WEDNESDAY, March 29, 1905.

The Select Standing Committee on Agriculture and Colouization met here this day at 10 o'clock a.m., Mr. McKenzie (Bruce) presiding.

The CHAIRMAN.—I would ask Mr. Ruddick to continue his address.

IMPROVEMENT IN QUALITY OF CHEESE.

Mr. RUDDICK.—Mr. Chairman and gentlemen: When the Committee adjourned yesterday, I was discussing the progress in improvement of quality in our dairy products and I had referred briefly to the question of the cool curing of cheese and what effect it was having on the improvement of Canadian cheese. Now, I would like to read you just one letter on that point, from among many which I have received, and which covers much of what has been said by others. We secured at these cool curing rooms a number of cheese taken from the same vat of milk, one cured at ordinary temperatures and the other cured in the cool curing room. These cheese were marked so that they could be identified when they were sent across to merchants on the other side of the Atlantic. One lot was sent by Mr. Miller, of London, Ontario, to W. P. Sinclair & Co., whom he represents. The cheese were from the Woodstock curing room, and Messrs. Sinclair & Co. were asked to make a report on them. They wrote as follows:—

'We herewith hand you account of sales for 48 boxes of cheese sent to us by the government, through you, showing a credit balance of £73 15s. 9d.

'You will notice that we have made a higher price for the cool curing room cheese than for the ordinary cured; also the detailed weights of the cool cured cheese are much more satisfactory than the ordinary cured cheese.

'With reference to keeping qualities of the cheese, there is no doubt in our minds as to which process is the best. We would far rather have cheese cured on the system advocated by the government than the ordinary method now in use at the factories. Not only is the weight preserved and the condition better, but the flavour is very much more satisfactory. This is the general consensus of opinion of all the people in the trade who have inspected the cheese in our warehouse.'

The account sales show that the cured cool cheese sold for two shillings per cwt. (nearly half a cent a pound) more than the ordinary cured.

IMPROVEMENT IN QUALITY OF BUTTER.

In the matter of improving our creamery butter we have a much more difficult task than we have in connection with the cheese. Let me mention one point to show what I mean. If there is a defect in cheese it can be pointed out to the maker before it leaves the factory, and when a man knows that he is wrong he has made the first step towards improving. But you may take a package of butter when it is a week or even two weeks old and it may appear to be in first-class condition, but before it has reached the consumer, on the other side, it has gone off in flavour or developed some objectionable condition and is faulted on that account. Now, the maker never hears of that directly. He thinks his butter should give satisfaction, because it was in good condition when it left his hands. If the cheese is inferior it will show the defects at the time it is made, or very shortly after, and before it has left the cheese maker's hands; so you see the butter maker is at a disadvantage compared with the cheese maker in this respect. Butter deteriorates from the time it is made. The deterioration

is checked by proper methods of storage and so on, but it never improves. Cheese of course does improve within certain limits and under favourable conditions, for a good many months. Now, that is one of the difficulties we have to contend with in trying to improve the butter-making industry in this country. I may say, and I will not dwell on that point any longer,: that as far as I and my staff are concerned, we intend to give special attention to the butter-making branch of Canadian dairying in the future. We believe that the extension of our dairy trade must be very largely in the growth of the export of finest creamery butter; it is important that this branch should receive every attention.

By Mr. Blain:

Q. May I ask if it is possible to make as good butter upon a farm where they have well equipped dairy utensils, &c., as it is in a butter factory?

A. I think it is possible, and it very often is done. You will very often find private dairy butter which is fully equal in quality to creamery butter. The difference between creamery butter and dairy butter is, that on the average the creamery butter is very much superior and more uniform in quality.

GOVERNMENT CREAMERIES IN THE NORTH-WEST TERRITORIES.

Passing on, I wish to refer briefly to the government creameries in the North-west Territories. The industry is making first-rate progress in northern Alberta. In other sections the creameries are not growing, and there is a tendency to go out of dairying in some districts where wheat growing is more successful than it was a few years ago. The markets for this butter are now all in the west. Two years ago we had to export a considerable quantity to the Old Country to relieve the western market; but that market has grown so much within the last two years that there is not enough made now in the west to supply the local demand, in which I include British Columbia. Butter has been shipped west from Montreal during the past few months, and a few shipments have been made from New Zealand to Vancouver. The consumption is growing faster at present than the production is. Until two years ago there was none of this butter, except what was supplied to the North-west Mounted Police, going to the Yukon, but by persistent effort we were able to win back that trade which was lost to us through the short-sighted policy of some merchants who sent the veriest trash into that country when it was first opened. We succeeded in placing last year nearly 200,000 pounds in the Yukon, and they tell us if we can continue to supply butter of similar quality we will have the whole of that trade, which amounts to about half a million pounds a year.

Q. What part of Canada was that shipped from?

A. Alberta and Assiniboia; Alberta largely. Most of it is put up in tins like that which I now hold in my hand. Some are larger and hold four pounds instead of two pounds. This is a special tin for the Yukon trade and, as far as I know, it is the only part of the world in which it is used. The butter is put up in pound prints, wrapped in parchment paper and dropped into the tin. The top, as you will see, is soldered on and the tin is filled with brine. Then the cap is put on and hermetically sealed.

By Mr. Wright (Renfrew):

Q. It is lacquered after the butter goes in?

Q. The tin is lacquered at the shop where the tins are made, except at the end where it has to be soldered, where it is applied with a brush and air dried. We also use these round tins, in which the butter is packed solid without any brine and the cover is put on with a machine. All the tins are first coated inside with paraffin wax and then lined with parchment paper so as to protect the butter as much as possible. The greatest difficulty in tinned butter is to prevent the tin from getting a little rusty on the inside and thus discolouring the butter. These round tins go largely to Japan. As I told you yesterday, we shipped last year nearly 50,000 pounds, and when the war

is over I am given to understand there will be quite a large increase in the trade to Japan.

By Mr. Blain:

Q. How long will the butter remain in those tins and retain its flavour?

A. Well, you cannot depend on the butter retaining its flavour perfectly for any length of time; but it will keep better in tins than if exposed to the air. It should be kept at a low temperature the same as any other butter, but the difficulty is that most people who handle tinned butter treat it as they would tinned meat or vegetables.

By Mr. Wilson:

Q. If placed in any other package would it keep better?

A. I do not think so. It is hermetically sealed in these packages, and if they are filled as full as possible so that no air will be allowed to remain in the tins, it keeps better than any other package. We have put the following inscription on the tins:—

'Tinned butter even when made from pasteurized cream is not sterilized during the canning process like tinned meats or fruits. Its quality deteriorates unless it is kept at a low temperature. Under 36 Fahr. is desirable, and the colder the better.'

When I was down in Jamaica last winter, I inquired of one of the grocers there as to how long he kept tinned butter on the shelves of his shop. His answer was: 'sometimes a year.' The butter is sure to be stale under those conditions. But I doubt very much if these people would like really fresh butter, they are so accustomed to butter that is a little strong.

By Mr. Wright (Renfrew):

Q. Why cannot you send butter to the Yukon in the ordinary packages, it is such a cold country?

A. They do take some, the last shipments in the fall, in the ordinary package; but a great deal of what goes in at that time is intended for use in the early part of the following season. They do not want to take any butter in during the winter and so the demand of the trade is for tinned butter largely, although we did send a quantity last year in pound prints in the ordinary packages and I think that trade will be increased. They are getting over the idea that the butter must be in tins, because they have cold storage there now.

Q. And it is pretty cheap?

A. Well, they have mechanical refrigeration in Dawson City.

ALLEGED SALE OF ADULTERATED CANADIAN CHEESE.

I would like to give you one illustration of the value of our stringent dairy legislation. Many of the members of the Committee, no doubt, heard of what was called the Hastings Cheese Case last fall in the Old Country. The story in brief is this: A well-known cheese factory in western Ontario sold their October cheese to the firm of Thomas Ballantyne & Sons, Stratford. They kept the cheese in their cold storage warehouse all winter. In the spring, during the month of May, they shipped the cheese to Andrew Clement & Sons, of Glasgow and London. Messrs. Clement resold some of the cheese to a firm of grocers in Hastings, on the south-east coast of England. That was about the month of August. An inspector under the Food and Drugs Act came along one day and took a sample of this cheese, in the usual course, and handed it to the borough analyst for examination. The analyst pronounced it adulterated cheese, adulterated with 20 per cent of foreign fat. The grocers were summoned to appear before a magistrate and they appealed to the Grocers' Federation to help them out in the matter. Clement & Sons took it up with the Grocers' Federation and asked to be allowed to conduct the defence. They made such representations to the court that they succeeded in getting a postponement of about two months on the understanding that they were to get evidence from Canada as to how these cheese were made, and other facts. I received a request for full particulars and they got in touch with

the High Commissioner and our chief inspector, Mr. Grindley. The following memorandum was submitted:—

'With reference to the sale of Canadian cheese alleged to be adulterated with foreign fat on the find of the borough analyst of Hastings, England, I beg to submit the following statement:—

'1. The adulteration of all dairy products is strictly forbidden by law in Canada. Section 2 of the Dairy Products Act, 1893, reads as follows: "No person shall manufacture, or shall knowingly buy, sell, offer, expose or have in his possession for sale, any cheese manufactured from or by, the use of skimmed milk to which there has been added any fat which is foreign to such milk." A violation of this law has never been known.

'2. The adulteration of cheese with foreign fat can be accomplished only by adding the adulterant to the milk from which the cheese is to be manufactured. Adulteration of the cheese after manufacture is impossible.

'3. The process of making adulterated cheese requires special machinery—(*a*) to remove part or all of the butter-fat from the milk and (*b*) to mix the foreign fat with the skimmed milk.

'4. All Canadian cheese intended for export is made in factories where the milk from surrounding dairies is collected. These factories are public places, visited daily by a large number of persons who are thoroughly conversant with processes of legitimate cheese manufacture. As the apparatus necessary for and the materials used in the adulteration of cheese do not belong to the ordinary equipment of a cheese factory, they could not be introduced there, nor could the unusual manipulation of the milk take place, without scores of people being fully aware of what was going on.

'5. The dairy farmers and others interested in the trade have strong convictions to the effect that Canadian dairy products must be kept pure and above suspicion in every respect. As the laws are well known, any violation would be at once reported.

'6. It is absolutely certain that no adulterated cheese is made in Canada.

'7. Finally, these cheese from which the sample was taken at Hastings, which were said to contain foreign fat, were manufactured in one of the best factories of western Ontario. There are hundreds of reliable men who could testify that no "filled" or adulterated cheese was ever made in this factory. Affidavits from a number of those most directly connected with the factory, including the cheese-maker, the assistant cheese-maker, the salesman and members of the firm of Thos. Ballantyne & Sons, who bought the cheese and shipped to A. Clement & Sons, have been procured and are forwarded herewith.

'(Signed) J. A. RUDDICK
'Chief of Dairy Division.

'Department of Agriculture,
'Ottawa, October 15, 1904.'

Another sample of the cheese was sent to Somerset House and was pronounced to be pure by the government analyst. The result was that in the end the grocers were acquitted. After that stage was reached we were able to advertise the fact all over Great Britain that Canadian dairy products are pure, and we have had column after column of articles in the newspapers commending the position of Canada in regard to such matters. And so, what threatened to be a serious thing for the Canadian cheese at one time, turned out to be one of the best advertisements we have ever had.

By Mr. Broder:

Q. Was this cheese being put on the market as Canadian cheese?

A. It was Canadian cheese made at the Molesworth factory in western Ontario. The analyst was mistaken; it was not adulterated.

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A COW CENSUS.

Acting under instructions from the Honourable the Minister of Agriculture, the dairy division announced early last spring that it would undertake to test for one year the milk of individual cows belonging to farmers in the district around Cowansville, Que., free of cost to the owners. The object of this work was to get data for the farmers of Canada showing the difference in productiveness of the individual herds under different management, &c., all with a view of showing the possibilities of increasing the profits from milk production by paying more attention to the selection, care and feeding of dairy stock.

In a district about 15 miles square, 72 farmers took samples under instructions issued by the dairy division. Each man was furnished with a box of sample bottles and a small dipper. Blank forms were supplied for recording weights of milk and details of feed. When samples of six different milkings during the month had been taken, the boxes were sent into the government cool cheese curing room at Cowansville. Samples were taken on the 3rd, 13th and 23rd of each month. As soon as the testing was finished the bottles were returned with preservative in each for the next month's samples, with a note of the percentage of fat in each sample tested, and the calculated yield of pounds of butter-fat.

The records show remarkable variations in the yield of milk and butter from these cows, and the information which was collected has awakened a great interest among the farmers in that district and in other districts where the information is being disseminated. It is quite clear that it is along this line, of improvement in the productiveness of the dairy herds, that the greatest possibilities are to be found for increasing the profits from dairy farming. The average yield of milk per cow in Canada is estimated to be about 3,000 pounds a year. For the sake of comparison let me give you a few figures from the Danish records on this point. I am able to quote from a report made by Mr. C. Marker, one of my staff, a Dane, who visited his native country last winter. The farmers there have organized associations for the purpose of testing the productiveness of their cows. They started in 1895 with two associations representing 834 cows, and in 1904 there were 402 of these associations testing 155,287 cows. Now the point I want to make is that the lowest record I find in any of these Danish herds is over 3,300 lbs. per cow per year. It may be of interest to read a table which I have here. This is the record of 1,172 herds.

Yield from	2	herds averaged	3,300— 4,400	lbs.	annually.
"	21	"	4,400— 5,500	"	"
"	135	"	5,500— 6,600	"	"
"	386	"	6,600— 7,700	"	"
"	438	"	7,700— 8,800	"	"
"	158	"	8,800— 9,900	"	"
"	27	"	9,900—11,000	"	"
"	5	"	over 11,000	"	"
	1,172				

Now, these are the ordinary working herds of the country, and not special herds tested for advance registration, or anything of that kind. If the Danes find it profitable to go into this matter of testing cows, it certainly should be profitable to the farmers of Canada, whose cows average only about 3,000 lbs. per cow. You will see there is a great margin for improvement.

By Mr. Miller:

Q. 3,000 lbs. of milk per cow?

A. Yes, that is about as near as it can be got at.

By Mr. Wright (Renfrew):

Q. Were they grade cows?

A. They are mostly the Red Danish cows. In those 1,172 herds the test ran from 3 per cent to 4·01 per cent.

Q. What cow do you say it is ?

A. The Red Danish cow.

By Mr. Derbyshire :

Q. You have cows in this country that do as well as that ?

A. We have individual cases.

By Mr. Wright (Renfrew) :

Q. Not many ?

A. Not many as a rule. There are not many herds which go over 5,000 lbs. per year per cow, which is about the lowest records the Danes show.

Q. I would like to see the herd that gives over 5,000 lbs. They are pretty scarce.

A. Yes. Now, I will leave that, for it finishes what I have to say in regard to the dairy division. We now come according to the order paper, to the fruit division.

By Mr. Wilson :

Q. Have you any of the samples of cheese that you were talking about yesterday ?

A. Yes, but I was going to leave that until the last.

Mr. Chairman, if it meets with the favour of the Committee, I would suggest that the chief of the fruit division, Mr. A. McNeill, be asked to come before the Committee and give evidence on the work of that division. I am sure you will be glad to hear what he has to say, for he is familiar with the details of the work. It is really only within the last three months that I have had anything to do with the administration of this division. I will, therefore, pass on to the cold storage division.

BONUSES FOR CREAMERY COLD STORAGE.

Now, to begin at the beginning, let me say in regard to bonuses for cold storage at creameries, that altogether 270 creameries have received the full bonus of $100; 165 creameries have received the first and second instalments, making $75; 126 creameries have received only the first instalment of $50. That is to say, 561 cold storages at creameries have been approved for the first payment. Many of them have been held up for second and third payments because the requirements as to temperature, management, &c., have not been fulfilled. Out of a total of 879 applications for the bonus, 318 have been refused, as not being up to the standard required.

By Mr. Blain :

Q. What are the requirements ?

A. They have to build according to plans that are furnished them, maintain a reasonably low temperature for the butter during the season, and send in reports of the temperature. Those are, briefly, the requirements.

ICED BUTTER CAR SERVICE.

Then the iced butter car service comes next. Iced cars were running last year on 49 different routes, converging on Montreal. The total number of cars on all routes for the season was 1,014, that is putting all these routes together. Of the foregoing number 481 cars were run without any subsidy. The government guarantees two-thirds of the earnings of a minimum car plus $4 for icing. If the earnings exceed that amount, then there is no claim on the department, and if there is more butter than one car will accommodate on the route, the service is considered to be self-sus-

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taining. There were four routes on which all the cars were self-sustaining. This service was in operation from May 16 to October 22.

ICED CHEESE CARS.

The Department of Agriculture agreed to pay $5 per car for icing a total of 105 cars per week, distributed among the different railways, on a mileage basis, from July 1 to September 10. These cars, up to the number stated, were available on application from shippers for the transportation of cheese in carloads, minimum 24,000 pounds, consigned to Montreal.

COLD STORAGE ON STEAMSHIPS.

There were 39 steamships having cold storage accommodation that sailed from Montreal in 1904. There were altogether some 20 steamers in the regular service that had no cold storage. The total cold storage space on the 39 steamships is 735,670 cubic feet. There were 197 sailings of these steamships with cold storage space aggregating 3,610,071 cubic feet. There were 30 sailings of cold storage steamers where the cold storage was not used at all, and there were ten sailings when the cold storage was used to its full capacity. These figures do not include the South African service, which was a monthly one, with cold storage on all the steamers.

By Mr. Broder:

Q. Last year the report of the Minister of Agriculture spoke of butter being landed on the wharf at Glasgow and being neglected. Has nothing been done to cure that?

A. If you will permit me I will bring that up later; I have a note on that point. With your permission, Mr. Chairman, I would like to file a statement here which gives the names of all the steamers and the ports to which they sailed, with the cubic capacity of the cold storage chambers and the number of chambers on each. It would take some time to read, but it can be inserted in the report.

NAMES OF STEAMSHIPS SAILING FROM MONTREAL IN 1904 HAVING COLD STORAGE.

Allan Line.

To Liverpool—

Name of Steamer.	Number of Chambers.	Capacity in Cubic Feet.
Tunisian	4	19,826
Bavarian	4	19,810
Parisian	1	4,288
Ionian	2	5,300
*Pretorian	2	14,266

*This steamer made only two sailings to Liverpool.

To London—

Name of Steamer.	Number of Chambers.	Capacity in Cubic Feet.
*Hibernian	..	8,166
Hungarian	3	7,994
Ontarian	5	13,349

*This steamer took only one cargo out this season.

To Glasgow—

Name of Steamer.	Number of Chambers.	Capacity in Cubic Feet.
Corinthian	3	10,162
Sardinian	2	8,600
Sicilian	3	14,700
Pretorian	2	14,266
Pomeranian	1	10,000

Dominion Line.

To Liverpool—

Name of Steamer.	Number of Chambers.	Capacity in Cubic Feet.
Dominion	4	41,000
Canada	4	47,000
Kensington	1	26,560
Southwark	1	25,960
Vancouver	4	10,593

To Bristol—

Manxman	3	51,000
Turcoman	4	33,000
Englishman	2	23,216

Canadian Pacific Line.

To Liverpool—

Name of Steamer.	Number of Chambers.	Capacity in Cubic Feet.
Lake Erie	4	24,000

To London—

Montrose	4	28,154

To Bristol—

Montcalm	1	15,340
Monteagle	3	24,700
Montfort	3	24,700

Donaldson Line.

To Glasgow—

Name of Steamer.	Number of Chambers.	Capacity in Cubic Feet.
Marina	4	11,000
Parthenia	4	16,000
Athenia	4	16,100
Lakonia	4	14,526
Kastalia	4	13,493

Thomson Line.

To London—

Name of Steamer.	Number of Chambers.	Capacity in Cubic Feet.
Cervona	4	14,614
Devona	3	22,558
Hurona	4	20,889
Iona	4	20,521
Kildona	3	14,009

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Manchester Line.

To Manchester—

Name of Steamer.	Number of Chambers.	Capacity in Cubic Feet.
Manchester City	2	10,000
Manchester Commerce	2	10,000
Manchester Trader	2	6,000

Leyland Line.

To London—

Name of Steamer.	Number of Chambers.	Capacity in Cubic Feet.
Virginian	2	20,000

Combined cold storage space of various steamships sailing to the various ports in 1904:

	Number of Steamers.	Cubic Feet.
Manchester	13	26,000
Bristol	16	171,956
Glasgow	9	128,852
London	10	170,254
Liverpool	11	233,608
Totals	39	735,670

COOLED AIR SERVICE, 1904.

The following steamships with cooled air service sailed from the port of Montreal during the season of 1904:—

	Cubic Feet Space.
Dominion Line—	
Southwark	41,480
Canada	47,000
Kensington	42,120
Allan Line—	
Pomeranian	14,746
Thomson Line—	
Iona	34,000
Cervona	50,000
Kildona	50,000
Hurona	48,000
Devona	56,000
Canadian Pacific Line—	
Montcalm	18,688
Total space	402,034

There were 45 sailings of these steamers, making the total available space for the season, 2,013,340 cubic feet, distributed as follows:—

	Cubic Feet.
To Liverpool	780,000
To London	1,140,000
To Bristol	93,340
	2,013,340

'Cooled air' was used in nearly every sailing, but not to its full capacity. During the warm weather the full capacity was used to London.

IMPROVEMENT IN OCEAN SERVICES.

Now in connection with cold storage on steamships, I would just like to say that since I was before the Committee yesterday Mr. W. I. Gear, vice-president of the Robert Reford Company, called at my office and gave me an interesting piece of information. It was to this effect, that the steamships of the Thomson Line, London service, will in their future sailings go direct to what is known as Surrey commercial dock instead of to Tilbury dock. Surrey commercial dock is located within two miles of Tooley street, which is the great centre of the cheese trade in London. Heretofore all the cheese carried by these steamships has been discharged at the Tilbury docks, 35 miles from Tooley street, and railed from that point to Commercial road station, and thence carried to its destination. It had to be handled five times in transit, resulting in large damage to the boxes and exposure to heat. Not only will these boats now go to Surrey commercial dock, but the cheese and butter will be discharged direct from the ship into a cold storage and cooled air warehouse on which £80,000 is being spent this year. The lack of such facilities has been a great drawback in the past. I thought you would be glad to know of this improvement in the handling of our cheese and butter at the port of London.

By Mr. Wright (Renfrew) :

Q. That applies to London only?
A. Yes, it applies just to London.

By Mr. Finlay :

Q. Does the cold storage belong to the government?
A. No, it belongs to the dock company.

FRUIT IN COLD STORAGE AND COOLED AIR.

The fruit carried in cold storage and cooled air in 1904 was as follows:—

	Cold Storage.	Cooled Air.
Apples in barrels	4,067	1,268
Apples in boxes	1,503	438
Canadian pears (boxes)	967	...
American pears and plums (boxes)	12,912	...
Totals	19,449	1,706

CHEESE AND MEATS IN COOLED AIR.

I should have mentioned in connection with cooled air service for cheese that during 1904 there were 102,238 boxes of cheese carried in the cooled air, as against only 43,000 in 1903. There is an increase in the demand for this service, and that demand, I am glad to be able to tell you, comes largely from the other side. They are beginning to appreciate the value of having cheese carried that way. In 1904, 18,072 cases of meat were shipped in cool air. The packers are using cooled air largely for the shipment of mild cured bacon.

EXTENSION OF MARKETS DIVISION.

Inspection of perishable products in transit.

This division is charged, among other things, with the supervision and inspection of all cold storage services at Montreal; to see that the refrigerator cars have

been properly iced and cleaned, and to take note of the number of packages in each car; to see that they are loaded properly, &c. Last year an inspector visited many of the creameries, taking the temperature of the butter in the cold storage room, also at the stations where it was loaded on the cars, marking the packages in order to have them tested again at Montreal for the purpose of showing up the weak points in the handling of butter. In addition to these inspectors there are other men located at Montreal who watch the laoding of all cargoes of farm products, taking notes of the condition in which the goods are delivered at the wharf, where they are stowed in the ship; placing thermographs in the cold storage and cooled air chambers, and generally getting information regarding the handling of this produce. I have here in my hand a sample of these reports. This is a report on SS 'Parisian' which arrived at Liverpool on October 23. Now all these reports give a description of the ship, of how it is ventilated, what the refrigerators contain, &c. There is also a detailed report on the cheese and butter in each cargo, the thermograph record, a record of the actual butter temperatures at different stages, notes on the eggs and bacon, fruit, &c. Then we have a full report on the same cargo from the port of discharge which gives us complete information as to how the produce is carried. Before this work of inspection was inaugurated, when there was any complaint about the condition of produce arriving on the other side, the steamship agents put the blame on the railroads, or on somebody else. There was no way of proving anything to the contrary. But now we have specific information as to the condition in which goods are delivered to the steamship, and of the condition in which they are delivered on the docks in the Old Country, so that if there is any disparagement between the two reports we know where the blame belongs. I can assure you that this inspection and the resulting publicity has made a great improvement in the loading and stowing of butter, cheese and apples, and the ventilation of cargo space for such goods as require ventilation.

By Mr. Wright (Renfrew):

Q. I would like to ask you if there is any arrangement whereby we can protect ourselves in this country against the railway companies? Just to give you a case in point. I went to our railway station not long ago when we were sending a quantity of butter to Kingston. There was a whole mass of hides in one end of the car, and the odour from these hides was not the pleasantest thing in the world. Yet they were actually putting our nice creamery butter in the other end of the car, and afterwards closing the doors and leaving the butter closed up in that car with the hides, which of course would not be calculated to improve its quality or flavour. Now is there any law under which we can protect ourselves against the railway in a case like that?

A. I am not a lawyer, and I would not like to answer that question. But I should think that if your butter was depreciated you would have an action for damages; but as I say, I am not a lawyer.

By Mr. Avery:

Q. The railway company might say you did not have any damage,—that you had the flavour in the butter?

A. I want to make one point about this work of inspection. You understand that these inspectors have no legal status whatever. I suppose the shipping companies could, if they wished to do so, refuse them admission to the docks and ships. I am glad to say, however, that to-day the importance of this work is recognized by the shipping people, and by everybody connected with the trade, and it is now regarded as an established part of our transportation system. The inspectors are given every facility for carrying on their work. No objection is raised to their getting information, notwithstanding the fact that they have had to report against the shipping companies rather severely at times, in order to bring about changes that were necessary.

By Mr. Broder:

Q. The inspectors have no authority to act, but they report the conditions as they find them?

A. Yes, and we publish the information and accomplish our object in that way. A great improvement has been effected in the manner of loading and unloading cheese. Formerly the cheese were mostly lifted from the dock to the ship's hold, or *vice versa,* in a net caught up at the four corners, so that the boxes were jammed together hard enough to break many of them. What is known as the platform sling is now much used with a great saving to the boxes. One of the Montreal shipping firms has secured control of a cheese 'dropper,' which takes the cheese at the deck and drops them into the deepest hold, or ''tween decks,' without the slightest jar or concussion. One improvement suggests others.

DELAYS IN REMOVING BUTTER FROM DOCKS IN GREAT BRITAIN.

Now, then, Mr. Broder asked me about the delay in the removal of butter from the docks on the other side of the Atlantic. This delay which he speaks of was first noticed by our inspectors in 1903, particularly at Liverpool and Glasgow. Representations were made to the Mersey Docks and Harbour Board and the Liverpool Provision Trades Association, Ltd., and the information was laid before the Produce Merchants' Association of Montreal. It was shown how injurious this was to Canadian butter, to have it remain on the quay in some cases as much as nine days before it was removed. There was not very much improvement made in 1904, so the inspectors were instructed to make a careful report as to the delays, to take the names of the consignees, the dates of the arrivals, and the dates of the discharge and removal of the different lots of butter from the docks, &c. Then the matter was again laid before the responsible parties, and the information was given to the Montreal Produce Merchants' Association. The members of this association are very much interested in this question, because claims for inferior quality which are presented after the butter reaches Great Britain come back on them. One of the Montreal merchants wrote me the other day saying, 'I am going to England, and I wish you would give me a copy of that statement that I may take it with me and thresh this question out when I get over there.'

Perhaps you will allow me to read one letter which expresses the view of the department. It is as follows:—

OTTAWA, February 21, 1905.

MILES KIRK BURTON, Esq.,
General Manager, the Mersey Docks and Harbour Board,
Liverpool, England.

DEAR SIR,—Doubtless you have seen the correspondence that appeared recently in the Liverpool *Journal of Commerce* relative to the length of time Canadian butter ex-steamship refrigerators, is allowed to remain on the Liverpool docks before it is removed by the consignees, and I believe that you have also had before you the statements prepared by our Mr. Grindley, which gave complete details of the landing and delivery dates of Canadian butter at Liverpool during the season of 1904. Assuming, therefore, that you are conversant with the true state of affairs at Liverpool, I beg to call your attention to the position of the Canadian Department of Agriculture in this matter. For several years past the dairy branch of the department has been bending its energies towards the development of our butter-making industry, not only by educational work at the creameries, but also by the payment of substantial sums of money in the shape of bonuses, subsidies, &c., for the purpose of providing cold storage in the creameries, a refrigerator car service on the railways, and efficient cold storage transportation on the steamships plying between Canadian and British ports. As a result of these efforts our butter is now kept at a fairly low temperature from the time it is made until it reaches the British docks. Now, in order to reap the full advantage of all the care taken throughout the various transportation stages, it is obvious that the butter should be cold stored immediately after it has been discharged from the steam-

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ship, and where this is not done the efforts of the Canadian government, to say nothing of the money that has been spent, are rendered nugatory. This department is therefore deeply concerned over the uncalled for delays that occur in Liverpool in connection with the removal of Canadian butter from the docks, and is most anxious to see a remedy provided. This would be done very effectively if your board would adopt the regulation in force at other English ports, which provides that all butter not removed within 24 hours from the time of discharge shall be placed in cold storage by the dock company at consignee's expense. The department does not know the position of your board in this matter, and we shall be greatly obliged if you will favour us with an expression of your views.

In conclusion, I may say that if by spring no attempt has been made to ensure proper deliveries at Liverpool, the department will publish, in the form of a bulletin, all the information we have gathered regarding the methods of handling butter at the leading British ports, so that our shippers will be fully cognizant of the facts. Those who ship butter through the port of Liverpool will then do so with full knowledge that their butter is liable to receive injury after it is landed on the quays, to detention for several days in a warehouse where it is exposed to a warm temperature.

Faithfully yours,

(Sgd.) W. W. MOORE,
Chief, Markets Division.

By Mr. Wright (Renfrew):

Q. I would like to ask one question with reference to the inspection of butter. Now, when I was in Liverpool—I saw this myself—they would go to a package of butter and they would not take the cover off, but they would take an auger and bore a hole in the side and then stick a tryer through to see if there was any tobacco being smuggled in these packages. I went and asked if that kind of thing was going to continue, and the inspector told me that so long as the government told him to do that he would do it. That is not a nice thing for our butter.

A. I never heard of that.

Q. Has that ever been brought to your notice before?

A. No, not that kind of inspection. That is conducted by the Customs Department.

Q. Well, he seemed to be putting in a good deal of work about it anyway. It is done at the warehouse where the butter is stored after leaving the dock.

A. I shall make inquiries from our inspectors over there to see if that sort of thing is continued. I have no personal knowledge of it.

Q. They bore through the sides of the box with an auger and then put their tryer through.

By Mr. Cochrane:

Q. Mr. Ruddick made the statement that one of the large concerns over there, in England, has provided facilities for the proper cold storage of our produce landing there. That will force the other steamship companies to do the same, will it not?

A. I am informed by Gear, the vice-president of the Robert Reford Company, that £80,000 is being spent on a warehouse that was practically unused, at the Surrey Commercial Dock, to put in cold storage and cooled air, and that the Thomson line of steamers will go direct to that dock instead of unloading at the Tilbury dock, 35 miles down the river. There is also a large increase in the cold storage facilities at Southampton. I understand that to-day a butcher in London can send his meat van on a truck to Southampton, and if he sends his order before 5 o'clock in the evening, that van is back loaded with meat at 9 o'clock the next morning and all he has to do is to put his horse to it and start delivery at once.

By Mr. Broder:

Q. You have to be very careful not to antagonize the business interests over there or you will do Canadian trade a great deal of harm.

By Mr. Wright (Renfrew):

Q. If there is a demand for it, cold storage facilities will increase.

A. There is a very great increase in interest in cold storage among the cheese and butter merchants in Great Britain, and advantage is being taken of the increased facilities. The Thomson line boats to which I referred handle a very large quantity of cheese and butter, and of course the agents hope to take trade away from the other ports by reason of the improved facilities at London. If the trade leaves the other ports, then those interested in these ports will very soon provide similar facilities.

INSPECTION WORK CREATES AN INTEREST.

I shall finish what I have to say about the inspection carried on by the extension of markets division, by pointing out this fact, that this work, since it was inaugurated, has awakened an interest in these questions. Before there was any inspection of cargoes the shippers took very little interest in the matter of whether their cheese and butter was properly handled or not. They got no reports and had no means of finding out where the defects in transportation were. They accepted the service which was offered, with very little criticism. It is entirely different to-day. One report was sent out last spring about a certain steamer not having landed her cheese in good condition on the other side, and her agents were unable to get any cheese for several trips after that. A few years ago, and before the merchants were able to get this information, they would not have paid any attention to the matter and the chances are they would never have heard about it.

WHY CERTAIN KINDS OF CHEESE ARE NOT MADE IN CANADA.

I do not know that I have anything more to add along this line; but I have these samples of cheese, which I was requested to bring before the committee; if you are ready for it, I will now show them. Before doing that, however, I want to say a word or two on cheese-making. I am often asked why Canada cannot produce the cheese that France and Holland and some of those other European countries do. There is this fundamental difference between the cheese which we make in this country, and which we call cheddar, and all those soft or blue-moulded varieties. Cheddar is practically the only variety of cheese that is made on what is known as the acid system: that is, there is a certain amount of acidity developed in the milk before the cheese-making process begins. This is not the case with these other kinds of cheese, and I might mention about 150 different kinds made in various parts of the world. All these soft kinds, as far as I know, are made by what is called the sweet curd process; the milk must be very sweet, and in some cases they must have new milk, just from the cow. They have full control of the milk on the farms where these cheese are made, and can keep it very much sweeter than we can where the milk is delivered to factories as it is in our system. That is why the factory system has grown in this country, because we make cheddar cheese. We cannot successfully make these soft kinds of cheese on the factory system.

By Mr. Cochrane:

Q. In what country that is occupied is there such a large area of land far exceeding the areas occupied by the farmers of Canada?

A. I suppose that Russia and Siberia have large areas. They used to make some cheddar cheese in Russia, but they do not make very much now; they make more butter. Some twenty years ago I gave instructions to a Russian who came here to learn our system of cheese-making, and he told me that his father had been running a factory on much the same system as ours. The famous Swiss cheese is made in factories to some extent. There is a colony of Swiss in Wisconsin who have made quite a success of its manufacture, but they have to adopt special means to get the milk very sweet.

APPENDIX No. 2

COATING CHEESE WITH PARAFFIN WAX.

By Mr. Maclaren:

Q. I want to ask with regard to the paraffining of cheese, what information have you to give us from your last year's experience? There has been a lot of discussion in the country; some favour it and some object to it. I would like any information you have in regard to the matter.

A. The practice of coating cheese with paraffin wax has been pretty thoroughly tried at the government cool curing room during the past three seasons, although it is not, as some seem to suppose, a necessary part of the cool curing, and should not be confused with it. The effect of 'waxing' the cheese is to prevent the growth of mould and to preserve the moisture in the cheese. The result is that paraffined cheese do not lose weight except very slightly. It follows also that if the cheese has no more than sufficient moisture to give it the right texture at the time it is 'waxed' the quality is also preserved, because a cheese which becomes too dry is very unsatisfactory.

The wax should not be applied until the cheese are ten days or a fortnight old, which gives them time to dry out on the surface. Cheese with an excess of moisture or those which are to be exposed to ordinary summer temperatures, should not be paraffined.

The practice is not yet recommended for general adoption, because of the prejudice against it which still exists with a section of the British trade, especially among the retailers. Certain Canadian exporters have even refused to purchase paraffined cheese, but it is worthy of note that some of these same exporters before the close of last season were paying a premium for cheese which were paraffined. Many of the objections raised against paraffining are quite groundless and will therefore disappear in time.

The most serious objection comes from the grocers, who complain of the loss of weight in stripping the cloths from the cheese, and that the paraffined cheese shrink excessively when being cut up on the counter. In order to get some information on this point the following tests were made:—

COMPARATIVE SHRINKAGE OF PARAFFINED AND UNPARAFFINED CHEESE AFTER 'STRIPPING' AND CUTTING.

TEST No. I.

Date Weighed.	Cool Cured, Paraffined.		Ordinary Cured, Unparaffined.	
	Lbs.	Oz.	Lbs.	Oz.
July 14, green weight	79	12	77	2
August 18	79	4	75	4
" 18, after stripping and cutting	78	12	75	0
" 20	78	8	74	12
Loss in stripping	0	8	0	4
" 2 days after stripping	0	4	0	4

TEST No. II.

Date Weighed.	Cool Cured, Paraffined.		Ordinary Cured, Unparaffined.	
	Lbs.	Oz.	Lbs.	Oz.
October, 26	77	6	77	10
" 26, after stripping and cutting	76	12	76	4
" 30	76	3	76	14
Loss in stripping	0	10	0	6
" 2 days after stripping	0	9	0	6

NOTE.—The cheese in No. 2 test were made on May 27 and were, therefore, five months old when stripped. The two cheese *in both* tests were made from the same vat of milk.

There is, of course, an extra loss of weight in stripping a paraffined cheese, equal to the quantity of wax adhering to it. This need not be more than 4 or 5 ounces. If the grocer has a paraffined cheese in his possession a week before it is cut, he will gain more in the saving of shrinkage than is lost in the stripping of the cheese, or in the shrinkage afterwards. When these things are better understood and the advantages of paraffining are fully realized, the objections now raised should be more than offset. I say without hesitation it has no effect whatever on the quality of the cheese other than that it retains the moisture and thus preserves the 'meaty' texture of the cheese. It does not affect the flavour in any way.

By Mr. Wilson:

Q. If there is too much moisture would it spoil the cheese?

A. Yes; if there is too much moisture the cheese will be soft and mushy.

The following letters and extracts in reference to paraffined cheese have been received:—

Messrs. A. A. Ayer & Co., Montreal, one of the largest cheese and butter merchants in the world, write under the date September 23, 1904:

'It seems to us that they are coming round to favour the paraffining of cheese, but they are very stubborn in acknowledging that it has any benefits. The people who had them last year and had to carry them through bad markets, however, discovered that it saved them a great deal in weight, and also preserved the quality.'

From Messrs. A. Clement & Sons, Glasgow, September 28, 1904:

'Paraffining in some cases is an improvement when properly applied on well-made, close-textured cheese, but does harm on mushy, soft and acidy cheese.'

From A. W. Grant, Montreal:

'I am strongly in favour of cool curing and waxing.'

From James Alexander, Montreal, May 12, 1904:

'*Re* paraffined cheese. My own candid opinion is that paraffining cheese improves them, particularly if they are going to be held and shipped in the winter. I have never yet inspected paraffined and unparaffined under similar conditions without the preference always being in favour of the former, not only the saving of weights, but quality as well.'

From D. A. McPherson & Co., Montreal, May 16, 1904:—

'Our Mr. McPherson, having returned from England Saturday, hastens to answer your correspondence regarding paraffined cheese. We offer the opinion that England is not so prejudiced against this practice as they were at the beginning, and think, in the course of a year or so, if the practice is kept up and increased, that they will rather approve than disapprove of the same.'

By Mr. Maclaren:

Q. Have you any letters or opinions from dealers this spring?

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A. No. I haven't anything from them yet, as they have only just departed on their annual trip to Great Britain.

From A. W. Grant, Montreal, May 18, 1904:

'In reply to yours of the 11th instant, I may say that personally I am strongly in favour of waxed cheese, but some of the largest dealers in London and Bristol are very much against it. They state that the retailers complain that the cheese shrink very much more than other cheese when cut.'

From Lovell & Christmas, Montreal, May 23, 1904:

'We have your letter of the 11th instant, and we may say that so far as our personal experience goes, we would be in favour of paraffining all cheese that are held in refrigerators for any length of time, but on cheese that go quickly into consumption we doubt if extra trouble and expense is sufficiently remunerative. We have no unfavourable prejudices ourselves, but some of the people to whom we sell in England are not favourable to paraffining cheese, and will not buy them until a very substantial reduction is made to cover loss of weight by stripping and what they claim is unusual shrinkage after cheese are placed on the counter. Whether this objection will be overcome after the importer becomes more familiar with them we cannot say, but in the meantime we find some trouble in disposing of them, and we are therefore not urging the adoption of this system.'

By Mr. Cochrane :

Q. Is it very important for the cheesemaker to know what is going to be done with his cheese?

A. Yes. You will allow me to say this? I would not recommend any cheesemaker to adopt the process at the present time. We will continue it in connection with our work at the curing rooms for another year, and I think by the end of that time it will be pretty well accepted. There has not been any real objection raised to the process. One man says the cheese are heated, another claims they are not cured, and there are all kinds of similar objections. There would not be any advantage in paraffining cheese which are kept in the ordinary curing rooms, where the temperature runs up to 70 degrees and over, because when the cheese are heated and the fat begins to exude, the paraffin coating will crack and scale off.

Q. Are the cheesemakers paraffining much?

A. No; not in Canada. Messrs. C. W. Riley & Co., large exporters of Ingersoll, Ont., have 'waxed" all the cheese taken into their store since August, 1902. McLaren Bros. also wax their cheese. The practice of paraffining cheese is quite general in the United States. I mention these facts, not to encourage the use of paraffin wax among the factories at present, but to show that it is more than a fad and is important enough to deserve the attention which we have given it.

COOL CURING AT FACTORIES RECOMMENDED.

Q. Is there some method by which a cheap ordinary curing room can be provided. If you will allow me, I think that will be a very important thing under the present conditions, because I cannot see how one of these large curing rooms can be operated in an ordinary section of the country?

A. I spoke of that yesterday. I said that we do not advocate or do not believe that central cool curing rooms will ever be adopted to any extent; their use is as an illustration. We are encouraging the factories themselves to provide the necessary equipment, and a great many have done so. It can be done at an expense of $400 to $1,000, according to the size of the factory.

By Mr. Derbyshire :

Q. A factory that will provide a cool curing room will find that it will pay for itself in a year in the saving it will make in the weight of the cheese. Is not that so?

A. It will make a great saving; about one and a half per cent of the weight of the cheese.

By Mr. Cochrane :

Q. Have you any information to guide those who intend providing a cool curirng room?

A. I have plans prepared with all the information ready to send forward to any factory that asks for it.

If any private factory had undertaken to paraffin cheese a year or two ago, they would have been obliged to stop it at once, because of the prejudice against it. There was scarcely a man in the trade that was in favour of it at the beginning. My knowledge of cheese-making enabled me to form an independent judgment in the matter, and I was convinced that, properly carried out, it was a good thing; and we were able, through these cool curing rooms, to overcome practically all that prejudice. The private factory could not have done that.

SAMPLES OF FANCY VARIETIES OF CHEESE.

I am not sure what the object of the members of the committee was in asking me to bring these specimens of different varieties of cheese here to-day, but I am very glad to be able to do it, and if you desire it I shall briefly describe them. This (producing sample) is the 'Edam' cheese of which I spoke, and which is made in Holland. There is quite a trade in making these 'Cannonball' cheese, which are shipped in large numbers to tropical countries. For this trade they are often made partly of skim-milk so as to stand the heat better. It is a cheese which is a good deal like dry, crumbly Cheddar, and has something of the flavour of Cheddar cheese, with an excess of salt.

Here is a piece of real English Stilton. This is one of the blue mouldy varieties. This class of cheese would not be fit to eat without the blue mold. When it is first made it is sour and acidy, but the mould feeds on the acid and it disappears and the cheese becomes mellow.

Now there is a piece of 'Gruyere' or Swiss cheese. This is the kind of cheese which Mark Twain once ordered when he was abroad. The waiter brought him an empty plate and knife. Mark asked where the cheese was. The waiter replied, 'My dear sir, your cut came opposite one of the holes.' This cheese is not made in Canada.

Here is a sample of cheese (sample produced) that is made at the Trappist monastery at Oka, on the Ottawa river. It is a very delicious cheese. It has a little of the flavour of Limburger on the outside.

By Mr. Maclaren:

Q. How does it keep?

A. It keeps very well.

Q. How is it kept?

A. It is kept cool.

By Mr. Wilson:

Q. How do they salt that cheese?

A. It is salted after it is made. Even the Gruyere cheese, which sometimes weigh 200 or 300 pounds, are salted in that manner.

By Mr. Broder:

Q. A dry process?

A. Yes. This Roquefort cheese is made in France from ewe's milk. The farmers make the cheese and sell them when new to a company which cures the cheese in large caves, situated near the village of Roquefort.

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By Mr. Derbyshire:

Q. You have not any Italian goat milk cheese?

A. No. That blue mould in Roquefort cheese is encouraged to grow. They make a coarse bread, allow it to mould, crumble it and put it in the curd before the cheese are pressed. It penetrates the mass, destroys the acid in the cheese and brings it to that mellow condition.

Here is one of the famous soft cheeses of France, the Camembert (sample shown). It is very creamy on the inside; the mould on the outside has to be removed. Then there is the Neufchatel cheese (sample shown), now made in the United States and somewhat similar to the ordinary cottage cheese from sour milk. It is made from fresh milk and is only good for about two weeks after it is made.

Here is a cream cheese made in Canada (sample shown). It is a very delicious thing when it is the right age. Fresh cream cheese is only good for about two weeks. There is a limited market for some of these fancy cheese, and they could be made on farms as butter is.

Having read over the above transcripts of my evidence, I find them correct.

J. A. RUDDICK,
Dairy Commissioner.

THE DIVISION OF INSECTS AND PLANTS

COMMITTEE ROOM 62.

HOUSE OF COMMONS,

Friday, March 3, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 a.m., Mr. Greenway, Chairman, presiding.

THE CHAIRMAN.—We will hear this morning from Dr. Fletcher.

DR. FLETCHER.—Mr. Chairman and gentlemen, as Entomologist and Botanist to the Dominion Experimental Farms it is my duty to make a special study of insects and plants together with their relations to the different industries of the Dominion. When invited to come before this committee, I thought it well in the first session of a new parliament, to give a concise statement of the work which has been done in the past and which is now being carried on in the Division of Entomology and Botany. To avoid misapprehension it may be well to state that although this important division of the work of the Department of Agriculture, has been under my direction since the Experimental Farms were organized and results of incalculable advantage have been secured, I have no hesitation in speaking freely of these good results for I maintain that every man who hopes to succeed must have a thorough belief in the utility of his work and in his own ability to carry it out. Moreover it is manifest that the work of such a division is not all done by the chief officer, and in speaking of the success of the division I do not refer to my own work any more than to that of my two energetic assistants who do just as much as I do myself. The work carried on is, I claim, of great use and I hope to persuade the members of the committee here present to-day that this is the case, and that it is worth their while to know a little more about it than perhaps may be the case at present.

SCOPE OF WORK IN THE DIVISION OF INSECTS AND PLANTS.

The different classes of work taken up, as the title of the division indicates, deal with insects and plants; particularly such as are injurious or the reverse. This includes a special study of all insects injurious to crops, but also of many beneficial species; of useful plants suitable for cultivation in Canada and also of noxious weeds, together with the best way of dealing with them. There are besides many cognate subjects which have demanded attention such as forestry, the reclamation of land from drifting sand or water encroachments, and investigations into the usefulness of various grasses and other fodder plants. The work has now been going on in its present form for eighteen years. Careful records are kept of all investigations, and gradually a large amount of valuable information has been accumulated which is at the disposal of the many correspondents who are constantly seeking information from the division.

CORRESPONDENCE AND COLLECTIONS.

Every year there is a large correspondence with farmers, which shows their appreciation of the fact that they can get useful information from the Experimental Farms. It may surprise this committee to hear that there is an average of over 3,000 letters every year written by farmers to this one division asking for advice about insects, plants, and other matters dealt with by the officers. With regard to the working machinery of the department, it is necessary, of course, to have good collections for reference, and efforts have been made to amass as complete collections of insects and plants as possible. The insects are arranged so as to show the injurious species in all their different stages, and in such a way that they can be easily examined. I have with me here (pointing to a case in front of him containing mounted specimens of insects) a sample drawer from one of our cabinets showing the way in which the collections are prepared for exhibition to visitors when they come to the office for information. From this the members of the committee will be able to judge for themselves how very useful these are in our work. In carrying out these investigations on injurious insects we try to discover as soon as possible the full life histories of all the different common insects which attack farm and orchard crops and in this way also complete our series of specimens for the cabinet.

In this drawer which I have here you will notice that there are divisions, each one of which illustrates the life history of a different insect. In the first section we have the well known pest of orchards and street shade trees, the Fall Webworm, which is shown by specimens of the male and female moths, the latter with a cluster of eggs which she has just laid on a leaf, the caterpillars of different ages, the nest in which they live on the trees, and the cocoons in which the chrysalis passes the winter. Similarly in other sections we find the Variegated Cutworm, which did so much harm on the Pacific coast three years ago, the Red-backed Cutworm, which is common and destructive all over the Dominion nearly every year; the Spotted Cutworm and the Black Army worm, the Zebra caterpillar, and two kinds of Tent caterpillars. In the left hand corner is the White Cabbage Butterfly, with some of the parasites which help to keep this destructive insect in check. The object of these collections is to help farmers to recognize their enemies when they come to the Experimental Farm, as many thousands do now every year, and visit the division to see the collections. It is very useful to them to know their enemies in all the different stages. A farmer looking at this case might not recognize the moth, the perfect form of a cutworm, but would probably be familiar with the appearance of the cutworm or caterpillar state of the insect which injures his crops. It is a frequent occurrence for farmers and others, when looking over the collections, to say 'Ah, that is the insect I want to know about.' It is therefore very important for us to have as complete collections as possible. I will draw your attention particularly to the skill that has been shown by one of my assistants, Mr. Gibson, in preparing these caterpillars and giving them the life-like appearance by which they may be so easily recognized. We have now gradually gathered together a representative collection showing nearly all of the worst enemies of crops in Canada. These are kept separately so that they may be recognized and so that the fullest information in regard to them may be given. At the same time, other investigations which do not show the amount of time devoted to them, are being carried on, and the results are all carefully recorded. That, too, is a feature of the work which I wish to draw special attention, to, that all work done is recorded so that it may be available for use when required, and sometimes it may be that the results of researches are held over for some years before the facts can be used. But when the time comes, as on some sudden outbreak of an injurious crop pest, the information is there, and complete life histories and popular statements as to the work of the insect, together with the best remedies, can at once be given to the public, either through bulletins, through reports of this committee, through the annual reports, or through what is probably the best way of reaching the country, the daily newspapers. The press has always shown the keenest interest in the work, and has made great use of the information which we have been able to give out from the Division of Insects and Plants.

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ANTICIPATING OUTBREAKS OF PESTS.

Naturally no opportunity has been lost to keep in touch with work of the same nature which is being done in the United States and other countries. As a consequence we have been able on some occasions in the past to apprise the farmers of Canada beforehand of dangers with which they were threatened, and prepare them with advice as to the best steps to take when the enemy appeared. The Cattle Horn Fly was an example of this. An emergency bulletin was issued, giving the best remedies within a couple of days from the time it first appeared in Canada. The San José scale, one of the worst insects which has ever attacked fruit crops, was fully described a year before it came to Canada, and by this anticipation our farmers have been prepared beforehand to do the best that could be done under the circumstances to mitigate loss from the attacks of some of their worst enemies.

By Mr. Wilson:

Q. You might tell us what progress you have made in stopping the San José scale in the apple orchards of the Niagara district?

A. Excellent work has been done by spraying trees which were infested with the lime and sulphur wash; but, with your permission, Mr. Wilson, I will speak in detail of the San José scale later, if time permits. I want now merely to show that the work of the division is being actively prosecuted, and that the investigations are being pushed up close to the danger line.

Q. The only thing was I thought it was a very important matter, and we would like to know more about it.

A. I have a note to speak especially of it, sir. A working knowledge of the habits of the common crop pests may frequently effect a great saving for a farmer or fruit-grower. Such knowledge with regard to injurious insects is plainly of great importance on account of the enormous losses which these creatures cause. In almost all of our staple crops there is a reduction amounting to a very large percentage of loss every year due to injurious insects. No figures that I can give now would prove this, but the general statement may be made, and is a very low estimate, that at least ten per cent of every crop grown is destroyed by insects, and another tenth by fungous diseases such as smut, rust, mildew, &c. Any one who is especially interested in a certain crop and watches it closely throughout the season will know that a tenth is really, as an average, a very small estimate.

I have brought here to illustrate a matter which I wish to speak of emphatically to-day, some pease injured by the Pea Weevil. This insect for several years, up to last year in fact, destroyed at least $1,000,000 worth of our Canadian pea crop every year——

SAN JOSE SCALE.

A MEMBER.—Tell us about the San José scale?

A. The San José scale is actually destroying orchards now in a small part of Canada, in the Niagara peninsula; that is in cases where fruit-growers are neglecting to spray with the lime and sulphur wash. I mention that it is only in a comparatively small area, because of the misapprehension which exists in some quarters with regard to the injury that is being done and the amount of infestation in Canada. If we read some of the English or United States newspapers we are led to believe that the whole of Canada is invaded, and that there is not a clean orchard or a safe nurseryman in the country. It might be well to state very positively that the number of nurseries in Canada which have ever been infested by the San José scale can be counted on the fingers of one hand. More than that, the statement might be added that everything that ought to be done is being done by our nurserymen, and there is no country in the world that is distributing better trees and cleaner trees than is the case with our Ontario nurserymen to-day.

The losses, then, are very great, and not only is this the case with injurious insects but it is also the case with some kinds of injurious vegetation. Fungous diseases every year destroy a large percentage of every crop that is grown, and many of these have been studied and remedies recommended for their control. A notable instance is the Potato Rot, which can be largely controlled by spraying with Bordeaux mixture.

NOXIOUS WEEDS.

Another subject which has aroused a great deal of attention is that of noxious weeds, and in most parts of our prairie provinces, which are a little more celebrated perhaps for the fertility of the soil than some others, this question has become one of enormous importance. It has received a great deal of attention not only from the provincial governments but also from the Federal government, and the Division of Entomology and Botany. By permission of the Honourable Minister of Agriculture, and at the request of the Manitoba, North-west and British Columbia governments, I have visited the West, and have held series of farmer's meetings to discuss weeds and their treatment for the last ten years.

RECLAIMING SAND-HILLS

There are other matters connected with the work which at first sight do not appear to be so important as those I have mentioned, but yet which have a very important bearing on those districts to which they are applicable. In the matter of forestry a great deal has been done by the experimental farms since they started, and one particular branch of that subject to which I should like to draw attention is the reclaiming of sand hills and sandy districts which, having been denuded of their trees, have become a danger to the districts surrounding them from the drifting of the sand. Important experiments are now being conducted at Lachute, Que., in replanting an extensive area of drifting sand. If this effort is successful, it will mean a great deal to the farmers living in the neighbourhood.

BUREAU OF INFORMATION.

I have merely touched upon the different lines of work we are doing; but from the mass of useful available information which has been gradually accumulated I claim that the Division of Entomology and Botany at the Experimental Farm is now a useful source of reference concerning insects and plants, with specialists in charge who are not only willing but most anxious to give the fullest information they can to the farmers of Canada. Further than that, the farmers of Canada have learned this and are making much use of the division. The more widely these facts are made known, to that extent will the division be of increasing use to the country. It is the desire of every member of the staff to make it as useful as possible. This end is attained by attending such meetings as this, from the freest criticism of our friends, which we invite, and by suggestions from those who are interested in the work.

Now, with regard to the different lines of work which have been taken up. It may be asked what has this division done which I am claiming is so useful to the farmers of Canada. In the first place, it has developed into a bureau of free information giving out regularly the latest results obtained in the warfare against injurious insects and parasitic plants; upon fodder crops of all kinds and their suitability for cultivation in the different parts of Canada; upon noxious weeds and the best way to eradicate them, and upon many other subjects connected with farming.

In connection with the introduction of Nature Study into the schools of the country, the services of the officers of the division have been made free use of by teachers and students in all parts of Canada, to help them in the identification of specimens of plants and insects.

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DEFINITE INFORMATION GIVEN.

Perhaps I may now be allowed to refer to a few subjects upon which definite information has been given out as occasion arose to the great benefit of the community.

Spraying.—At the time the experimental farm system was organized the words 'spraying' and 'spraying pump' were actually unknown as the names of a method and implement for distributing liquids in a fine state of division, to protect plants against parasitic enemies. Largely through the work of the Division of Entomology the benefits of this work have been made known, and now every up-to-date fruit grower and farmer sprays regularly and saves much of his crop. I fully believe that the men who spray their crops regularly to control fungous diseases and insect enemies, can on an average double their crop by saving a loss of about 50 per cent which they would lose if they did nothing to prevent it.

Brome Grass.—When the Northwest was opened up for settlement it was soon evident that something would have to be introduced to take the place of the native prairie hay, and give heavier crops for the ever increasing herds of cattle. The Awnless Brome Grass, introduced by us from Russia, has met all requirements and is now cultivated on thousands of acres in the West, giving heavy crops of excellent hay and of readily marketable seed, while at the same time its cultivation very much improves the physical condition of the soil.

Potato Rot.—This destructive disease which probably destroys year after year about half the potato crop of the whole world, it has been found can be almost entirely controlled by spraying the potato vines, beginning about the first of August and following with four later sprayings at intervals of two weeks. A constant effort has been made to keep these facts before the farmers of Canada.

Standard Remedies.—From a continuous study of injurious insects, good standard remedies have been devised for some of the worst enemies of farm and garden crops. These have been arrived at after a great many experiments and we are now in a position to give a farmer definite information as to the best remedy for him to apply under his special circumstances. There are sometimes half a dozen different remedies which might be used with more or less success but if a man whose crop is being destroyed can be told to do one thing, he will generally attend to it at once, whereas if you give half a dozen remedies while he is making up his mind which to use, the crop may be destroyed. I will mention some of the leading insect enemies concerning which information can now be given at once.

The Codling Moth.—This is not a native insect but is now found in almost every part of the world where the apple is grown and everywhere is a destructive enemy, injuring a large proportion of the crop. Many experiments have shown that at least 75 per cent of the very best quality of fruit can be saved by spraying regularly and with the proper materials. Not only is this the case with the apple crop, but the plum cro pcan also be preserved from the attacks of the Plum Curculio to a rather smaller but almost equal extent, by spraying in the same way with standard remedies. By means of these standard general remedies most of the farmers and fruit-growers can do something when a new pest occurs, while they are waiting for advice from a specialist as to the way which his experience has shown is the best way to treat it. With your permission, sir, and with that of the committee, I purpose to submit a Spraying Calendar, as it is called, in which all these standard remedies will be printed in concise form for inclusion in your report, as was done a few years ago. This will save a great deal of repetition in the short time I have for addressing the committee to-day, and will be convenient for the members to give to their constituents or to find out for themselves what those who are specially connected with this work have found to be the best remedies.

I will now refer to some other pests which every year do a great deal of harm, which we have studied specially, and for which also we have made known as widely as possikble the best methods.

The Hessian Fly.—This insect has been a serious enemy of the wheat crop for a good many years, and the best remedies are pretty well known even if they are not followed. The practical information which is being spread broadcast through the country every year, reminding farmers in many instances of what they knew, but giving them, at the season of the year when it can be most useful, a definite statement which has been confirmed and corrected by others, as to the best measures to adopt, is of use in persuading them to use methods by which loss can be abated. In the treatment of the Hessian Fly it was recommended first of all to sow the seed later, so that the young plants might appear above the ground at a time in the year when the females which lay the eggs had disappeared. All insects have their exact season in the year for appearing, and in the same way that an apple tree blooms at a certain time of the year and the fruit is ripe at another time, so we find the same rule is applicable to insects. They appear at a certain time in the year, and only at that time. There is, however, a certain difference, in that there may be one, two or even threeb, broods of any certain insect in a year; but they all have their regular times of appearing. The question is to find out when that time comes and if it is possible to change our agricultural methods so that a crop is presented to its enemies in such a condition that it cannot be injured, the main end is attained of protecting the crop. By sowing fall wheat at the end of September, instead of what is certainly the best time under all favourable conditions, in the beginning of the month or at the end of August, the young plants appear above the ground after the time when the Hessian Fly has disappeared, so of course no eggs can be laid. In addition to that there are other remedies, but they are secondary, late sowing is the chief remedy. The burning of the straw after threshing, cutting high and burning over the stubble, the destruction of the screenings and the application of a special fertilizer in spring, all have to be considered according to circumstances by practical farmers who keep well in touch with what is going on.

Cutworms.—With regard to cutworms, it may be mentioned that the word cutworm is a general name applied to a whole class of caterpillars such as you see here, which every year do a great deal of harm in the spring time. Each has its own habits and all have a special time at which they appear and attain full growth. A knowledge of these facts is sometimes of the utmost importance when deciding upon a remedy. It has even been found sometimes that doing nothing at all is the best remedy, that it is the best paying remedy.

During last summer a farmer in the province of Quebec wrote to me complaining about a kind of cutworm which was eating down his peas, and asked what he could do to save them. He received the rather surprising information that his best course was to do nothing at all, that the caterpillars were full grown and would soon disappear, and that he would still get his crop all right and without any expense for special treatment. Some years ago we had upon the experimental farm here an experience almost identical with this farmer's. Three acres of peas were eaten bare before the caterpillars could be checked, and as the pea plants were entirely eaten off we supposed that there would be no crop; but as a matter of fact both on our field and on this farm in Quebec a heavy crop of peas was reaped, and no difference could be noticed between the part of the field where the plants had been eaten off and where they had not. Now if we had not had experience beforehand we could not have given our correspondent advice so confidently when he asked for information, and he would have ploughed up the land and lost all his peas, which he must have wanted, or of course he would not have sown them, and besides this he would have been put to the expense of sowing another crop.

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By Mr. Lewis :

Q. Is there not a danger of the crop being injured afterwards by a second brood of those caterpillars ?

A. No, there is only one brood in the year of the Black Army worm, the kind referred to, and, when that is disposed of, there is no more danger. The caterpillars only occur in the spring and reach full growth by the end of May. There are in North America about 300 different kinds of moths which lay eggs from which the caterpillars called Cutworms come. Many of these we have been able to study and to learn their habits as to the time the eggs are laid, when they hatch, and the length of the caterpillar life; also the kind of locality or soil in which they are most likely to occur. After trying many remedies we have found that the so-called Poisoned Bran Mash is the most effective. This is simply a mixture of bran or shorts and Paris green, and not only is this remedy applicable in gardens, but it is just as useful in field practice. The mixture is composed of one-half pound of Paris green and 50 pounds of bran. That is a very large quantity of bran, but the quantity of Paris green mentioned is sufficient, and the mixture is distributed over the fields either by hand or with a flat instrument, such as a paddle or piece of shingle by which the material can be thrown 20 to 30 feet. The remarkable fact that has been brought out by experience is that cutworms will eat the mixture actually in preference to green vegetation. No remedy which we have ever tried has given us such decisive results as this. The persistent recommendation of this remedy has resulted in a great saving to the farmers and the gardeners of Canada, and any one who has ever tried it has recognized its utility, and it is now being used over a very large area. There is another class of cutworms called climbing cutworms; these come out at night and crawl up the trunks and attack the foliage of apple and other trees. When their presence is noticed they may be poisoned in the same way by placing some poisoned bran around the bases of the trees, or may be kept from climbing up by tying a band of cotton batting around the trunk. There are other and more permanent forms of tree protectors, but cotton batting as a rule answers for the short time it is required.

By Mr. Herron :

Q. What quantity of land would that mixture of 50 pounds of bran cover ?

A. Considerably more than an acre, because you would not require to put it over the whole area. You can see by the appearance of the crop where it is necessary to distribute it, but if the whole acre were infested it could be cleared very easily with the quantity mentioned.

By Mr. McLennan :

Q. Would you moisten the mixture before application?

A. Yes, slightly. The method of mixing it is given concisely in my last report. Dampening the bran slightly with water having a little sugar dissolved in it causes the Paris green or other poison to adhere to it. After mixing thoroughly add the Paris green little by little, stirring all the time. If Paris green is added to the bran when it is perfectly dry, it will, owing to its weight, sink at once to the bottom when stirred. Half a pound of paris green is sufficient to poison 50 lbs. of bran, although double this amount may be used. Bran should be added to the mixture until it will crumble easily and run through the fingers without adhering. It may then be distributed through or along the edge of an infested crop or may be applied to land either around or between plants, or a row may be run close to drills by means of a Planet Jr. seeder, or a similar implement. For such crops as tomatoes, cabbages, tobacco, &c., a collar of paper put around the stem at the time of planting will prevent the destruction of many plants. Seedlings must be transplanted so that none of the leaves hang down and touch the ground. The same protection is provided in a more permanent manner, but at greater cost, with strips of tin. Convenient rings may be made from old tomato and fruit cans by throwing these into a bonfire and melting off the tops and bottoms and then

splitting the sheet of tin which is left down the centre. This not only makes a good protection against cutworms, but disposes of a class of rubbish which often accumulates to an inconvenient degree.

Apple Aphis.—Another instance came before my notice where this laisser faire policy was the best. It was when the Apple Aphis, an insect which attacks the apple tree just as the buds are bursting. In this part of Canada it seldom pays to use any remedy for the apple Aphis in the Spring, and the only instance in this part of Canada where the aphis occurs injuriously and where it pays to treat it, are when it attacks nursery stock in nurseries. Then, however, nurserymen can control it at the time when it is most abundant and in the month of August, but the use of the well-known remedies for sucking insects such as kerosene emulsion, or whale oil soap solution, which are to be applied as sprays, or when more convenient the heads of the young trees may be dipped into a receptacle filled with one of these, or some other similar remedy.

Grasshoppers.—A remedy which has been exploited by the division and which has given excellent results, is that which is made by mixing Paris green with fresh horse droppings as a practical remedy against grasshoppers. This has proved especially effective for destroying grasshoppers or locusts, as they are generally called. For a period of four or five years recently grasshoppers did serious harm in Manitoba and in parts of the North-west and British Columbia. Many expensive machines and implements have been manufactured for destroying them, such as the hopper dosers and other expensive methods. But of all the methods a Canadian remedy, which was discovered by Mr. Norman Criddle, of Aweme, Manitoba, has given the best results. Mr. Criddle, who is an observant farmer, living in Central Manitoba, noticed that wherever horse droppings were lying along the trails, the grasshoppers gathered around them in great numbers. Bran is very expensive in the West, and it is also troublesome to get. Therefore, the observation that this material, which can be obtained on every farm, was so effective as an attractive bait, was of great importance, because it costs nothing, and for that very reason was more likely to be used than anything which had to be purchased. The formula is, horse droppings 100 parts, moistened sufficiently with salt and water (1 lb. in 2 gallons), so as to be easily distributed, and one part of Paris green, were mixed together. This material was put in a half barrel, placed on a stone boat, and was drawn around the edges of the field and scattered broadcast through the grain; the material was distributed easily by means of a flat paddle or shovel. This remedy at first was hather jeered at by those people who didn't take the trouble to try it, but those who did try it saved their crops, while the jeering neighbours lost theirs. The practical result to the general public was that we now have a good, cheap and effective remedy for one of the worst enemies the farmers in the West are liable to be visited by. In fact, it is the best remedy for locusts which has been as yet devised, and those farmers who have used it in very bad years have been successful in saving their crops. The chairman himself, who is here to-day, and every one else in Manitoba, knows very well the excellent work which was done by his department in Manitoba a year or two ago, in making this remedy known, and he also knows that it has been successful in saving many crops all through the country where locusts occurred, so that in some districts where the pests were abundant and committed great damage a few years ago, they have now practically disappeared. I do not claim that this remedy alone has stamped them out, but it has certainly reduced their numbers enormously. It is not claimed for any remedy, at least not by reasonable people, that it will give perfect results. No doctor will claim that he can save every patient he treats, nor do we claim that these remedies which we suggest for injurious insects will save all the crops entirely and at once. All that is claimed is that the remedies recommended will give sufficient relief to make it pay farmers to use them to protect their crops, and we see to it that the remedies we recommend are the most practical ones known. In spraying for the different orchard pests we do not claim that we can save the whole crop, although this is sometimes the case; but we do claim that by spraying as recommended any fruit-grower can save 75 per cent of his crop from injury, and that this large proportion will be of the very best

quality, while if he does not spray he may lose his crop altogether or a very large portion of it will be injured by insects and fungous diseases like the Black Spot of the apple or the Cracking of Pears.

By Mr. Lewis :

Q. It might be advisable that people should know why it is best to put this horse dung mixture around the outside of the fields. Is it to prevent the grasshopper flying over and getting to the centre?

A. Yes, they almost always come from stubble fields to attack growing crops. The habits of the grasshoppers have been very thoroughly studied, and it has been found that they lay their eggs by preference in certain kinds of soil or where the land is in a certain condition; the most favourable condition is presented in a field at the time it has a crop of grain growing on it. Now, the time these insects do most harm is not when they can fly and are laying their eggs; but it is on the new crop the next year by the young insects which have hatched in the old stubble fields. It is in the firm soil of fields under crop that the conditions are presented which are most attractive to the female grasshoppers for laying their eggs. It has been observed that the females will congregate on cultivated fields to lay their eggs. You will not find a pod of eggs in the grass on the unbroken prairie; but you will find them by the hundreds in the cropped land. The mature grasshoppers die before winter sets in, and the only way in which the insects pass the winter is in the egg state in the soil. Therefore, in the spring the eggs are in the stubble where the young grasshoppers hatch, and then migrate from those fields to the growing crop. The recognized remedies are the ploughing down of the stubble before the eggs hatch or before the young hoppers are large enough to do damage to the growing crop; or if this has been neglected the treatment of the growing crop with such remedies as I have mentioned, before the young locusts have had time to destroy it.

By Mr. Wilson :

Q. Ploughing down, I presume, would be the better remedy ?

A. The better remedy by far, because where the grasshoppers do most harm is right in those dry districts where experiments have shown that summer-fallowing every other year is the best means of securing a heavy crop of wheat, and the ploughing down of stubble early, so as to kill the young grasshoppers, is the first operation in getting a good summer-fallow. Summer-fallowing in many parts of the west is begun too late. The question of summer-fallowing in the west, of course, is largely one of retaining moisture, and the frequency with which the operation is practiced must be decided according to the district, by the farmer who is using the land. In the hot, dry districts of the interior such as Moosejaw and Indian Head, summer-fallowing to give the best results should be done every other year. Further east, once in three years, as a rule. In the rich Red River valley some do not believe in summer-fallowing at all. They have moisture enough and must use other methods for cleaning their land of weeds. The question was asked here of Dr. Saunders the other day in comparing districts in the west, whether Indian Head was not an exceedingly rich district. It is exceedingly rich, and with proper treatment the land gives grand crops, but it must be remembered that it did not do so 20 years ago. The methods of farming have changed, and Indian Head is to-day one of the best districts of the North-west Territories, only because the farmers have learned how to work those good lands; namely, to summer-fallow regularly to hold in the moisture necessary to give big crops. When the experimental farm was established there the government was criticised severely for buying land which it was said was not of any use, because it was too far west, was too dry and was out of the wheat belt; but by Mr. McKay persistently dinning into the farmers of that district the absolute necessity of summer-fallowing properly, its great fertility has been proved. He told them that they should break the land early while still moist, then harrow at once and follow by two or three cultivations of the surface before winter, so as to destroy weeds, and they would thus hold sufficient moisture in the land to produce good crops the next year.

By Mr. Maclaren:

Q. How long have you had that farm?

A. Seventeen years, I think.

By Mr. Lewis:

Q. What I was trying to get at was the use of this mixture to kill grasshoppers. You put it around the edge of the field in order to prevent the grasshoppers flying over?

A. Yes. It is so attractive to them that they stop there and feed and it kills them. After they have eaaten some of it they have been found lying dead, by actual measurement, 100 feet away in the field. The best time to treat them is when they are young and have no wings when they hop from the stubble fields to the green growing crops. They are then so numerous as to attract everybody's attention, numerous enough to injure the crops very quickly and the farmer who sees them on his land should apply the remedy promptly. If he allows them to spread through his crop a considerable amount of injury is done, and although he may save some of his crop, early work pays by far the best. The grasshoppers become fully grown and can fly by the middle of July, but before that time, where the edges of the fields have been treated, the grasshoppers are killed and greatly reduced in numbers. I mentioned the edges of the crop because the best work has been done by simply treating the edges of the crop. It is unwise to drive to or walk out into the crop and apply any remedy because of the injury done in walking over the grain. The crops in the district around Douglas were much injured a few years ago and I saw there a striking object lesson. There were two wheat fields close together, one of which had been treated with the criddle mixture, but the other had not. One field gave 18 bushels per acre and the other none at all. It was eaten as bare as this table.

By Mr. Cash:

Q. Does not the grasshopper do most of the damage before it is developed?

A. Yes. When they are large they fly great distances at the time they migrate, and their chief business is breeding. They leave the fields where they have developed and fly to others. When they attack fields in spring they are found on the edges of the crop because they come there from the stubble fields. They can be treated easier while there because they swarm on the succulent young crop, devouring it and this reduces the labour very much, an important point.

TURNIP FLEA-BEETLE.

A member of the committee asked the question whether there was any treatment for the turnip flea-beetle, and suggested that sowing late was a good remedy. This undoubtedly is the best agricultural remedy that can be adopted, and in hot sandy districts or where injury takes place every year it is wise to delay sowing the turnips till about the 20th of June, as an average date. At Ottawa that is the exact date. This allows the young turnips to come up after the first brood of turnip flea-beetles has disappeared, and when the second has not yet arrived. The injury to turnips is so severe because then the plant is very young the beetles attack the seed leaves. These are not true leaves although they are green, but are really small bags filled with food for the young plant to serve it until it has formed its rough or true leaves. Any injury, therefore, to the seed leaves is a serious loss to the young plant. That is why injury to seed peas by the pea weevil is so serious. The habit of growth, however, is not quite the same in these two plants. When a young pea plant comes out of its seed the seed-leaves do not come to the surface, but in the young turnip plant the two seed-leaves are pushed out into the air and act as reservoirs of prepared food to feed the young plant until the true leaves are formed. Any injury to these is very severe, because the young plant has no means of living when they are cut off. If you take a seed of some plant which has a large seed like a bean, for instance, or a squash, which can be examined easily and allow it to grow and then when the seed-leaves have expanded you cut

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them off, the plant will die. It cannot take food from the air because it has no leaves, and it cannot get much besides water from the soil, which alone will not support it.

By Mr. Cochrane:

Q. Have you ever tried experiments with artificial manure on the drills to force rapid growth?

A. Yes, that is a very good plan, but if the beetles are so numerous that they injure the leaves before the shoot is formed the plant must die.

There are three remedies for the turnip flea-beetle. First, and most important, is sowing late, because turnips are a crop which can be sown late without loss. In saying this it may appear that I am rather conflicting with what Dr. Saunders said the other day about the benefit of early sowing, but he only spoke of the larger weight per acre obtained by early sowing. By sowing late you get a smaller weight, but better turnip. If you can sow late and get 10 tons it is better than sowing early and getting your crop largely destroyed by insects. By sowing late we miss the first brood of the turnip flea-beetles, which pass the winter as beetles and appear early in spring. Another remedy is to dust a poisonous mixture over the young plants when they first come up. In this way we can protect them for two or three days, during which they produce the small central tuft of rough leaves. We have had excellent results by dusting the young plants with a perfectly dry mixture made of 50 pounds of land plaster, or any other perfectly dry powder, and one pound of Paris green mixed thoroughly together.

Q. Did you ever use dry salt with land plaster?

A. No, not with land plaster. Salt has very little effect on injurious insects. It might possibly help the plants.

Q. It has a tendency to retain the moisture?

A. I have no doubt that may be the case, but I have never tried, and I do not know that. Salt is very useful on many field crops, as barley, and I have no doubt that if the turnip plant would stand it, it might be very useful.

Q. I put it on the surface before the seed is put in?

A. To keep the ground moist.

Q. It forces the plant up very rapidly?

A. I think it might be very useful when the seed was sown late because the weather is sometimes very hot in June.

By Mr. Bland:

Q. Would that prevent the insect on the turnip plant later in the season when near maturity—the turnip louse?

A. No, that is an insect with quite different habits.

Q. I have noticed in my country that you can sometimes hardly see the turnips for inssects when they are sown early?

A. That means, I think, that the late sown turnips if they get a good start have more power to throw off the insect attack. The *Turnip Aphis* is very conspicious sometimes in a field on high knolls or where the plants are near a tree growing in the field. This is because the tree for some distance all around it dwarfs the turnips by robbing them of moisture and the plants being weaker are more attractive to the insects. A vigorous plant outgrows and throws off the attacks of insects and in all methods of prevention of insect attack such circumstances show us the necessity of trying to produce a vigorous plant and of pushing on a rapid healthy growth.

By Mr. Cash:

Q. Would that be the same louse that attacked the wheat in the Northwest this year? They were so numerous that they stopped the binder?

A. No, but it looks a good deal like it. I saw one or two instances where the *grain aphis* was very abundant in the West last year. It is a different insect. The insect that injures turnips merely attacks the turnips, the cabbage and plants of that family,

but its habits are very similar to those of the *grain aphis*. I do not know that the injury to the grain crop was very severe this year, because the insect appeared so late that it did not do so much harm as was anticipated by some who saw it. However, there was a certain amount of shrivelling of the grain due to the plant lice having sucked the sap from the ears of wheat while the grains were soft and forming.

By Mr. Cochrane:

Q. In reference to the early and late growing of turnips have they ever been analysed to ascertain the difference in feeding qualities?

A. I believe they have, and some of our superintendents have very decided opinions about the value of small turnips, which they deem perferable to large ones, but I think Mr. Shutt has been working on this subject and will probably give you the information if asked when he appears before the committee.

Q. I mean between the early and late sowings?

A. I think Mr. Shutt will give you the result of analyses which I believe he has made.

By the Chairman:

Q. In speaking of the dates of sowing you were referring to the dates for Ottawa when you mentioned the 20th of June?

A. Yes; the date mentioned, the 20th of June, was for Ottawa.

Q. That will answer for all Ontario?

Q. Well, probably a little earlier for Western Ontario.

By Mr. Bland:

Q. I know that we used to consider we would have to get them in early, in order to get the hoeing done before haying came on or they would be a failure. Our turnips have been a failure that have been sown early of late years, and I think our own seedsmen have said that from the 16th to the 24th June was the best time in Western Ontario?

A. That would practically be the date. Your season at that time of the year is a little earlier than ours.

Q. We have adopted that plan, and invariably we have benefited by it?

A. You avoid the attacks of the flea-beetles in that way.

Q. Yes, and get moisture enough to get the seed started?

A. Although I said on the 20th of June for this locality, experience would have to show the exact date for different districts; the 20th of June is the date for Ottawa. I should not suppose, however, there would be very much difference over the whole of Ontario and Quebec down to New Brunswick, merely a day or two.

THE RUSTS OF GRAIN.

By Mr. Schaffner:

Q. I do not know whether it is pertinent to this subject this morning or not, but have you any opinions on rust that affected us so much in Manitoba last year?

A. Yes, sir, you will find a rather complete article upon it in my annual report now in the press. My opinion is, after considering all the circumstances, that you will not have very much trouble with rust in the future. In the whole history of the country we have never heard of such an outbreak of rust as you had this year, and I do not think it is in the least likely you will have another unless some very decided change in the conditions which generally prevail takes place.

Q. What is the difference between the kinds of rust, the black rust and the others?

A. There are several kinds of rust, parasitic on grain crops, which have to be dealt with: the Orange and Leaf-rusts that appears early in the season and the Black Stem rust which appears later on the straw. The Orange and Leaf-rust does not do very much harm to the crop, as it develops chiefly on the leaves, but the Black Stem-rust does a very great deal of harm because it develops on the stem and intercepts and uses up

the food material on its way to be stored up in the forming grain. Of course both kinds do harm, but the injury by the leaf rust is very much like one man stealing from another without his knowing it. While in the case of the Black Stem-rust it is like a man taking the food off one's fork just as it is being put into his mouth—it stops the food going to the grain just at the time when it is needed.

Q. What are the circumstances that make you think it will not come this year?

A. Judging from the fact that we have no record of any such outbreak in the past. The weather conditions of the season affect very largely the prevalence of the different fungeous. We now have records of at any rate 30 years of the West as a grain growing district and there never has been such an outbreak as we had last season. Fungous diseases of plants, the same as the epidemics among animals, are exceedingly prevalent and destructive at some times, and then disappear almost entirely for a long time

Q. If there is a similar season to what it was last year we will have it again, will we not?

A. You may or you may not; there are two things to consider: the presence of the spores and conditions favourable for their growth. The rust is a plant, minute as it is, and has its seeds or spores like any other plant, and given the same conditions that you had last year, with the spores there, you may have injury again, but I think it is unlikely.

By Mr. Cochrane:

Q. Will salt do anything to kill the germs? I had an experience with the black rust I had a summer-fallow and a part of the field was composed of new land and I intended to use the old land because I thought it would help it, but my men got part of the way across the new piece before I got up there. I stopped them there and when we came to cut the grain there was black rust on part. Where we used the salt it was not in any way as bad. It was almost free from rust. It appeared to be free owing to the use of salt?

A. Undoubtedly the salt would have some effect. We know that salt has an effect on all vegetation, either deleteriously or beneficially, and your experience would indicate that it would have a beneficial effect by preventing the rust fungus from developing. I thought at first when you spoke that you said 'stock' instead of 'salt,' and that suggested another thought to my mind. There is no doubt that the feeding of rusted straw may have the result of spreading the rust disease. The fungus passes the winter in the straw in a resting condition; it is a parasitic plant. Now, if rusted straw is fed to stock the fungus will keep on growing in the manure, so that treatment of the manure to destroy the fungus is necessary, or at any rate desirable. It is possible that turning it frequently might be beneficial. Whether that will have the effect of destroying rust we do not know, but it would do no harm to turn manure from animals fed on rusted straw very thoroughly before putting it on the fields. A rather interesting result came out of the analytical experiments by Mr. Shutt which he will probably present to you when he appears before the committee, but I will mention it briefly as it has been published in the newspapers. It was found that straw from a rusted crop is actually richer by far in feeding value than clean straw. That is explained by the fact that the rusted straw has held in its tissue much of the food material that should have gone to the berry, but was arrested by the parasitic rust.

By Mr. Blain:

Q. Is rust due to climatic conditions?

A. The increase of rust is due to climatic conditions, but it cannot be said that they cause rust, but they do favour its propagation and increase. Rust is a plant which must originate from a spore or seed.

Q. I know that last year we were troubled with the rust in our fall wheat. I had considerable fall wheat, some of it on new land, and I believe that was the worst in the neighbourhood?

A. The abundance of the disease would undoubtedly be from climatic conditions. The rust plant has a curious growth; the spores which pass the winter in the straw, germinate in the spring in the old straw or stubble left on the field. That is their first spring growth, and after a short time they produce other spores which are exceedingly light and which are carried by every lightest draught of air that moves. When there is the slightest movement of the air these spores are carried far and wide for many miles, or even hundreds of miles, until they fall upon a suitable host plant when they germinate there, and from these spores the next condition of the plant grows and that is the one that penetrates the tissues of the wheat plant and does injury to the crop. A crop 100 miles from another infested crop may be easily infested by the spores which are carried by the winds.

By Mr. Cochrane:

Q. How do you account for the fact that it is always worst in our section of the country where the crops are very heavy?

A. That is because there is less air moving among the plants; there is no chance of ventilation by the air blowing through the crop. The rust may develop under such conditions, but if the conditions are made unfavourable for its propagation by dry air blowing through it it may dry up and be made ineffective in the same way that even such a terrible disease as tuberculosis may, under certain conditions, dry up after it has reached a certain stage and the patient overcome it.

By Mr. Blain:

Q. In what parts of Canada is the rust most prevalent?

A. In Ontario and the provinces to the east.

Q. Is there any part where you have not found rust?

A. In the hot dry districts of the prairie province and British Columbia it is almost unknown and is very rare in Manitoba in the dry districts.

By Mr. Shaffner:

Q. From your theory it appears to me that on the high knolls wheat would be affected most and that there would be less rust in the low districts according to your theory?

A. If the development of the plant was less vigorous it might suffer—the knolls in the fields might be unfavourable to the development of the wheat plant which would then be more liable to attack.

By Mr. Worthington:

Q. Is this new article that is being used, gypsum, of any value? Have you had any experience with it?

A. Gypsum can hardly be called a new article. It is used as a quick acting—not fertilizer exactly, but encourager of growth on certain soils. It releases the plant food in the soil and makes it available for the uses of the plant.

Q. Is that beneficial to the manure?

A. Well, I think it is not mixed with manure. It is used in stables for collecting ammonia and preventing unpleasant odours. It is not put with manure as a rule; it is used separately.

Q. It is used in the stables as a collector of nitrogen?

A. Yes. Mr. Shutt will explain that to you. It has been used for a great many years in Canada, especially in those districts where it can be easily obtained.

POTATO ROT.

Speaking of fungous disease, I should like to refer to the good work which has been done by the Division with regard to the potato rot. This disease destroys every year

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an enormous proportion of the potato crop of the whole world. The results of experiments carried on from year to year, every since the farm started, show that loss may be almost entirely prevented by a cheap and easy remedy, which consists in spraying the tops of the potatoes during growth, about the first of August in this district, with the Bordeaux mixture, composed of copper sulphate with lime or soda to neutralize its injurious effects. This prevents the propagation of the disease and the consequent destruction of the tubers almost entirely.

By Mr. Maclaren:

Q. What date do you spray them?

A. For Ontario, about the 1st of August, when they are about a foot high.

Q. How does that affect the potato bugs?

A. They can be killed at the same time by mixing Paris green with it. The Bordeaux mixture alone is not sufficient to destroy the potato bugs, but by adding Paris green the beetles are destroyed at the same time as the potato rot is prevented.

Q. The same mixture that would do for fruit trees?

A. Yes, practically the same mixture, but rather a larger proportion of copper sulphate can be used on the potato plant. For use on fruit trees, four pounds of sulphate of copper, four of lime and four ounces of poison; on potatoes, six pounds of sulphate of copper, four of lime and the same amount of poison. Potatoes will stand a stronger mixture without injury than fruit trees will.

By Mr. Cochrane:

Q. How much water do you use?

A. Forty gallons.

By Mr. Lewis:

Q. Before you leave this question, would the rot in potatoes or in corn stalks if fed to cattle be injurious to them?

A. They would not eat many of the rotten potatoes, and experiments have not shown that there is any injury to stock from eating mildewed straw, if they would eat it. Some experiments tried with corn smut did no harm to the animals, but they soon became nauseated and would not eat it.

By Mr. Maclaren:

Q. How much Paris green do you consider necessary?

A. As a general recommendation for spraying fruit trees, one ounce for every 10 gallons of water—that is, one pound for 160 gallons. It is best when using Paris green on foliage always to add an equal amount of fresh lime.

Q. Do you ever use arsenic alone?

A. I have used arsenate of lead; arsenic alone is too dangerous.

Q. Arsenic is used very largely by the large fruit growers?

A. That is because it is cheaper, but I think the cheapness is not of sufficient consideration to make it worth the risk of using it. Serious injury to foliage by using arsenic is very common. Paris green is comparatively cheap and gives constant results which are as good, if not better. There are other proprietary preparations as Disparine, Green Arsenoid, &c., which are also useful. The green colour of Paris green is a great advantage as it prevents it being mistaken for any other material used about a house.

By Mr. Ingram:

Q. Speaking of this rusty straw that would be profitable for cattle, would that affect milch cows?

A. No, I do not think it would. What I said was that it is richer in feed value. I would not like to recommend it being used in a district where there was rust on the crop, unless it were absolutely necessary, because there would be a possibility of the rust fungus being increased and propagated through the manure.

By Mr. MacLaren:

Q. *Horn Fly.*—Have you anything to prevent the fly from bothering cows at fly time?

A. We have found the best remedy for the cattle horn fly is a mixture of one pound of pine tar in five of lard, tanner's oil or other grease.

Q. How do you apply it?

A. It is put on with a rag or brush on the shoulders, the back or such parts of the animal as the flies congregate upon.

PEA WEEVIL.

I began to speak of the Pea Weevil and should like to say more about it. The loss from the Pea Weevil during the last ten years will probably average $1,000,000 year. Now, I claim that from the peculiar nature of this insect there is no reason why it should not be wiped out absolutely from Canada and from North America, and, therefore, it is worth while for everyone to know obout the insect and its habits. In this way it may be possible to get the remedy applied. First of all, it is an introduced insect. It has no other known food plant than the seed of the cultivated pea. The cultivated pea cannot withstand the cold of our winters and all seeds left in the field the year before are destroyed before the growing season the next year. There is no such thing, I think, as a volunteer crop of peas. This is important because every pea that is sown has been within the control of somebody during the winter, and we have a positive and effective remedy, namely fumigating with bisulphide of carbon, by which every weevil in seed peas can be destroyed during the winter or before the seed is sown. The farmers have it in their own hands, and I want to draw special attention to this matter now. If I could only induce everyone to refuse to buy seed peas without a guarantee from their seedsman that they had been treated to destroy the weevil and also get those who save their own seed also to treat it before sowing—this injurious insect could be stamped out. When a farmer wants peas for sowing he should refuse to pay the seedsmen full price for peas that have not been fumigated or treated to prevent the weevil. The peas as seed are only worth about one-sixth as much as uninjured seed, and when forced to do so seedsmen have fumigated peas in the past and have sold clean peas. In 1904 the Pea Weevil almost disappeared. Now, therefore, is the time for everyone to make a most strenuous effort to wipe it out altogether. The injury in 1902 was very great, not quite so much in 1903 and very little in 1904. As a consequence of this many farmers will sow peas this year who last season refrained from doing so.

By Mr. Cochrane:

Q. How do you account for that reduction?

A. I cannot altogether account for it. I claim that farmers following advice given them by specialists had something to do with it, but the weather had also a great deal—the intense cold of last winter and the cool summer did much to reduce the numbers of this pest. But that is not the point now. The point is this, the Pea Weevil is perhaps at a lower ebb in occurence just now than has been the case for many years. Further, owing to the cool season I believe that very few left the peas last autumn, so they are now in the seed where we can get at them, and if everybody would only make a great effort this spring not to sow peas unless treated, the Pea Weevil could be reduced enormously.

By Mr. MacLaren:

Q. Wouldn't it be a good idea to add that to the Seed Bill?

A. Legislation on agricultural matters has always been a rather doubtful policy.

Q. We have a very doubtful bill then?

A. No, it is a pretty good bill. You don't know what good that bill has done, Mr. Maclaren. The very fact of discussing the matter has induced seedsmen to supply cleaner seed than has ever previously been the case in the history of this country.

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By Mr. Cochrane :

Q. Would you allow me to ask this question : In our section of the country we have not sown any peas for three or four years. We would be, I suppose, pretty safe in sowing them this year, that is as far as the pea bug is concerned ?

A. A little safer, that is all. The Pea Weevil beetles can fly long distances.

Q. You think that if there is no seed used which has not been fumigated it will help us ?

A. Certainly, it is very much better to kill the weevil in the seed before sowing. If you kill it, it cannot do you any harm.

Q. Can any farmer apply that remedy himself ?

A. Yes, any farmer can fumigate his own seed quite easily. The material used, bisulphide of carbon, is cheap and easily procured. Any farmer can get a coal oil barrel which will hold 300 lbs. or 5 bushels of peas. Three ounces of bisulphide of carbon put in a saucer on the top of the peas, or even the liquid poured right on to them, and then a tight cover placed over the barrel to keep the fumes in, will kill every weevil in the seeds. The barrel must be kept tightly closed for 48 hours, and as this liquid, is very inflammable, care must be taken not to bring a light of any kind near. The work is best done in an open shed out of doors.

By Mr. Henderson :

Q. But will it kill the seeds as well ?

A. No, it will not injure the peas at all and the beauty of this remedy is that ten minutes after the cover has been taken off the seeds will be fit for use should it be necessary to use some of them for feeding.

By Mr. Blain :

Q. For 20 years back a certain section of Ontario could not grow peas on account of this weevil, and they cannot grow them yet. In Bruce county they never had the weevil until three years ago, it seemed to be coming in. Nearly all through the section the year before there was a lot of Pea Weevil, and a great many dropped out of peas last year, but those that had them last year had no weevil at all. I was going to say that a few years ago I sent some peas that never had bugs in them down to Oxford county, they sowed them there and they found that year that they were full of the weevil ?

A. Because you sent them to a district which was already infested, and the weevils from other fields flew to the one where your seed was sown, and laid their eggs on the young green pods.

Q. But they had never developed in our section in the county of Bruce ?

A. No, the seed you sent was undoubtedly free of weevil—the infestation took place in Oxford county after your seed began to grow. There is a whole section where weevil may or may not develop, further south they are abundant every year. Unfortunately, the weevils develop most freely in the districts which are best suited for growing good peas. We seldom suffer from Pea Weevil in this locality, but if pea seed with the weevil in it is sent here to Ottawa they will develop here to a certain extent, but will soon die out.

Q. I do not think there was any weevil in that district, because we never had them there ?

A. They can fly from other districts at a considerable distance.

By Mr. Cochrane :

Q. Supposing in our section of the country where we have not been growing pease, and where there is no weevil, if I fumigate the peas that I use, and the other people who sow them do not fumigate, would not the weevil from their crop injure mine ?

A. Certainly, and that is why I want to get this matter before this committee, and through them to urge upon the general community that here is a practical remedy.

The difficulty is that everyone does not apply it. I want the people who are buying peas to say to pea growers : 'I will not pay you $1 per bushel for your peas when one-sixth of the feed value and five-sixths of the seed have been eaten away by the weevil, and when you can prevent the spread of the weevil by treating your seeds,' and to seedsmen ; 'I won't pay you full price for pease of which only from 15 to 20 of every hundred will grow. You claim to sell good seed free from living weevils, and I will not buy your seeds unless they have been treated.'

Some seedsmen fumigate their seed peas, but I found by talking to them that others say, 'I am quite willing to treat my seed if every one does so, but other firms, do not do it, and I cannot afford to do so at extra expense and compete with them.' I believe the remedy is in the hands of the public, and my object in bringing this matter before the committee is that I may stir up such a fuss about it, that the people who are buying seed peas will do something. In 1902 and 1903 there was great loss from Pea Weevil attack, and much attention was drawn to the matter in reports, in newspapers and farmers' institute meetings. Last year many seedsmen fumigated their seed, and if they will do so again systematically, we have a better opportunity than ever before to clean up our pea crop, and I want to make such a fuss about it now as to wake people up and make them wonder what it is all about; and if I can persuade them that they are paying one-sixth more for feed pease than they are worth, and five times as much for their seed peas, they may do something. I want the members of this committee to help me, because it is a matter of importance to a large part of the Dominion.

Remember that one-sixth at least of each seed is destroyed by the weevil and a percentage of five-sixths of the peas in a bushel are often rendered useless as seed.

By Mr. Blain :

Q. How do you treat the pea seed ?

A. There are two methods of treatment. Bi-sulphide of carbon is now easily obtainable everywhere, you can get one pound for 15 cents, and three ounces of the liquid, costing a few cents, are enough to thoroughly clear 300 pounds of pease in an ordinary barrel. This treatment can be applied by everybody. The other treatment is to drench the seed with ordinary coal oil, using one gallon to 20 bushels of pease. Pour it over them a little at a time, and then shovel the peas over frequently several times, twice a day for three or four days. There is still another method which can be used successfully. If a farmer saves his own seed, and he knows they contain weevils, bag them up and keep them for two years before sowing. You see the weevil must come out the next spring after it develops in the green pease. The beetles cannot eat their way through the bags, and as they cannot feed on the dry peas they soon starve inside the bags, consequently you can sow these peas the following year and be sure that you are perfectly free from the weevil. The best time to treat the peas is directly after you have harvested and threshed them, because the injury to the seeds is less at that time than it will be later on.

By Mr. Henderson :

Q. How does the weevil get into the pea ?

A. The eggs are laid on the green pods in the field, and the young grub eats its way into the pea while it is soft.

WEEDS.

By Mr. Maclaren:

Q. What about the ox-eye daisy ? Is there any remedy for that ? What success are you meeting with in the extermination of this and other weeds of a similar nature?

A. To clean land of ox-eye daisies, seed down early with clover, cut your crop of clover early and you will destroy the daisies before the seed ripens. When you cut the second crop of clover you will again prevent daisy seed from ripening, and then when

the clover is ploughed down the daisy roots are destroyed, because they grow close to the surface.

Q. What about the wild mustard ?

A. There are two successful ways of treating this persistent enemy. Harrowing growing crops after they are well up with a light harrow or weeder or spraying the young plants before they blossom with sulphate of copper solution, using 10 lbs, to 50 gallons of water. This will kill all the mustard plants, but will not injure the grain among which they are growing.

Q. What about the Canadian thistle ?

Q. The Canada thistle is a perennial plant which roots deeply ; therefore, the secret is to plough deeply and keep harrowing or cultivating the tops down as soon as they show above ground. In this way the plant gradually becomes exhaused.

Q. Do you find that the farmers themselves are doing anything to exterminate these weeds ?

A. Oh, yes. They are doing a splendid work throughout the country. I do not know any subject which is more interesting to farmers at meetings than that of noxious weeds, and I do not know of any line of study where better work is being done in this direction than through the fall exhibitions, the farmers' institutes and the agricultural papers.

By Mr. Cochrane:

Q. How do you say you get rid of daisies in the clover?

A. The ox-eye daisy flowers about the same time as the clover, therefore seed your land down with clover, cut your first crop before the daisy seed is ripe, and when you cut the second crop you do the same thing again; then you plough up the sod and you destroy the ox-eye daisy, because it only grows on the surface and has no deep roots.

Q. But if the seed gets into the ground will it not lie there and germinate?

A. The seed of this plant is not like that of the wild mustard, which lies in the ground for a great many years and then germinates when a favourable time comes.

By Mr. Burrows:

Q. What about the French weed?

A. We do not recognize the name 'French' weed. Now, we speak of that old enemy as the 'stink' weed. Harrowing growing grain is the best way to destroy the young plants in crops. Early ploughing and frequent cultivation on summer fallows.

Wild Oats.—Some one asked about wild oats. It is generally known when land is infested with wild oats. The best treatment in my experience is to harrow or cultivate the land in the spring. Then sow it rather late with an early variety of oats or barley; cut these for hay when they come into flower; afterwards cut second crop and plough under.

By Mr. Christie:

Q. If you seed down for five years will that not finish the wild oats ?

A. You mean seed down your land to grass?

Q. Yes.

A. I do not know whether the seeds of the wild oats would last in the land for five years or not, but I hardly think so.

Q. I do. I have lots of wild oats.

A. In what district, sir?

Q. I had a field of 20 acres in which many wild oats occurred. My experience is that you can get rid of them by allowing the field to remain five years in grass.

A. I do not think you will get many farmers who are ready to do that. I will ask the question of the gentleman from the West who asked about wild oats. Do you think there are many farmers in the West who would want to leave their fields in grass for five years?

By Mr. Maclaren:

Q. Does not the seed of wild mustard remain in the ground year after year?

A. Yes, it remains a great many years.

Q. Are the seeds carried back and forth by the manure?

A. They seldom get into manure, I think.

Q. It is liable to turn up years and years afterwards?

A. As much as twenty years afterwards.

Q. What about Perennial Sow thistle?

A. That is a very deep rooted perennial plant. It lives a great many years, and spreads widely by its running root-stocks, and also ripens great quantities of seed. The best method of eradication is to plough very deeply to destroy as much of the root-stock as possible. The best time to do that is just as it is coming into flower, if the land is not under crop at the time. If you are working the land to get rid of sow thistles it is a good plan to give up the whole year to summer fallow. The proper time to plough is at flowering time, because the plant is then in its weakest condition, having drawn off the largest amount of nourishment from the thick, fleshy root-stocks, but that alone is not enough—ploughing alone will not destroy this sow thistle. You will have to keep your land so cultivated during the rest of the year that the plant cannot get its leaves above the surface. The next season the land must be used for a hoed or cultivated crop—as potatoes, corn or roots.

By Mr. Wright (Muskoka):

Q. With regard to the ox-eye daisy, we have large stretches of country where they are spreading. Is there any method of killing them where the land cannot be cultivated?

A. The only method under such circumstances would be to turn sheep on the land to eat them, as these useful animals will eat daisies as well as many other troublesome weeds.

By Mr. Martin (Queen's):

Q. We have large quantities of wild tansy down in our country.

A. Where is that?

Q. In Prince Edward Island.

A. Tansy is not as a rule a very bad weed, it generally grows along the edges of fields and roadsides. Is the plant the ordinary garden tansy with a yellow flower, finely cut up leaves and a strong odour?

Q. It is just like the common tansy.

A. A strong smell?

Q. Yes.

A. Tansy is a shallow-rooted perennial, with the roots near the surface of the soil.

Q. Propagates by the roots?

A. Yes, its roots do not grow very deeply, but they spread quickly, forming large patches.

Q. They grow on the surface?

A. Yes, the only way known to me is to break up the surface, and then cultivate till all the weed disappears.

By Mr. Herron:

Q. Is it impossible for good oats to degenerate into wild oats without having some wild oats seed to begin with?

A. The question has been very often asked. There is no doubt that cultivated oats were derived from wild oats, but it took a good many centuries to do it, with careful selection and crossing, and I do not think that cultivated oats would go back to wild oats except through a good many centuries of neglect, during which they would be more likely to die than degenerate.

Q. I am not positive, but I believe they are doing it.

A. I think uncertainty on this subject is chiefly owing to the fact that wild oats

are very prevalent in some districts; experiments I have tried have never had the slightest effect in two or three generations. I have tried starving some plants and feeding others very heavily, all grown from the same seed. The wild oats were only affected in the size of the plants. There was no reduction or increase in the hairiness of the seed or in the size of the kernel. Similarly cultivated oats grown on very poor soil were only reduced in size. There are some kinds of oats which are very much like wild oats, Joanette for instance. What makes it seem unlikely to me that this rapid change takes place, is that where it is supposed to occur in the west the soil is remarkably rich and instead of degeneration we should expect improvement. The winter would have no effect because oats very seldom go over the winter. There are certain characteristics by which wild oats may be recognized. These are most conspicuous in the seed. The kernel of the wild oat is exceedingly small, with a large hairy husk, and twisted awn. Another character is their earliness and the irregularity with which they ripen. Moreover we do not find any oats which have characters half way between wild oats and cultivated varieties. It is the opinion of botanists that cultivated oats do not change to wild ones. The Brackman and Kerr people of Edmonton are, I believe, trying some experiments now to see if they can answer this question.

PEA WEEVIL.

By Mr. Henderson:

Q. How do you think the reduction in the Pea Weevil is brought about—by farmers ceasing to sow peas or by this process which you described?

A. I do not think that the ceasing to grow peas had any effect whatever, nor is it a practical remedy. To be practicable, everybody without exception would have to cease; but in every district a certain number of people would grow peas in their gardens. Although an effort was made to persuade people to desist from sowing peas, I consider that such a thing is absolutely impossible. Neither the people of Canada nor of any other country are quite so generous or so much interested in the public weal that they are willing to give up a favourite vegetable like green peas for the benefit of any branch of trade, or for a class of the community that they are not specially interested in. Such a cessation of growing peas, to be effective, would have to be absolute, and not a single patch of grown peas anywhere in the area. I do claim that the fumigation did a lot of good. Owing to the intensity of the cold last winter and the cool, damp seasons which we have had for the last two years, we have now, as I have stated, fewer Pea Weevils in the country than ever before, as far as I know. The seedsmen will provide their customers with peas without the weevil if the farmers and others will only ask for them. Peas which have been weevilled will give only about 20 per cent of plants as seeds, and every weevilled seed has lost one-sixth of its bulk for feed. So that if you buy weevilled peas you are paying one-sixth more than you ought to pay, and if you sow weevilled seed you may only get 2 per cent to grow, and you pay 100 per cent for them.

By Mr. Lewis:

Q. You said that you took a coal oil barrel to put the peas in in order to kill the weevil?

A. Yes. Put the peas into the barrel, pour in the liquid and then close the barrel tightly. Bisulphide of carbon is a liquid which volatilizes quickly at the ordinary temperature of the atmosphere, and the heavy vapour runs down among the peas in the barrel and kills quickly all insects which may be there.

Q. In reference to bagging up the peas for two years, would not the peas injured by the weevil be destroyed for seed?

A. They would, but the weevil would be safe in the bag, and any peas not injured would be just as good for seed in the second season as they were the first spring. There

seems to be no depreciable increase in the value of peas for two or three years for seed.

Q. Will bagging prevent the weevils coming out? What kind of bags?

A. Any kind of bags, even paper bags would prevent their escape.

Q. An ordinary sack will not do?

A. Yes, it will; they are unable to get through it, even a coarse sack.

By Mr. Henderson:

Q. I do not understand if the weevil gets into the pea when it is in its green state—

A. Yes, it does as a grub, and remains there till the next year, when it goes back to the field full grown, if you sow peas containing the beetles. The egg is laid in June, the grub hatches and lives inside the green pea, it becomes mature by August; occasionally some leave the peas in autumn, but most go through the winter inside the peas. When the peas are sown in the spring the weevils are carried to the field with them. A few days after they eat their way out of the seed pea and remain in the field feeding on the foliage of the young peas until the young pods are formed in June, when they lay their eggs on them, and the old beetles then die.

CHESS.

Q. Is chess in wheat produced by sowing chess?

A. Yes.

Q. And not from sowing good wheat?

A. No. I found a great deal of difficulty in persuading some of the visitors to the Experimental Farm that chess can in no way come from wheat, until I hit on this device which has been very convincing to those who see it. I sow every year several rows of chess, and by the side of these I sow several rows of fall wheat. When visiting the grass beds farmers frequently discuss this supposed relation between fall wheat and chess, and some hold very positive opinions. When the discussion has gone far enough I generally say: 'Now then, gentlemen, you all know what a grain of wheat is like,' and they all admit they do. I then take them to these plots and we dig up some plants of chess and some of wheat; both being grasses, the old seeds remain attached to the roots for some time, and in every instance you can find the seed of the chess plant attached to the roots, and as it is entirely different in appearance from the wheat, having a husk on it bearing several conspicuous bristles; those who see it are generally somewhat shaken in their faith, and many are convinced.

By Mr. Jackson (Elgin):

Q. How do you account for having chess on new land that has never had any crop on it, where perfectly clean seed was sown, and where there has been a heavy crop there is none?

A. I cannot account for it, unless you allow me to say that it was 'apparently' perfectly clean seed that was sown. I had an experience in the Northwest, and I merely relate it in order to point to the fact that it is hard to recognize the presence of foreign seeds sometimes. I went through the Prince Albert district two or three years ago, and there was a weed very prevalent there—the ball mustard. We collected samples of wheat from 27 farmers who had some of their seed left over. We took small samples from each, and in every case we asked them this question: 'Did you sow clean grain in the spring?' And the answer in every case was very positively, 'Yes.' We made an examination of those samples, and out of the 27 we found that 20 of them had seed of the ball mustard in it, but they did not know it. The reason is that the seed is like a small grain or particle of earth, and it had been overlooked when examining the wheat seed, probably under the impression that it was a small lump of earth. It is absolutely impossible for any treatment of wheat to turn it into chess, which is a different and distinct grass, not even closely related to wheat.

Q. In this section I speak of, two years ago I opened up some new land with clean seed, and expected to get a good crop of wheat and that the result would be satisfactory.

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Last spring the wheat winter-killed around the edges where the snow was lying on the top, but in the centre of the field there was a heavy crop. There was no chess at all in the centre where the wheat was good, but around the edge it was three-quarters chess?

A. I cannot account for it.

Q. Neither can I. That field had been in pasture and had never had a crop on it before; it had been in pasture for over 30 years?

A. Well, you see, in pasturing that land the stock that fed in there might have been feeding before on chess. I have carried on these experiments with chess and wheat for 15 years, and have never been able to produce chess from fall wheat by any treatment such as any of those which are supposed to produce it in the field. I can give no further explanation than that. If you have any fall wheat this year I would like to try the experiment that I have referred to of digging up some of the plants carefully as soon as you can recognize them as chess, and I am sure you will find that I am correct.

By Mr. Henderson:

Q. Have you not observed that in a crop of wheat where the fall wheat has been winter-killed chess comes up frequently?

A. Yes, and in my experimental plot where I plant year after year in one bed 100 grains of chess and 100 of wheat alongside of each other, there is never any of the chess missing, while from 25 to 30 per cent of the wheat is killed out by the winter. The chess is much hardier than the wheat, and that is the reason it is more conspicuous where the wheat has been killed out. It stools out more, having more room.

By Mr. Jackson (Elgin):

Q. You make the statement that it is practically impossible for chess to grow from wheat?

A. I do—and I challenge the whole world to disprove it.

Q. You will find that it is pretty hard to make some of us who have experience on our farms agree with you on that. As a matter of fact, I have been a farmer all my lifetime, and I have raised wheat on ground, taking it from the virgin soil, and sowed pure wheat, no chess in it whatever, I venture to say, and it produced chess, not where the wheat grew vigorously like, but where it was killed, or almost killed, out; in low places and around fences we would have lots of chess. As a matter of fact, some years with us we have sowed pure wheat and reaped almost the whole crop of chess, simply because the fall wheat has been killed out—I am speaking of fall wheat?

A. I know it is very difficult to believe, but I think if you will try that experiment next year and dig the plant up, you will be convinced. Now, sir, I am not trying to persuade you. I want you to examine the matter for yourself, and you will do me the greatest favour in the world if you will disbelieve what I say until you find out for yourself.

Q. I cannot believe it, you know.

A. I am delighted to hear it; the man who always agrees with you does not do you or himself any good, but I am so confident that chess comes only from its own seed that I want you to try and prove this for yourself. I am so sure, that I will gladly stake the reputation of my other work upon it, and if you find I am wrong in this you are at liberty to distrust all my other statements. I have investigated this for years, and I am quite confident that it is not within the power of human beings by any treatment to get a plant of chess to grow from a seed of wheat.

Q. You can come up to the township of Southwold and tell the farmers there who have been farming all their lifetime that you are correct, and they will say to you the same as I do, that they can scarcely believe it—unless they see it for themselves.

A. That is it, unless they see it, but every reasonable person will, I believe, be convinced if next year when the chess is growing in the wheat he will water the soil so as to make it soft and mellow, and then make the test by taking a spade and digging up the chess plant carefully and then examine the seed attached to the root, he will see the difference between the seeds at a glance.

Q. We have uniformly good crops of wheat in our district when we have no chess whatever, but in seasons where the wheat is almost entirely killed, or the plant is very weak, then you have chess, and where the wheat plant is strong there is no chess.

A. I know it is where the wheat is killed out it shows most. Your position is the one that is taken by thousands of farmers, but the question is one that I have been investigating for many years; I am so confident in the result of my investigation that I ask you to make the same test, because I think my investigation of that particular question has been a little more thorough—because it has been made with the special object of finding out the truth—than that of most people who complain that their wheat is full of chess.

Q. I have heard farmers saying that they have had chess growing on the same stem as the wheat?

A. I have heard it, too, and I have publicly offered $1,000 to any one who will find me one single example. Some years ago the *Farmer's Advocate* published a picture of an ear of wheat with a spikelet of chess growing out of the side. They were very careful about it, however, and they asked a committee of scientific men to examine it and would not allow it to be touched until that committee met. If I remember rightly, Dr. William Saunders was one of the committee. During the course of the examination of the specimen one of the members of the committee bent the ear of wheat slightly and the spike of chess dropped out. It had merely been caught in the chaff of the wheat by accident and broken off the panicle of chess on which it grew.

By Mr. Lancaster:

Q. You said that the chess is allied to the wheat?

A. Yes, but not very nearly; they are both grasses.

Q. Chess is usually associated with wheat, is it not?

A. It can be grown with other crops and it can be grown alone without any crop at all. The only reason it is found in fall wheat more than in other crops is because they are both sown in the autumn and mature the next year. They are biennials and very few other crops than fall wheat are of this nature. Where winter oats are grown chess occurs with them.

Q. That is the explanation of that association of the two plants?

A. Yes.

By Mr. Blain:

Q. It will come up as a volunteer crop in the following year along with the hay?

A. Yes, if the seed is there; but it is not a longlived seed. The seed left in the ground, if it did not germinate the first year, would rot. I grow it every year simply to show it to farmers. However, it has special value for feed. In Oregon, and Washington State where it is grown for hay, particularly on alkaline land, it is worth $8 a ton where timothy is worth $10; so that it has considerable value as feed.

WILD CARROT.

By Mr. Christie:

Q. Have you had any knowledge of the wild carrot?

A. No, it does not grow here as a weed. It is merely the cultivated carrot which has run wild. It is a rather troublesome weed in western Ontario and in parts of the United States.

Q. In western Ontario?

A. Yes.

Q. There is a lot of it there.

A. It is an easy weed to get rid of. Being a biennial plant it only lives for two years, and if regularly mowed or fed off by sheep so that no seeds ripen, it must soon disappear.

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LOCO WEED.

By Mr. Herron:

Q. Have you any knowledge of the loco weed?

A. Yes, I have examined and studied it in the North-west for many years, but I have never seen a case of Canadian bred animals being locoed.

Q. It is supposed to exist in Alberta.

A. Yes, the loco weed is common all through the Territories and across Manitoba to the wooded country.

Q. I know herds of horses that are crazy for it.

Q. Were they not driven over the border from the south?

Q. No, raised in Canada.

A. Well, the loco weed is very abundant in Alberta and right through to Manitoba, but it is not nearly so injurious there as on the Montana ranges, where there is less vegetation. The only reason I can imagine why it is less injurious here is that we have more grass on the ranges, and our stock do not acquire the habit of eating it as they do farther to the south. The plants are easily seen on the prairies; the creamy white or light purple flowers stand up in a stiff bunch and are very seldom eaten by our stock except as a starvation food when there is no grass. Where there is little vegetation of other kinds I could understand our stock might get the habit of eating it. I have never seen our ranges so bare that the stock had to eat loco weed.

Q. I have been told of a herd of 700 animals that had been eating it?

A. Where was that?

Q. Between Old Man's River and Willow Creek, in the Porcupine Hills.

A. That is strange, for there is good prairie there and plenty of good grass.

Q. Yes, plenty. Is it a poisonous plant?

A. It is poisonous when stock get into the way of eating it. It is not poisonous in small quantities, but if once they get the taste for it they eat it and nothing else, and the characteristic madness develops. It is a member of the pea family, a curious family which contains many anomalies in the way of closely related plants, some of which are poisonous and others of the highest value as food.

Q. I suppose it is something like the opium to the Chinese or tobacco to the Canuck?

A. Well, it is more injurious than tobacco without its advantages.

Having read over the preceding transcript of my evidence, I find it correct.

JAMES FLETCHER,

Entomologist and Botanist of the Dominion Experimental Farms.

FRUIT CULTURE AND POTATO GROWING

COMMITTEE ROOM 34,
HOUSE OF COMMONS,
FRIDAY, March 24, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Greenway, Chairman, presiding.

Mr. W. T. MACOUN, Horticulturist of the Central Experimental Farm was present at the request of the committee and made the following statement.

MR. CHAIRMAN AND GENTLEMEN,—I appreciate very much the honour of having the privilege of bringing the importance of the fruit industry of Canada before the attention of this committee, and especially the work being done by the Horticultural Division at the Central Experimental Farm.

Fruit growing is a very important industry in Canada, and one that is rapidly growing.

IMPORTANCE OF THE FRUIT INDUSTRY.

There has been a steady increase in fruit production, and on comparing recently the statistics between the census of 1891 and of 1901, I find that in nearly every case the fruit production has doubled, and in some cases more than doubled; for instance, in the case of the peach, we are producing eleven times as many peaches to-day as we were in 1891. It is thus easily seen that this industry is a growing one. This is a good indication to me that it must be a profitable industry, and that we have now a better market for our fruit than we had some years ago. Now there are several reasons, I think, why there is a greater production in fruit in proportion than there is increase in population. For instance, the export trade in fruit has developed very rapidly, and then I think our own people are using fruit to a very much larger extent than they used to do. The apple, for instance, is not now considered to be for the dessert table alone, but it is being used as a regular article of diet, and that is so with many other fruits. Fruit is getting to be just as common an article of diet as flour or other necessary products, and that is one reason I think why our industry is developing so rapidly. In order that it may continue to develop with the same rapidity in the future as it has in the past, we have to keep extending our markets and perhaps there is no better opportunity at the present time than in our own home market, in Manitoba and the North-west, where, if we are able to get our fruit there in the proper condition, and if the right kind of fruit is packed, good prices can be obtained. The freight difficulty which you have just been discussing in regard to general rates throughout the country applies also to the products of the orchard. The freight arrangements for fruit at the present time are not what they might be, and the results are sometimes uncertain. But we are hoping that there is a better time coming for the fruit grower and that there will be a better distribution of fruit throughout the whole Dominion, which will tend to increase the production of fruit very materially indeed.

VALUE OF EXPERIMENTS IN HORTICULTURE.

In my position at the Experimental Farm as Horticulturist I try to find out how the fruit growers of Canada can be assisted as much as possible by our work. The men who are engaged in the business of fruit growing have very little time themselves for experiments, and it is just possible if they do not get assistance from outside, or look for it from outside, they may carry on a wrong method of culture, or they may be growing varieties that are not as profitable as some others, or letting something destroy their fruit, which if they had proper information, they would be able entirely to control. That is why I think the government has been wise in establishing experimental stations for the purpose of carrying on experiments in fruit culture, so that we may be in a position to tell the fruit growers of this country the best methods to adopt in growing fruit. To show you how important it is for a fruit grower to know as much as possible about fruit growing, I may say that there are fourteen insects which are injuring the apple crop alone in Canada, also six fungous diseases. There are thus twenty enemies of the apple alone. Of the plum we have ten insects, and six fungous diseases which are injurious to it and the grape, peach and other fruits suffer just in the same proportion. These pests have to be fought against, and in this respect we are able to give the fruit grower the information necessary to cope with them and enable him to carry on his industry profitably.

Among the best ways in which I believe we can help the farmer or the fruit-grower are these : We can test the different spraying mixtures and spray pumps and be able to tell him how to treat fungous diseases and insects; by trying different methods of culture for the various fruits we are able to find which is the best for him to follow. We are also able to help him by testing all varieties which are offered for sale, and thus are able to tell him which kinds are the best to grow. We can originate new varieties for him, so that we can give him improved sorts which he could get in no other way. Then there should be means of identification of the varieties for the fruit-grower. As you know at the present time, there is a Fruit Marks Act in operation in the Dominion, and under that Act every fruit grower when he packs his fruit has to put the proper name on the package, and when it reaches the inspector, if it is not properly named, the grower may be fined for it. It is sometimes not the grower that is at fault; he does not know the varieties, he may have got trees from which the fruit was taken wrongly named. It is frequently found when a tree comes into bearing that it was not the tree that was ordered, and sometimes the farmer does not know the difference, and it is only when he puts the fruit on the market and the inspector informs him that it has been falsely packed that he knows the difference. The grower is now in a position to have his fruit properly named, because at the Experimental Farm we examine any fruit that is sent to us, and give it its proper name if it is at all possible to do so. Then our reports and bulletins, which are published from the farm, give in a concise and practical form the results of our experiments and the recommendations which we make. I have here some of the publications that have been issued by the horticultural department during the last 15 or 16 years since the farms were established. We have published bulletins on the apple, plum, pear, peach, cherry, raspberry and strawberry, and also bulletins regarding fungous diseases, and also in regard to ornamental and forest trees.

METHODS OF DISTRIBUTING EXPERIMENTAL FARM PUBLICATIONS.

By Mr. Martin (Wellington) :

Q. What means have you taken to distribute this literature?

A. We have a mailing list at the Experimental Farm, and any farmer or resident of Canada that sends his name to the Experimental Farm can get all this information free of charge.

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Q. Do you think it is generally known throughout the country, or that means have been taken to let the people know that they can obtain that information free?

A. It seems to me that it should be known by this time, as every effort has been made to bring it under their notice.

Q. Have you ever found that a great deal of this printed matter remained on your hands and was never used?

A. No, certainly not. We have an edition of 60,000, and our mailing list is about 55,000. The balance is used up to supply foreign libraries and foreign correspondence and those whose addresses are sent in, and also special applications, so that we never have a very large number left over. The farms have been established so long, it is now 18 years, I should think every farmer ought to know that he can obtain that information free.

By Mr. Barr:

Q. Do I understand you aright, that all they have to do is to just send in their names and addresses, and they will get all these publications.

A. Yes.

Q. And continue from year to year ?

A. Not the back publications unless they are asked for, but if they ask for them specially they get all that we have, but they get the current numbers, and all future numbers if they ask for them.

Q. If any one sent in a list, would that act just as well?

A. Certainly, if the names were of persons who really wanted the publications.

By Mr. Finlay :

Q. Would it not be better to get the township voters' lists and to mail them to everybody?

A. There would be a great waste of literature that way. There are many people on the voters' lists who are not farmers, and who would not care to look over the bulletins. The best way, I think, is for the member in his constituency to look over the list and select, say about one hundred names of those he knows would care to get them and they would be sent to those persons.

Q. Would that be accepted?

A. Certainly, if you select only those persons who would be interested in those reports, that is all that would be necessary.

By Mr. Wright (Renfrew) :

Q. All those who are members of farmers' institutes get the reports and bulletins?

A. I do not think so.

Q. Not the Dominion bulletins?

A. He gets the provincial bulletins, but not the Dominion.

By Mr. Martin (Wellington) :

Q. I think that is a point of very great importance—that our farmers do not know they can get these publications free. I do not know why; there need be no difficulty; you can put an advertisement in all the local papers?

A. I am glad to hear that point brought out here, because I can tell Dr. Saunders about it, and it would be a very simple matter to publish it in the papers if thought necessary. It is surprising too that farmers do not appreciate the fact that they can send letters to the Experimental Farm free of postage; it has been announced time and again, every year for the past eighteen years, that the farmers can send letters to the Experimental Farm free, yet I suppose nearly 50 per cent of the letters that come in, and we get many from farmers, have stamps on them.

By Mr. Schell :

Q. That is partly owing to the fact that the provincial department on the literature they send out say, 'free if not sealed,' and the people themselves are more or less confused in regard to the Dominion and the provincial departments.

By Mr. Martin (Wellington) :

Q. I think it would be proper to send a small local advertisement to every local newspaper in the country informing people that they can obtain these bulletins and reports, and also that the letters they send to the Experimental Farm are free of postage, and that the farmers are expected to use the department as much as possible. I do not think they are getting one-half the benefit that they ought to.

A. I think if this committee would pass a resolution to that effect Dr. Saunders would only be too happy to do what he could to carry this out.

By Mr. Wright (Muskoka) :

Dr. Saunders is already doing some advertising with regard to some of the branches in the Experimental Farm, advertising in the local papers. I think it would be well to have a little tabulated statement dealing with all the branches taken up on the farm, not drawing attention to one thing, but setting out the different lines of grain, fruit and the different things dealt with here, and then drawing the attention of the farmers to the fact that by sending in their names and addresses they can get information free.

A. We found that absolutely necessary in the grain distribution. Dr. Saunders told me that he found occasionally, when large lists were sent in, the grain was sometimes sent to farmers who never used it. We send notices to papers throughout the Dominion saying that if the farmers apply within a certain time they will get a sample of grain, and only those who apply will get it.

Q. He is already advertising in these papers drawing attention to certain branches of the farm work. It would not cost a cent more to put in other headings that we wish to draw the farmers' attention to, and we might as well do the whole thing.

A. Our notices for the grain distribution are always sent out as items of news, and have never been refused, so far as I know of late years.

By Mr. Finlay :

Q. It is done free?
A. Yes.

By Mr. Barr:

Q. Is it a fact that they are done free?
A. Yes.
Q. In not very many cases?
A. It is optional whether they put them in or not.
Q. They are sent to every paper?
A. Yes, and they are asked to put them in.

By Mr. Wright (Muskoka) :

Q. How many branches are taken up affecting farmers and fruit growers at the Experimental Farm ?

A. I may just mention the main departments at the farm. There is the director, who has general oversight over the Central Farm and the branch farms; the Agriculturist, who experiments with farm crops and live stock; there is the Horticulturist, who has charge of the fruit and vegetables and botanical garden and forest belts ; the

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Botanist and Entomologist, who makes a study of plants and insects; there is also the Chemist, the Experimentalist, and the Poultry Manager. I think that covers all.

HOW FRUIT GROWERS ARE AIDED BY THE CENTRAL EXPERIMENTAL FARM.

I was just referring to the means by which we are trying to disseminate information with regard to fruit culture in Canada. I was speaking of the reports and bulletins published by the Horticulturist at the Farm. Another means by which we are trying to impart information is by attending meetings, and I think we can perhaps bring home information to the farmers and fruit growers better that way than by bulletins. I attended a series of meetings in the Niagara peninsula last week which, I think, were not only helpful to the farmers and fruit growers, but were also an inspiration to me to do better work for the fruit growers of Canada. Then there is the correspondence which we are carrying on at the farm, and which is a growing one. Every fruit grower or farmer in the Dominion is invited to send questions to us, questions that are puzzling him regarding fruit culture, and we are always ready to try to give him an answer which will satisfy him and which will help him in his work. Experiments are being tried with different methods of orchard culture and spraying, and the identification of fruits, &c., takes considerable time. Eighteen annual reports have been published besides other information on fungous diseases, spraying and so forth. Not only has the horticulturist experimented in fruit culture, but in vegetables as well. At present a bulletin on potatoes, prepared by myself, which is thought will be of the greatest value to farmers is almost ready for the press. Last year the potato rot was very bad in Ontario, and the loss as given by the Bureau of Industries was from 20 to 50 per cent. From results obtained at the Experimental Farm it has been shown that this can be practically prevented by thorough spraying. The work of the horticultural department also includes work in connection with the botanic garden and the forest belts. The area of land in the horticultural department is about 125 acres, in which are included 40 acres devoted to fruits and vegetables, 65 acres to the arboretum and botanic gardens, and 21 acres to forest belts.

The various experiments being conducted in these several branches have been dealt with from time to time before this committee. I wish only to refer to two or three of these this morning as the time is getting late. The first one I would like to refer to is regarding the diseases of the grape.

DISEASES OF THE GRAPE.

The importance of this subject has been brought home to me very much during the last few months by the spread, the rapid spread, of the black rot disease of the grape in the Niagara peninsula, and during the last few years by the rapid spread of the disease in Essex county. We have studied the various diseases of the grape and are in a position to offer recommendations as to how these can be prevented. Last week in the Niagara peninsula at this series of meetings I had the opportunity of speaking several times on this subject, and I think that this may have helped to awaken the fruit growers there to the importance of doing something before the disease spreads any more than it has already. In Essex county vineyards have been rooted out during the last few years from the fact that the fruit growers there did not think they could control the black rot, which has practically destroyed the grape in many districts year after year. Last year in the Niagara peninsula the black rot was very bad, indeed. So bad that in some vineyards there was not a bunch of marketable grapes. It is thus time for them to begin and do something there to prevent its spread. In Essex county, even though the black rot has spread so rapidly and is so bad, if the fruit growers would make up their minds to give the vines a thorough treatment by spraying them, they could get them back to their original health and vigor and freedom from disease. Be-

cause it has been proven that this can be done in places where this disease has been troublesome. I should like to mention here the state of Ohio which was very much troubled with black rot on the grape. The best vineyardists there do not fear it now any more than other diseases and insect pests which trouble fruits. This black rot is a fungous disease which spreads very rapidly by spores. Just at this time of the year there are millions of spores in the diseased grapes which are hanging to the vine, and there are also probably millions of spores lodged on the trunk and upon or under the bark of the vine, and also on the canes, and just as soon as growth begins and the proper conditions of moisture and heat arise these little spores germinate and penetrate the new growth, and the first indication the fruit grower has of the disease is the little brown spots on the leaves, little brownish roundish spots, and longish brown marks on the stem. On the surface little black spots, black pustules, appear, and inside these little black pustules the new spores are lodging. This disease multiplies so rapidly that it only requires a very few days to spread. The spores on the leaves and stems blow to the young fruit which is now set. It has been found that the young grapes can be infected with the disease practically as soon as they are set, just after blossoming time, and it is absolutely necessary in order to prevent the disease to have the vines covered with a fungicide so that the spore will be killed before it penetrates the fruit. As soon as the spore penetrates the fruit, if the weather conditions are favourable, it will begin to grow rapidly and spread all through the fruit. It ramifies by means of the mycelium of the fungus and feeds on the interior of the grape, the result being that in a very few days the berry begins to shrink, to shrivel and then becomes ridged, the whole grape turns black, and is covered with the black pustules inside of which are these myriads of spores. These blow again unto other grapes which have not been infected, and so the disease spreads; and at the end of the summer, if the conditions are favourable and the disease is not checked, the whole vineyard will be infested and there may practically be no fruit fit for the market. I was at one vineyard last fall near St. Catherines, consisting of about 15 acres, where I do not think there was one bunch in the whole vineyard which was fit for market. I saw another vineyard up there which had been sprayed seven times. It was not entirely free from the disease, but was in such good condition that the man marketed many dollars worth of good grapes, so that it paid him many times over to adopt these preventative measures.

By Mr. Blain:

Q. What effect does frosty weather have on the spores?

A. It is not known what effect cold has on the spores, but it does not seem to have much; at least the amount of cold we have in an ordinary winter, but the weather conditions have doubtless some effect. The spores are so small they are not visible to the naked eye, and of course it is a very difficult matter to determine. But the weather conditions in summer have a great deal to do with it. Now, in dry seasons the black rot is not so troublesome, but in moist summers, like those we have had during the last two years, the disease spreads very rapidly and the result is that it destroys everything. What we are recommending, and what we have found by experience—for I might say that this disease has been treated successfully for the past sixteen years—the treatment is not new at all, but it is not generally known by fruit growers of Canada because they have not been troubled much with the disease before recent years. Bordeaux mixture is what is used to prevent it. It has been found that the best times to spray are just before the grapes begin to bloom, then just immediately after blooming, and then about five times afterwards, keeping the vines covered with the mixture from before blooming time until the latter part of summer. Now, most fruit growers look aghast at a recommendation like this. Those who have not sprayed will say that it is impossible to do that. But those who have done it find that it pays them well and many successful examples are found now in the United States, and, in fact, in the Ohio districts they have no trouble with it at all. Our best fruit growers are beginning to see

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it now, and one I saw last year is perfectly convinced that he can control that disease if he keeps his vines covered with mixture all through the season. The last two sprayings have to be made with a mixture which does not colour the crop. This is called ammoniacal copper carbonate.

Q. Does the mixture you spray with affect the quality of the grape?

A. Not at all. I might just give the formula of the Bordeaux mixture. The formula is 4 lbs. of blue stone, 4 lbs. of lime and 40 gallons of water. That disease, as I said, is spreading very rapidly and if the conditions continue favourable it will probably spread over the whole district.

By Mr. Schell (Oxford):

Q. You do not use any Paris green?

A. Not in that mixture. Of course if there are any insects affecting the fruit a little Paris green can be added, namely, 4 ounces to the barrel of Bordeaux mixture.

There are not less than five diseases affecting the grapes in the Niagara district. This black rot is the one that is causing the greatest scare at the present time, but there are five altogether. It is another disease called the brown rot which has caused the most injury in the past, that is, up to the last two years, in the Niagara district. This disease not only affects the fruit, but affects the foliage as well. I might say that the black rot does not spread over the foliage, it does not extend over the whole leaf, but by means of the spores from the diseased spots the disease spreads. Once a little spot is affected on the leaf the spores appear, but the spot does not spread much. In the brown rot the spore alights on a leaf and germinates. The fungus then grows all through the leaf and as a result the whole or the greater part of the vine is destroyed, and if you go through many vineyards during the latter part of August or early September you will find the leaves dried up all the way through, and this, to a very large extent, is due to the effect of this brown rot, which not only, as I say, dries up the leaves, but affects the fruit as well. It is in some respect a more serious disease than the black rot, although it does not usually destroy much fruit, because once a spore enters it may spread through many leaves and it may spread through a whole bunch of fruit. But with the black rot it required a fresh infection for each fruit. This brown rot, fortunately, can be sprayed at the same time as the black rot with the same fungicides. Very often the two diseases attack the vines at the same time. Then there is the powdery mildrew, which is the ordinary mildrew of the grape. This grows on the outside of the leaves and can be prevented by one spraying usually either with sulphur or Bordeaux mixture. Then there is the anthracnose, ripe rot and the grape leaf blight. All these diseases, although they have slightly different life histories, can be treated with this Bordeaux mixture with very good results.

Now there is just one other matter which I would like to draw your attention to this morning, unless there are other branches of the work you would like me to touch upon, and that is with regard to the potato.

POTATO CULTURE.

As I said, I am preparing a bulletin on the potato and it will be ready for the press I think next week. It has been brought to my attention recently, more perhaps than it has ever been before, what a great loss there is every year from improper methods of growing the potato. The potato, as you know, is a very important food product in Canada. According to the last census we had over 55,000,000 bushels produced in this country. The average yield per acre for the whole of Canada is about 123 bushels, for the province of Ontario the average yield per acre is only 115 bushels, and when

I state that it is possible to raise 1,000 bushels of potatoes to the acre, because it has been proven by witnesses that this has been done, not on a whole acre, but on a small plot, when it is possible to raise 1,000 bushels to the acre, just think of the possibilities of increasing that crop of 115 bushels. Of course I do not mean to say, in fact I think it is practically impossible for a farmer to raise 1,000 bushels on a whole acre. That is practically impossible, because he cannot see that every plant in the acre is in perfect condition and not affected by disease nor by the potato beetle, nor that all the soil is uniform and the moisture is the same. But I believe that with proper methods that yield can be increased and doubled, and perhaps trebled by proper methods. As I say the average now is only 115 bushels to the acre. The highest yield we have been able to get on the experimental farm on a small plot is 690 bushels per acre of marketable potatoes and taking the marketable and unmarketable, 772 bushels per acre on a small plot. So you see we have come within 230 bushels of that maximum yield of 1,000 bushels to the acre on a small plot. But in our field crops, about the best we have been able to do is at the rate of 370 bushels to the acre, which we had last year at the farm. So that I don't think it is out of the way at all to say that any farmer with proper potato soil can raise 300 bushels to the acre if he adopts the best methods.

By Mr. Blain:

Q. What would you call proper potato soil?

A. The best soil is a rich sandy loam with plenty of vegetable matter and with a constant supply of moisture. The moisture question is a very important one with the potato crop, and at the same time it is one of the most serious drawbacks. Potatoes will not do well in wet soil at all, but unless there is a constant supply of moisture, especially in the middle of the summer when the tubers are developing, the crop will be lessened very much indeed. One wants a well drained soil, retentive of moisture, a warm soil and also rich in plant food.

By Mr. Lewis:

Q. If you make it too rich does it not tend to increase the foliage?

A. Yes, but as a rule the top of the plant indicates the crop underneath, but if you have a fertilizer which is not well balanced, a strong nitrogenous fertilizer, for instance—a fertilizer rich in nitrogen—and without any other plant food, you will get a large crop and perhaps a small crop, but if you put on an evenly balanced fertilizer, the top usually indicates the condition of the crop underneath.

Last year at the experimental farm we had 73 varieties under test. I would just like to refer here to three or four ways by which the farmer can increase the crop of potatoes. First, as to the question of variety. In 1904, as I said, we were growing 73 varieties at the farm. The largest yielding variety, the Vermont Gold Coin, yielded at the rate of 554 bushels per acre. It is a new variety which has come out during the last two or three years. The poorest yielding variety was the Early Andes, a very early potato, which yielded only 123 bushels. Though they were side by side there was a difference of 431 bushels. That is a larger crop than we would get on an acre in field culture. But coming to the relative proportion between the productive and the non-productive varieties on larger areas of one-quarter acre, in a test of 20 varieties the highest yield was 435 bushels by the 'Dr. Maerker,' and the lowest yield 125 bushels. In that case of field culture there was a difference of 310 bushels between the highest and the lowest of 20 varieties.

By Mr. Wright (Muskoka):

Q. Which was the best potato?

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A. You could not wish for a better potato than the Vermont Gold Coin. I cannot show you that variety, but I can show you one almost identical with it, namely the the Carman No. 1. The 'Dr. Maerker' is not quite so good in quality.

Now, there was a difference of 310 bushels per acre in the field crop between most productive and least productive, taking an average variety which yielded 309 bushels. There was a difference there between it and the highest of 126 bushels to the acre, between the highest and the average one, and that would be perhaps a fair estimate of what a farmer could get of an increase between the varieties that many are growing and the most productive varieties, 126 bushels, or say 100; he should be able to increase his crop by 100 bushels per acre by growing the most productive varieties. And I may say that during the distribution of this last winter we have sent out from the farm several of the most productive varieties and we have been sending them out for several years, and I am quite sure that it will influence the crop very much indeed.

There is another point with regard to culture. It has been proven by careful experiments that there may be an increase of 40 bushels per acre if the potatoes are cultivated six times instead of three, the latter being the number usually given by farmers who usually cultivate them about up to haying time.

SPRAYING POTATOES.

It is stated in the November crop report of the Bureau of Industries for the province of Ontario that the loss from rot in 1904 in the province of Ontario was from 20 to 50 per cent. Taking the average of three years' tests at the Central Experimental farm, the increase in yield from spraying with Bordeaux mixture to prevent blight and rot has been 94 bushels per acre. That is the average of three years on many varieties. In some instances the crop was increased considerably over 100 bushels per acre, the cost of spraying a crop four times being only $4 to $6, depending on the appliances used.

By Mr. Lewis:

Q. Per acre?

A. Yes. I may refer here to the question of varieties again. We find that there are many farmers who have recently taken to growing early varieties because the crop will be well advanced before the blight strikes them. We have found from our experience that the main crop, or late potatoes, if properly sprayed will give a much higher yield. They have so much longer to grow. The difference in yield between our best yielding main crop potato and our best yielding early potato was 64 bushels, and when you get down to the average varieties it runs to over 100 bushels.

By Mr. Wright (Renfrew):

Q. Is that Vermont Gold Coin an early or late potato?

A. Medium late.

IMPROVED METHODS OF POTATO CULTURE NEEDED.

The potato crop could also be increased by better preparation of the soil, the use of freshly cut seed and the use of sets with a good amount of flesh. It is very frequently the case that farmers cut their seed in rainy weather and hold it over. It has been proven by careful experiments that the yield will decrease just in proportion to the time the seed has been cut. If it is necessary to cut the seed early it should be covered with land plaster or lime, which prevents evaporation, and the results are better. It has been proven that the best way to do is to cut the seed, plant it immediately and cover it and the results are very much better.

By Mr. Lewis:

Q. What is the difference in yield where you don't cut the seed at all?

A. As a rule the yield is better where you don't cut the seed, but you have to plant about double or three times the quantity—about double the quantity, or even more, and then unless your ground is in very good condition, you are liable to get a larger proportion of small potatoes if you plant whole potatoes. The most economical sized set as has been shown by very careful experiments, is to cut a medium sized potato lengthwise and crosswise, so that each piece will have about three eyes and perhaps one or two more.

Q. Is there any difference in using small potatoes for seed?

A. It has been found that small potatoes do not produce as good results in the yield as larger potatoes with a good amount of flesh. If there is a dry spring the seed will dry up before it takes root, and there will be blanks all through the field. The losses in some fields from sets not germinating is as large as 10 per cent of the crop. That can be entirely prevented by using better seed.

By Mr. Miller:

Q. How many bushels would you plant to the acre?

A. I would recommend 20 to 25 bushels to the acre.

Then there is the question of preventing the potato beetles from eating the foliage. I do not think there is any farmer who does not spray his potatoes. The difficulty is, he is busy with other things and does not do it until the leaves begin to look badly chewed when he gets at them, perhaps one-quarter of the foliage or one-half of it is eaten and the result is the crop is reduced just in proportion to the loss in foliage. That has been proven by experience; as the plant is defoliated so will the crop be lessened. Now, I think if these methods were adopted we could easily double our potato crop through the country, and I hope when this bulletin is published and distributed through the country it will have the effect of getting our farmers to adopt some better method in regard to potato culture, because they might just as well be getting twice the profit they are getting now.

TWELVE MOST PRODUCTIVE VARIETIES OF POTATOES.

I have brought with me twelve of the most productive varieties of potatoes we have at the Experimental Farm in order to let you see them. These are the twelve varieties which have averaged the best during the last five years.

By Mr. Wright (Renfrew):

Q. Are they all white potatoes?

A. No, some are pink and white, and there are two pink varieties both late kinds. We have found as a rule that the white potato has given the best results.

Q. Which have you found to be the best keeping potatoes?

A. Well, they vary, and there are of course other considerations to be taken note of. This (exhibiting sample) is the 'Dr. Maerker.' It is a good keeping potato, but not as high in quality perhaps, but the heaviest yielding potato we have, taking the five years average which was 496 bushels. Carman No. 1 (sample exhibited) is a splendid variety and one of the best potatoes we have; that has given a crop of 460 bushels per acre for an average of five years. Here is a potato, which is one of the nicest shaped and most uniform in size, and one of the most productive potatoes we have. It is called the 'Money-maker.' It is a good potato and sells well on account of its name.

Q. Is its average good?

A. Yes, that stands the fourth on the list in the average for five years, having a record of 482 bushels to the acre.

Q. Is that an average size?

A. Yes, that is an average size. It does not grow large. I have never seen it as large as this, which is 'Late Puritan' (sample exhibited), and is one of the most productive potatoes for the five years, but it sprouts rather early in the winter, which is somewhat against it, although it is a late potato. This potato gave an average of 485 bushels to the acre. That (producing sample) is 'Canadian Beauty,' which averaged 453 bushels, and this (producing sample) is 'Pearce,' which produced 433 bushels; both of these latter are varieties that have been produced in Canada.

Q. Have you the Vermont Gold; it looks like it?

A. It is much like Carman No. 1, but I have not one of that kind here.

By Mr Schell:

Q. Were these two potatoes brought out in Canada?

A. 'Pearce' was from a seed firm at London, Ont., and Canadian Beauty is also a Canadian potato. Other yields of the most productive twelve varieties are: Burnaby Mammoth, 483 bushels; Dreer's Standard, 459 bushels; Sabean's Elephant, 455 bushels; Rural Blush, 438 bushels; Clay Rose, 433 bushels.

POTATO BLIGHT AND ROT.

By Mr. Wright (Muskoka):

Q. I would like to ask has anything been done to prevent this blight in the potatoes —the blight that strikes them?

A. I would have gone into that question of blight only I brought it up before the committee last year, or the year before, but it might be as well to incorporate it here. The blight and rot is practically the same thing. The disease is carried over in the tuber—that is an indication, I think, there at the end of that tuber (exhibiting specimen) there is just a slight indication there of rot. Now, this is carried over in the tuber, and as soon as it is planted in the soil and the potato begins to grow, providing that eye grows—the eye which has the indication of disease upon it—the spores of the disease will germinate and the fungus will grow up in the potato stem and permeate the whole plant, although the disease is not seen until the leaves begin to turn yellow or brown; that is the time when the spores appear on the under surface of the leaf, the time when the disease reproduces itself. At the time when the spores appear not only has the fungus taken the substance from the leaves, but the latter dry up. As soon as they appear there a microscopic examination will disclose the fact that there are millions underneath the foliage. These soon reinfect the leaves and the foliage will be killed in a very few days, depending altogether on the weather conditions. We find that the so-called 'muggy' weather is the weather in which the disease develops fastest. It spreads very rapidly. If one has his plants covered with the Bordeaux mixture, the same formula as I gave for the grape rot, whenever the spore alights on the foliage it is killed and does not germinate. We have been enabled to get our potatoes to grow at the experimental farm for three weeks longer by using this Bordeaux mixture and the crop has been almost doubled in consequence because during that time it is the most favourable time of the year for the development of the tubers. That is because during that season of the year there is moisture in the air and the crops develop rapidly in consequence.

Q. How much space do you allow between the rows of potatoes?

A. Thirty inches as near as you can.

Q. And how far apart in the row?

A. 12 to 14 inches apart.

By Mr. Wright (Muskoka):

Q. How would it do to cut off the end with those spores which have indication of the rot?

A. Well you cannot always give so much time, it would be a good idea to cut them off. But it would not be practicable on a large scale, but no diseased potato should be planted if possible, because by planting, say one, one dozen sets with the disease on them, that dozen sets would produce spores enough to infect the whole field.

By Mr. Kennedy:

Q. About cutting the potato, you have spoken about cutting the potato like that, in four?

A. Yes.

Q. Well, if you follow that out, would there not be very much more eyes in some sets than in another?

A. Yes, but you cannot go into that question too closely, and pay too much attention to cutting the potatoes, because if you have a large field you cannot give the time. We want to cut approximately that number of eyes. But the greater number of eyes is around the seed end. In order to divide it we simply cut it down through the middle, so that part of these eyes will be in one set and part in the other. Cut it down the middle and then right across. It is sometimes thought that the potatoes produced from that seed end are not as good as from the others, but we have found that we get just as good crops from that end as from the others, because that end sprouts better. If you can keep the plants sprayed with the Bordeaux mixture it is just as likely you will get better results from that seed end than from other sets because the plants begin to grow sooner. In some places in the old country they cut their potatoes and sprout them before planting as they find they get a much heavier crop.

By Mr. Wright (Renfrew):

Q. Have you ever soaked potatoes in the Bordeaux mixture before planting them. Would not that kill the blight?

A. No, as the spores are not on the surface. The soaking is all right for the potato scab because the spores are on the surface but the blight spores are not on the surface and you cannot destroy them that way.

By Mr. Wright (Muskoka):

Q. Would it not be wise to advise that potatoes having any indication of the blight on them should not be planted?

A. It might be worth while to draw attention to the fact that it is not wise to plant any potato which has any indication of disease whatever.

By Mr. Martin (Queen's, P.E.I.):

Q. What is the object of having three eyes in the set?

A. That is a very good point, I am more particular about having a large amount of flesh than I am about the number of eyes. But it is very frequently difficult to get a potato with a large amount of flesh and only one eye. Of course there are some potatoes like Carman No. 1 where you can get that. But the difficulty is that if you recommend one eye, if you tell the farmer that one eye is enough the result will probably be that when cutting there will be only a small amount of flesh left with each

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eye and we have found that taking into consideration every kind and variety it is wise to recommend two or three eyes in each set and then the farmer is sure to have enough flesh.

Q. In our island they cut the top off altogether, they think that the tuber if the tops have been taken off will sprout earlier.

A. I may say that my brother-in-law in Ireland, who is a large grower of potatoes uses nothing else than those seed ends or tops, because he gets the potatoes to sprout early and thinks he gets a better crop. There are a great many of these points taken up by farmers that when you come to examine them are not borne out by the facts, but this must be taken into consideration, if you plant seed end pieces as I said before, having so many eyes you will get a larger proportion of small potatoes. That may be the point to which you refer. You get a larger proportion of smaller potatoes because with the increase in the number of eyes your soil is not usually rich enough to develop all the potatoes which are produced.

By Mr. Martin (Queen's, P.E.I.):

Q. With three eyes to set would they not sprout and be a drain?

A. They sprout. We have tried one eye, two eye and three or four eye potatoes, and we have found, taking everything into consideration, after seven years' experience that the latter size has given us the best results. On Prince Edward Island, where your springs are much moister than ours, one eye and a smaller amount of flesh might be sufficient.

Q. You get a good deal of flesh in one eye?

A. Because there you are not so much troubled by the soil drying up. Here two years ago many farmers lost practically the whole crop because the soil was dried right down to the sets. We had six weeks of drought, you will remember, and the result was that the potato set was destroyed.

By Mr. Miller:

Q. Are the machines successfully used that plant and cut potato seed?

A. The potato planters are very satisfactory because they bring the soil in contact with the set. They put it down and press the soil in contact with the set, so that in dry weather they stand a much better chance than those which are planted in the ordinary way. They are used with perfect satisfaction now.

Q. Do they cut the seed?

A. I was going to say that the cutters are not as satisfactory. The most satisfactory cutters are those where you hold the potatoes yourself and turn them around, but to put them into a hopper and have them come out a certain size is not a good plan at all.

By Mr. Jackson (Muskoka):

Q. Would you advise the use of the hoe, pressing the earth solid?

A. If the soil is light, not if it is heavy. If there is any danger of the soil packing I would not do it at all, because the looser you can keep the soil the better crop you will have provided you are not troubled with drought.

By Mr. Staples:

Q. What about using a potato digger?

A. There are several good potato diggers, but there are none of them which might be called perfectly satisfactory, although there are a few which are quite satisfactory enough and should be used where there are large areas to dig.

Q. Do they dig and pick?

A. Not the ones that I know of. I do not know of any that will pick up potatoes.

Q. I know a farmer in Manitoba that has put in forty acres of potatoes and he is equipped with a full line of machinery. He is planting and digging and I understood from him that the machine in question digs and picks. He got it on a trip which he made in some part of the States?

A. I have not seen that machine advertised and I have never seen it in Canada or anywhere else. You do not remember the name of the firm who advertised it?

Q. I did not pay very close attention to him. He was telling it to me the other day on the train.

A. The most complicated machines that I have seen carry the potatoes up a little inclined plane. The soil is sifted out and they leave the potatoes lying on the top of the soil right along in a compact row so that they can be picked easily.

Q. Might I ask, Professor, if the bulletin which you are about to issue explains the preparation of the ground?

A. Yes, I will go into all that. It will be a bulletin of between forty and fifty pages and goes into the subject pretty thoroughly.

By Mr. Lewis:

Q. When will it be out?

A. It will be in the printer's hands next week.

By Mr. Blain:

Q. Have you come to any conclusion as to the use of fresh manure?

A. It is not advisable to use fresh manure for a potato crop. We have found from actual experience, and it has been the experience of others, that fresh manure is liable to favour the development of scab. I believe it can be applied with much better satisfaction to the previous crop. For instance if you follow corn with potatoes. The plan adopted by some people is to manure heavily for corn and then there is quite sufficient left for the potato crop and it is in the best condition. The system I am recommending in my bulletin, which I think is the best one, is for potatoes to follow after clover, ploughing the clover under in the spring and then planting, because the potatoes thrive best where there is humus in the soil, and the clover crop seems to give the conditions most favourable to the potato. This clover crop can be manured the previous fall, fairly early in the fall, so as to develop a bigger crop of clover, and then you would have so much more plant food to turn under in the spring. Or, if you are going to apply manure, I believe in working in well rotted manure in the spring, thoroughly incorporating it in the soil all through, and on no account putting it in the trenches with the potatoes.

Q. Has flat cultivation or hilling proved the more successful?

A. Well, in some districts flat cultivation is best, in others hilling up. It all depends upon the character of the soil and the amount of moisture. If your soil dries up flat culture is best. If your soil is a little on the heavy side hilling up is best. If your soil is fairly light and well charged with moisture I believe hilling up gives just as satisfactory results as level cultivation. We have found it so at the farm; in fact in four years we have found slightly better results in our sandy soil from hilling up, but we are not now troubled with drought, there is any amount of moisture. In a dry soil, the wind blows across the hills and blows out the soil.

By Mr. Miller:

Q. Do you find wood ashes to be an especially good fertilizer?

A. Wood ashes are a good fertilizer but they also have been found to favour the development of scab. If you have scab in the neighbourhood, or on your farm, it is

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not wise to use wood ashes, but it should be understood that scab does not originate spontaneously. It has to start from spores like other diseases, and if you have not any scab on the farm you can use wood ashes with good results. It has been found that where wood ashes are used, they give best results when spread broadcast and harrowed in.

Having read the foregoing transcript of my evidence, I find it correct.

W. T. MACOUN,
Horticulturist, Central Experimental Farm.

SELECTION OF SEED GRAIN,—CROP GROWING

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
TUESDAY, May 16, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Thos. Greenway, Chairman, presiding.

Mr. G. H. CLARK, Seed Commissioner, Department of Agriculture, appeared before the committee and delivered the following address:—

Hon. Mr. GREENWAY AND GENTLEMEN,—As this is the first time I have had the honour of appearing before you, perhaps you will permit me to refer briefly to the training I had before I took up the work in which I am now engaged. Except for the time that I was attending the common and high schools, the first twenty-five years of my experience was obtained on the farm, near Brantford, Ont., where I was born. I entered the Agricultural College at Guelph in February, 1896, and graduated in June, 1898, when I was given a position on the staff under Professor Zavitz, who has charge of the experiments in field crops. I received a letter from my late esteemed chief, Prof. Robertson, in March, 1900, stating that I had been recommended to him to take the work of which I now have direct charge as Seed Commissioner.

THE OBJECTIVE WORK OF THE SEED BRANCH.

The work of the Seed Branch is mainly along educational lines, and is directed with a view to encourage the production and more general use of high class seeds as a means towards increasing the yield and improving the quality of farm crops.

The first step that was taken was made in an endeavour to stimulate to a practical application on Canadian farms of the principles which make for improvement in crops through the careful growing and continued selection of seed grain. Prof. Robertson has already fully explained to this committee with what success that object was attained, and how the early stages of the work were conducted through the medium of the Macdonald Seed Grain Competition. Nor do I think it advisable to inflict on you at this time a statement regarding the underlying principles involved in the production of high class seeds, except to say that, in the application of those principles, the law that 'like begets like,' and that all living things tend to vary in character from generation to generation, is fully recognized. If wheat or oats be thickly sown on an impoverished soil year after year, the individual plants in the crop will gradually lose their power to reproduce, through their seeds, thrifty and productive plants, until better care, in respect to soil and selection has been given them for a number of years. If the conditions be reversed and those plants which would be considered to be 'run out' were given better soil, and a rigid system of selection were followed for a number of years they would return to their original productiveness. It is, therefore, not only well that farmers should secure the varieties of grain or other crops that are best adapted for their farms, but it is equally as important that they should use seed of those varieties that has had the best of care in cultivation and selection. There may be quite as much

difference between two strains of seed of the same variety, as between two different sorts so far as the capacity of the seed to give a large yield is concerned.

In carrying out this work it has been the aim to solicit the interest of farmers in all districts of Canada who are favourably situated for growing seed of one or more kinds of crops, with a view to induce them to adopt a well defined system in the growing and selecting of seeds, and to make seed growing a special industry in their farming operations.

METHOD OF GROWING AND SELECTING SEED GRAIN.

To commence with, they are advised to get the best obtainable variety and strain of seed. Many of them are able to obtain such seed in small quantities from the experimental farms. To increase the seed in its state of purity and productiveness and to make further improvement, they are recommended to provide each year a small area of fertile and well tilled soil, to use as a base of supply of specially selected seed. On this plot it is not sought to obtain the maximum yield per acre, but rather to provide the individual plants with the most favourable conditions for vigorous growth and secure a maximum yield per plant. To obtain the best results, many of the seed growers have found it expedient to sow wheat or oats in drills about 14 inches apart. That is done with an ordinary grain drill, having every other drill tube stopped. I do not consider that practice would work out so well under the western conditions, where the season for growth is considerably shorter than it is in the province of Ontario. Nature abhors a vacuum, and thin seeding tends to encourage plants of cereal grains to stool. That process of stooling retards the maturity of the plants to some extent. You will understand that the object in having this base of supply, this special seed plot on a farm, is to provide the highest class of seed for the balance of the farm. We have a number of farmers in nearly all the provinces who are now making a specialty of growing seed grain in that way on their farms. They have the highest class of seed that could be obtained at any place in the country, and some of them have been able to supply quantities of it to their neighbours, or to the people in the district where they live who, perhaps, are not so favourably situated for growing seed grain.

By Mr. Wilson:

Q. In what parts of the country do they grow seed in the way you describe?

A. We have been able to get a few good farmers to take up this work in nearly every agricultural district in Canada. In the eastern provinces there would be on an average, perhaps two or three farmers for each county. In Manitoba and Assinaboia same have taken up seed growing in a business-like way, and I am hopeful that within a few years the supply of this quality of seeds will be more plentiful in every district.

Q. In what parts of Ontario are they making a specialty of it?

A. In the province of Ontario the system has been adopted more generally in growing seed corn. I shall refer to that in a few minutes, if you will permit me.

Q. You will kindly give the districts in which they are doing it?

A. Yes. Before harvesting the ripened crop on the seed plots——

By Mr. Cochrane:

Q. Are we to understand there are no parties growing seed on the line you have explained to us in Ontario?

A. Yes, there are a large number in Ontario.

Q. Well, where are they growing it? Where could a man get his supply?

A. I have not a list of the men who are doing that work in the province of Ontario with me. There are about 60 or 70 men who have taken it up. Some of them have taken up the growing of seed grain and potatoes. Many of these men have commenced this work during the last two years.

Q. Where do you get the information?

A. You will be able to get full information after this year from the secretary of the Canadian Seed Growers' Association.

Q. Well, would it not be very important to have information like that? Can you not say where we could get it?

By Mr. Derbyshire:

Q. If I dropped you a line, could you not furnish me with information?

A. Yes. Nearly all of the seed that the growers had for sale this year was sold very early, I think most of it was sold before February.

METHOD OF SELECTION.

Before harvesting the ripened crop on the seed plot, they pick from 30 to 50 pounds of the best and ripest heads and from these they get good plump seed to sow the seed plot of the next year. The system provides for a selection of the best from the best from generation to generation, as would be applied in building up a good paying herd of dairy cows. We now have in Manitoba and the North-west Territories, farmers who have this year sold on an average of 150 bushels for each, of seed wheat, of Red Fife and other good milling varieties that have been improved in this way by several years of selection. Our efforts to encourage this work are most needed throughout the grain growing districts in the west, where it is thought that more permanent good can be done by stimulating private enterprise in the growing of high class seed wheat and other cereal grains than would result from the maintenance of seed farms under government control.

SEED CORN.

I desire to refer briefly to what is being done by those in the eastern provinces, but more especially by those who are growing seed corn. I have here to show you some specimens of ears of corn that are fairly representative of the types of corn that are required for ensilage in the different latitudes.

Here is one that was grown in the county of Essex last year. It would be about the best specimen of ear, that matured last year, that we could get from that district. Last year the seed corn crop was not very satisfactory in any part of Ontario. Let me draw your attention to the depth of kernel in ears of corn that will mature as far south as the county of Essex.

By Mr. Wright (Renfrew):

Q. What variety is that?

A. This is a sample of the 'Leaming variety.'

I have here a sample of corn that matured last year, one of the best ears we could get in the neighbourhood of Guelph. You will see the difference in the depth of the kernel between this ear and the type of corn that will mature further south.

By Mr. Cochrane:

Q. Well, it is not an achievement to grow good corn in the county of Essex, is it?

A. I wanted to show you mainly the difference in the character of the ears of corn from the different latitudes in which they will mature.

By Mr. Wilson:

Q. They are not both the same kinds of corn?

A. No, they are different varieties, but it would not make any difference. If the Leaming variety were grown as far north as the other the kernel would gradually become shallower on account of the shorter season for growth.

Q. Why not grow the same variety at the two places?

A. Unfortunately I could not get an ear of the Leaming that had matured in the neighbourhood of Guelph.

The ear that I am now showing you matured last year within three miles of Ottawa. You will see that the kernel is quite shallow.

By Mr. Wilson:

Q. How near do these samples go to what the average of the crop would be? These are not at all fair samples.

A. These are not fair samples, they are representative samples rather, of the type of corn that will mature in those districts.

Q. Of the best type?

A. Of the best type, yes. The best we could get from last year's crop. This ear was grown last year and is fairly representative of the type of ears that will mature in the vicinity of Ottawa which is considered rather far north to grow seed corn.

Here is the best ear we could get and which is fairly representative of the type of corn that will mature in the Gaspe peninsula. It is grown there by the Acadian French settlers. The stalk from this would not be higher than a crop of oats.

Q. To what particular use would they put that small corn?

A. I think they use it mostly for meal.

Q. For their own use?

A. For their own use, perhaps.

By Mr. Wright (Renfrew):

Q. It is flinty?

A. It is flint corn, yes.

The dent varieties of corn that will mature in the couny of Essex will give very good results for ensilage purposes as far north, perhaps, as Toronto or Guelph. In growing corn for ensilage it is not necessary to have it fully matured. The best results are to be had from varieties that reach the glazed stage.

By Mr. Cochrane:

Q. If you can raise corn that will come up to the glazed stage will that not mature properly?

A. Not for seed purposes. If in the average of seasons a variety of corn will only reach the glazed stage before the early frosts it would not be safe to grow that variety for seed purposes in that district.

By Mr. Bland:

Q. Leaming will mature for ensilage purposes in Bruce county.

A. It would be protected there to some extent by the water. That would make a difference.

By Mr. Cochrane:

Q. In our section of country when corn glazes we cut it.

A. For ensilage?

Q. For any purpose that we need it.

A. Your object would be partly to get good feed for the stock.

Q. Our object would be to get a corn that would make a meal or anything else that we wanted. It is glazed when we cut it.

APPENDIX No. 2

A. When farmers are growing corn to get the maximum value for feed, it is well to cut it very soon after it is glazed, but if they are growing corn for seed purposes it should be pretty well matured before it is cut.

Here we have a deep kernel, late maturing dent type of corn that would give good results for ensilage as far north as the city of Toronto, and in some favoured districts still farther north. The kind of corn that will mature near Guelph or Toronto would make very good ensilage as far north as the city of Ottawa, and in some favoured districts a little farther north. There is also a market for a fair quantity of this flint type of corn that will mature near Ottawa. If we can arrange for its production in quantity along the north shore of Lake Ontario and in other favoured districts, we can extend the corn belt very much farther north than it is at present.

Q. What corn is that?

A. The common Canadian Yellow.

By Mr. Wilson:

Q. There would be some advantage in doing that? Is there no other grain that would be more profitable to grow?

A. I believe that if this corn could be grown for ensilage purposes 50 miles farther north than Ottawa, in the dairy districts of the provinces of Quebec and New Brunswick, it would be a better paying fodder crop than any other fodder crop they are growing at the present time. There is very little corn grown for seed purposes in Canada except in the south of Ontario along the Lake Erie corn belt.

By Mr. Bland:

Q. Have you tested the Mammoth Cuban in the northern districts?

A. Judging from tests made at the experimental farms it would be too late a variety to grow as far north as the city of Ottawa, though it has given good results in some parts of western Ontario.

By Mr. Wright (Renfrew):

Q. Did you make this test—take for example the Leaming corn, the farther north that is grown and matured it will ripen the earlier on the average and will consequently be more valuable for the northern section?

A. Yes, our experience has shown that if you take one of these deep kernel varieties of corn and gradually move it farther north, it will gradually change and become shallower in the kernel and become an earlier maturing corn.

One of the main drawbacks which our dairy farmers in the northern districts have had is that they have been unable to secure seed corn for ensilage of a type that is well suited to their district. The supplies that they have been able to get through seed merchants were drawn very largely from districts still farther south than the county of Essex. To meet this need, a special endeavour is being made in the eastern provinces to create a supply of northern grown seed of the types most suitable for ensilage along the northern limit of the corn belt in Canada.

In order to prevent cross-fertilization the producers of seed corn are asked to grow but one variety on their farm. Twenty or more rows, of about 75 hills to the row, are each planted with the seed from a single ear. Those 20 rows form the breeding plot or base of supply. To get 20 ears to plant the breeding plot of the next year, they select the best row or two rows out of the 20 rows, and from those they take the best ears from the most perfect plants. Their breeding plot of 20 rows would furnish seed for 20 acres from which they would get a fair quantity of high class seed to sell. There are now 43 farmers in the province of Ontario, five in the province of Quebec and three in New Brunswick who have taken up this work of growing seed corn, and who have commenced the work of special selection within the last two years. Others in the eastern

provinces are growing seed of wheat, oats, barley and potatoes, by following the same system.

CANADIAN SEED GROWERS' ASSOCIATION.

To further this work of seed growing and secure more uniform methods of operating the breeding plots, the Seed Branch organized the 'Canadian Seed Growers' Association.' This association which was formed in June last outlined general plans for procedure in the operation of breeding plots and made definite regulations for the guidance of its members. Since June last, the department has assisted with the workings of the association in a way to gradually hand over the responsibility for its management to the representative directors and executive who are appointed by the members. This will be finally accomplished at the next annual meeting which is announced to be held in Ottawa, June 27 to 29 next. Our Department of Agriculture may then recognize the object of the association but will concern itself mainly with a continuance of the educational work that led up to its organization and made the association possible.

By Mr. Wilson:

Q. I notice you passed over the seed growing districts without giving districts in which the seed was being grown. You said you would give us that?

A. I beg pardon, if I have not made that clear.

Q. I mean where they are raising specially for seed suitable in Ontario. I would like to know where that is being done.

A. About seed corn especially?

Q. Well, tell us, you can give us the different kinds of seeds that they grow in each district?

A. The men who are growing seed are fairly well distributed; perhaps there are two or three men in every county in Ontario.

Q. I do not know of any in my part of Ontario?

A. You will understand that this work of encouraging the growing of seed according to the system I have outlined has been carried on for a few years only.

Q. But I thought if you had a number of people that were engaged in this work, you would probably be able to give us the districts they were operating in and what they were doing in each district?

A. I have not with me a statement showing the location of the different men who are doing this work, but I can easily supply that to any person who may apply for it.

By Mr. Cochrane:

Q. But it is very important if a man wants to change seed corn that he should know where he can get a supply.

A. If you would apply to the secretary of the association——

By Mr. Wilson:

Q. What I wanted to know was the districts in which they were growing this seed. If he could furnish that, I would like to have it?

By Mr. Cochrane:

Q. I want to get the man himself, I do not want any dealer.

By Mr. Blain:

Q. Is it the intention to have some-one growing this seed corn and other seeds in every county in Ontario? Is that the object?

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A. It is the intention to induce as many of the farmers who are interested in the work and who are favourably situated for growing seed, to take it up.

By Mr. Wilson:

Q. It is a matter of business; they take their own risks?
A. Certainly.

By Mr. Blain:

Q. Is there an association formed for that purpose?
A. Yes, the association which has been formed has made regulations to govern the members in respect to how these seed plots shall be carried on from year to year, just the same as the live stock associations have done for the breeding of pure-bred live stock in order that it may be eligible for registration.
Q. Has that been done in some parts of Ontario during the past year.
A. Yes.

By Mr. Wright (Renfrew):

Q. What is the name of the secretary of the association; we can write him and get the information?
A. From the time the association was formed, a year ago, our department has very largely taken the responsibility of this work, and I have been acting as secretary in the meantime. But the association will appoint their own responsible secretary-treasurer at the next annual meeting in June. The work of organizing the association has made substantial progress since last year, and I think it will be finally accomplished next June.

By Hon. Mr. Fisher:

I think if any member chose to ask for the names of the seed growers, Mr. Clark could furnish to him the names of all that he knows are growing seed, so that any member who wishes to find out if there is any-one growing seed in his county or in his neighbourhood can ascertain who it is. I think in the meantime, or until the association takes over the whole work in its entirety, Mr. Clark can give the information.

By Mr. Wilson:

Q. I would suggest that he can put the names in his report when he revises it.
A. They appear in the report, the annual report of the Seed Growers' Association.
Q. That is not distributed to members of the House of Commons, is it?
A. I think the last report was distributed.

By Mr. Derbyshire:

Q. Yes, it was published and distributed?
A. It will be quite agreeable to me to have the list of names published. They are as follows:—

PRINCE EDWARD ISLAND.

County.	Post Office.	Name of Seed Grower.	Kind of Seed.	Variety.
King's	Albion, Lot 59	Richard Creed	Oats	White Egyptian.
"	Bridgetown	T. J. Wigginton	Wheat	White Russian.
Prince	Urbinville	Elie E. Arsenault	"	"
"	Newton, Lot 26	Michael McKenna	Oats	Banner.
"	New Annan	James Marchbank	"	Black Tartarian.
"	Lot 10	Henry Ritchie	"	Scotch Black.
"	North Bedeque	Thos. S. Waugh	Wheat	White Russian.
"	"	"	Oats	Gothland.
"	"	"	"	Danish Island.
"	Glenwood	Edmund H. Boyle	Wheat	Preston.
"	Lot 14	James E. Brown	Oats	P.E.I. Black.
"	Margate	Turner Glydon	"	Scotch Black.
"	Lower Freetown	Wm. G. Schurman	Wheat	White Fife.
"	Bedeque	Chas. D. Wright	Oats	Siberian.
Queen's	New Haven	Gordon McMillan	Wheat	White Fife.
"	Glenfinnan	Wm. F. McDonald	"	"
"	"	"	Oats	"

NOVA SCOTIA.

Annapolis	Falkland Ridge	Chs. R. Marshall	Oats	Banner.
Antigonish	Doctor's Brook	Donald Gillis	Wheat	White Russian.
Cape Breton	Scotch Lake	Wm. H. Moore	Oats	
Cumberland	Wallace Bay	Peter G. Brown	"	Wallis.
"	Blue Sea Corner	Jacob W. Treen	Wheat	White Russian.
"	Little River	H. G. Hart	Corn	"
Digby	Rossway	Caswell H. Denton	Oats	Banner.
Hants	Lattie's Brook	William Burton	"	
King's	Dalhousie East	Wm. O. Wright	"	American Beauty.
"	"	John Long	"	Banner.
"	North Corner	Amos B. North	Wheat	White Russian.
Pictou	Millsville	Robert McKay	"	Red Fife.
"	"	"	Oats	Manitoba.
"	Four Mile Brook	Arthur McKay	Wheat	
"	"	"	Oats	
"	Waterside	Walter Sutherland	Wheat	
Victoria	West S. Middle River	Campbell, John W	Oats	Tartar King.

NEW BRUNSWICK.

Gloucester	Elm Tree	B. H. Cormier	Wheat	White Russian.
"	Green Point	Joseph A. Lagacé	"	Red Fife.
King's	Jeffry	Chs. H. McNutt	Oats	Early Blossom.
"	Mount Pisgah	David Proudfoot	Wheat	White Russian.
"	Portage	Irvine H. Dunfield	Oats	Banner.
Northumberland	Upper Blackville	B. Donald	"	
"	"	"	Wheat	
"	Blackville	W. J. McLaggan	Oats	
Victoria	Tobique River	Donald Innes	Wheat	White Fife.
"	"	"	Oats	Early Blossom.
"	"	"	Barley	Mensury.
York	Burden	John Crewdson	Wheat	Red Fife.
"	Lower Queensbury	John Ferguson	Oats	Early Triumph.
"	Central Haynesville	John Billing	Wheat	

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QUEBEC.

County.	Post Office.	Name of Seed Grower.	Kind of Seed.	Variety.
Argenteuil	Lachute Mills	Gilbert Matthews	Oats	Banner.
Arthabaska	Victoriaville	Rosaire Côté	"	"
"	"	Antoine Garand	"	"
Bagot	St. Simon	Félix Dandenault	Wheat	Red Fife.
Bellechasse	St. Charles	Jos. Leclerc	Oats	Banner.
Bonaventure	St. Alexis	Augustin Fortin	"	"
Brome	Foster	Clarence D. Johnson	"	Early Prize Cluster.
Champlain	St. Stanislas	Henri Trépanier	"	Banner.
"	Ste. Anne de la Perade	Philippe Laflèche	"	"
"	Champlain	Gustave Pintal	"	"
Charlevoix	Les Eboulements	Abraham Goudreault	Wheat	
"	"	Joseph Perron	"	Perron.
"	"	Adélard Tremblay	"	"
"	"	Philippe Tremblay	"	"
"	"	Achille Tremblay	Oats	Waverly.
Chicoutimi	Métabetchouan	J. B. Coulombe	Wheat	Red Fife.
"	Normandin	Zoel Turgeon	"	White Russian.
"	Hébertville	Jos. Elz. Tremblay	"	White Fife.
"	Métabetchouan	Jos. Boily	"	"
Dorchester	Ste. Hénédine	Narcisse Roy	Oats	Banner.
"	"	Leonard Boulet	"	"
Laval	Ste. Rose	Théophile Chalifour	"	"
"	"	"	Corn	
L'Islet	L'Islet Station	Joseph Gagné	Oats	"
Lotbinière	Ste. Emilie	Chas. Alph. Parrot	"	"
"	Leclercville	F. L. Tousignant	Wheat	Red Fife.
Mégantic	Ste. Julie	Honoré Gingras	Oats	Banner.
Montmagny	St. Pierre	Michel Cloutier	"	"
Montmorency	Ange Gardien	Léon Leclerc	"	"
Nicolet	Ste. Gertrude	Ephrem Champoux	Wheat	Red Fife.
"	Nicolet	Frs. Manseau	Oats	Banner.
Portneuf	St. Bazile	Jos. Paquet	"	"
"	"	Dolore Decareau	"	"
Québec	Les Grands Deserts	Joseph Déry	"	"
Richmond	Danville	Antonio Rousseau	"	"
Rimouski	Tessierville	Jérémie Levasseur	Wheat	Campbell's White Chaff.
Rouville	Village Richelieu	Jos. Théberge	Barley	
St. Hyacinthe	St. Jude	Stanislas Lafrenaye	Wheat	Preston.
St. John's	St. Jean	Ephrem Moreau	Oats	Banner.
Shefford	Bethel	W. L. Davidson	Wheat	Red Fife.
"	Waterloo	Norman Jamieson	Corn	
"	"	Frs. Desmarais	Wheat	White Fife.
Sherbrooke	Orford Centre	Louis St. Cyr	Oats	Banner.
Stanstead	Coaticook	Léon Gérin	"	Early Prize Cluster.
"	"	"	Barley	Duck Bill.
Témiscouata	Trois Pistoles	Cyprien Bélanger	Oats	Tartar King.
"	"	J. Hervé Rousseau	"	Banner.
Wolfe	Weedon	Pierre Després	Corn	

ONTARIO.

County.	Post Office.	Name of Seed Grower.	Kind of Seed.	Variety.
Brant	Onondaga	Abr. Sickle	Oats	
"	"	Chas. Edwards	"	
Carleton	Merivale	Geo. Boyce	"	Banner.
"	Dunrobin	Thos. Scissons	Wheat	
Dufferin	Marsville	Chester Wilson	Oats	Banner.
"	Lavender	James Johnston	Barley	Mandscheuri.
Dundas	Winchester	J. Christie	"	
Durham	Enfield	Leslie Pascor	Oats	
Elgin	West Lorne	Duncan Carmichael	Barley	Mensury.
"	"	" "	Oats	
"	"	A. Carmichael	"	
"	"	"	Corn	
"	Sparta	W. B. Roberts	"	Compton's Early.
"	Grovesend	Leonard D. Hankinson	"	Yellow Dent.
"	"	" "	Oats	Golden Giant.
"	Tyrconnell	John Bedford	Corn	
"	Iona	Frank Silcox	"	
"	Straffordville	T. H. Mason	"	
"	Middlemarch	Frank Joiner	"	
Essex	Ruthven	J. Wigle	"	
"	Blythewood	Jos. C. Thomas	"	White Cap.
"	Windsor	Charles Ure	"	Yellow Dent.
Glengarry	Maxville	Robert MacKay	Wheat	Red Fife.
"	Martintown	H. McDermid	"	
"	Lancaster	R. Sangster	Barley	
Grenville	Easton's Corners	A. J. Cochrane	Corn	Early W. Flint.
"	" "	Jno. Arnold	Oats	
Grey	Dromore	W. L. Dixon	"	Banner.
"	Thistle	W. W. Ramage	"	Tartar King.
Halton	Nelson	Herbert Davidson	Wheat	Early Red Clawson.
"	Mansewood	A. P. Gillespie	Oats	Sensation.
"	Milton	George Cottrel	"	
Huron	Goderich	David Prouse	"	Newmarket.
"	"	"	Corn	Compton's Earl.
Hastings	Madoc	Raymond O'Hara	Oats	
Kent	Wallaceburg	Robt. Armstrong	"	
"	"	"	Corn	
"	Romney	W. R. Reek	"	R. Yellow Dent.
"	Ridgetown	David Wilson	"	" "
"	Ebbert	Andrew Buist	"	White Dent.
Lambton	Watford	James Sullivan	Oats	Siberian.
Middlesex	Coldstream	E. M. Zavitz	Corn	
Nipissing	Hanbury	Jos. E. Marriott	Oats	Banner.
Ontario	Kinsale	Chas. L. McKey	Pease	Black Eyed Marrowfat.
Oxford	Otterville	C. I. Midgley	Wheat	
"	"	"	Corn	
"	"	"	Oats	Banner.
Perth	Avonbank	Neil Stevenson	Wheat	D. Golden Chaff.
Prescott	Vankleek Hill	Don. McPhee	Corn	
Renfrew	Northcote	Robt. Patterson	Wheat	Red Fife.
Russell	Cumming's Bridge	D. Gordon-Thompson	Corn	
"	" "	" "	Potatoes	
"	Dalmeny	J. Stuart	Corn	
Simcoe	Avening	Willie Murray	Wheat	Garfield.
"	Bradford	W. S. Fraser	"	
"	"	"	Barley	
"	Brentwood	Matthew Johnstone	"	Mensury.
"	"	" "	Oats	
Stormont	Aultsville	W. Morgan	"	
Waterloo	Heidelberg	C. R. Gies	Wheat	D. G. Chaff.
Wellington	Guelph	Neil McTaggart	Oats	
"	"	"	Barley	
"	Fergus	Alex. Moir	Oats	

APPENDIX No. 2

NORTH-WEST TERRITORIES.

County.	Post Office.	Name of Seed Grower.	Kind of Seed.	Variety.
Assiniboia	Hillesden	F. J. Dash	Wheat	Red Fife.
"	Saltcoats	Fred. Kirkham & Sons	"	White Fife.
"	"	" "	Oats	Danish White.
"	Regina	Robt. McKell	Wheat	Red Fife.
"	"	"	Oats	Banner.
"	Moffat	Sergt.-Major Coles	Wheat	Preston.
"	Wolseley	Hugh W. Gibson	"	Red Fife.
"	"	" "	Oats	Banner.
"	Perley	Frank Nicholson	Wheat	Red Fife.
Saskatchewan	Hague	Martin Hamm	"	Velvet Chaff.

MANITOBA.

Brandon	Roden	Thos. Thomson	Wheat	Red Fife.
"	Souris	W. Saunderson	"	"
"	"	"	Oats	Tartar King.
"	"	"	Barley	Mensury.
Dauphin	Gilbert Plains	Geo. Dow	Oats	Banner.
"	Valley River	Wm. Jas. Boughen	Wheat	Huron.
"	" "	J. A. Mooney	"	Red Fife.
"	" "	"	Oats	Newmarket.
Portage la Prairie	Neepawa	Stephen Benson	"	
Provencher	Rosewood	Geo. P. Jack	Wheat	
"	"	"	Potatoes	
Souris	Cartwright	Lumb Bros	Wheat	Red Fife.

BRITISH COLUMBIA.

Vancouver	Colquitz	Chas. B. Jones	Potatoes	Early Rose and Burbank.

THE PRODUCTION OF GRASS AND CLOVER SEEDS.

Fully 90 per cent of the grass and clover seeds produced and used in Canada are of Timothy, Red Clover and Alsike seed. Relatively small quantities of seed of Blue Grass and Alfalfa are grown in the Niagara peninsula, and some seed of Brome grass is grown in Manitoba. Timothy seed is grown to some extent in all of the provinces, but the main centres for its production are in the Georgian bay district, around Meaford, and in the lower Ottawa and St. Lawrence valleys. The quality of the Timothy seed grown in these districts is not excelled in any place in the world.

RED CLOVER AND ALSIKE.

The production of Red Clover and Alsike seed has grown to be an important industry in the province of Ontario, and has to a great extent taken the place of grain growing as a money making crop. Although there is evidence to show that clover seed can be successfully grown in most of the other provinces, there is very little of it grown outside the province of Ontario. The latter province practically supplies the whole of Canada with clover seeds, and in the average of years exports to foreign countries about one-half of her total crop. The Toronto market virtually controls the world's prices for Alsike seed.

As a means to encourage the production of these seeds on clean land, and to further arouse a sentiment among farmers regarding the importance of exercising care in the growing and use of seeds that are free from the seeds of noxious weeds the Seed Branch has this year arranged for the holding of several series of farmers' meetings in central localities and in the fields where grass and clover seeds are heing grown. These meetings have been arranged in co-operation with the farmers' institute system in the province of Ontario and in Quebec. They are announced for June 12 to June 26 next. The seedsmen were good enough to advise us as to the localities where the meetings should be held, and they collectively are invited to be present and address the meetings.

By Mr. Wilson:

Q. Can you tell us what is the modus operandi of getting a meeting held; if I wanted to have one in my locality, how would I get it?

A. The meetings were asked for in the first place by representative seedsmen who are large buyers of grass and clover seeds. They applied to the department, showing the necessity of holding such meetings at the time of the year when the weeds were most in evidence. We asked the seedsmen to point out to us the districts where they obtained the largest supplies of seed, and where they thought the meetings should be held. We followed their advice throughout in regard to where the meetings should be held.

By Mr. Blain:

Q. Have you a list of those meetings?

A. Not yet, the plan is not far enough advanced to be able to give you that.

By Mr. Cochrane:

Q. And the main business at these meetings will be to point out to the farmers what are foul seeds?

A. Each delegation will consist of one practical seed grower, who is a trained institute lecturer, and one weed expert who will be able to identify most of the weeds that the farmers will bring to the meeting. The farmers in those districts are invited to bring any weeds they may be able to get on their farms or in their locality. In holding the meetings they will probably visit two or more fields, and instruction will be given somewhat after the plan of that followed in 'orchard meetings,' and right on the ground where the seed is grown instruction will be given pertaining to the growing of these seeds.

By Mr. Wilson:

Q. These meetings will all be in the daytime?

A. Yes, there will be no night meetings. They will be held in the afternoon. Seedsmen are invited to be present at as many of the meetings as they can attend, and address the farmers from the standpoint of a merchant engaged in the commerce of agricultural seeds.

By Mr. Schell:

Q. Have you the names of two or three counties in Ontario which are the largest producers of Red Clover and Alsike?

A. Yes, Simcoe and Grey counties are perhaps the largest producers of Red Clover. The quality of the Red Clover seed grown in those counties is superior. Victoria and Peterborough counties are large producers of Alsike seed. Both Alsike and Red Clover seed is quite generally grown west of a direct line between Orillia and Kingston in Ontario.

APPENDIX No. 2

By Mr. Staples:

Q. Just before leaving that subject, have you been able to find any clover that does well in Manitoba or the west?

A. I have seen some favoured localities in Manitoba where Red Clover seemed to thrive very well. When it is sown the first year without a nurse crop and does not suffer too much from drought, it will come on and give a very satisfactory crop the next year. I believe that when shelter belts become more plentiful around the farms in the province of Manitoba they will have little difficulty in growing Red Clover. I know very little about the growing of Alfalfa in Manitoba.

Q. What species would be best adapted to Manitoba farm soils?

A. I do not know of any that would be better than the common Red Clover that is grown in Ontario. It may be that some new and hardier varieties of Alfalfa would do very well. In the United States they imported some seed of what they call 'Turkestan Alfalfa' a few years ago, which proved to be a little hardier than any other Alfalfa that they have, and I believe the crop from that seed thrived very well in Dakota. I am not very conversant with the work that has been done by Mr. Bedford at the Experimental Farm at Brandon, although I have visited that farm in three different years and saw on each occasion plots of Red Clover that seemed to be thriving quite as well as we would have them in Ontario.

THE COMMERCE OF AGRICULTURAL SEEDS.

Although there is a great deal of seed of cereal grains exchanged and sold among farmers, a very small proportion of the seed grain used by farmers enters into the commerce of agricultural seed. The proportion is very much lower in the province of Ontario than in the maritime provinces. Probably about ten per cent in the case of the former and 25 per cent in the case of the latter provinces. The supply of seed oats, which is the kind of seed grain for which there is the greatest demand from seed merchants in Quebec, New Brunswick and Nova Scotia, is grown mainly in the province of Ontario. A fair proportion of this seed is obtained from reliable seed merchants who have it grown on contract or secure it from good farmers and expressly for seed purposes. A part of the supply, however, is obtained by the maritime local dealers in seed grain, directly from the larger grain merchants at Montreal and other western points and consists of No. 1 or No. 2 car lots of oats that were never intended for seed purposes. The use of such grain for seed may result in a satisfactory crop, but the risk is much greater than the difference in price between its cost and that of the better article.

THE HOME TRADE.

The home trade in grass and clover seeds is affected very materially by the export trade. Europe is our best market for these seeds. In point of purity Canadian seeds have an enviable reputation abroad and the demand from foreign countries is mainly for seeds of the best quality. This demand for a superior quality of seeds is largely the outcome of work done by European seed testing stations, the first of which was established at Tharandt in Germany about 35 years ago. As evidence of the service which these stations have rendered, in European countries, I may add that Germany alone now maintains 39 of these seed testing stations. The work done at those stations led up to the adoption, in some of the countries, of laws to enforce the guarantee system, and in other countries the practice of furnishing a statement, showing the percentage of purity and vitality with the seed sold, was adopted voluntarily by most progressive seedsmen. To make it more clear as to just what is meant by that guarantee system, I might say that when a seed merchant is selling seed to a farmer he furnishes the farmer with a statement showing the percentage of pure seeds and the

percentage of vital seeds in the package he is selling. He provides a statement showing the real value of the seed.

By Mr. Wilson (Lennox):

Q. That is, in Germany he has to do this?

A. I think there are two provinces in Germany that have enforced the guarantee system by law. It is enforced by law in Austria-Hungary and Belgium.

Q. And what are the penalties for violation of the contract?

A. The penalties, I think, in Austria run from $100 in some cases down to a minimum penalty of $2.

Q. The minimum penalty would be $2 and the maximum would be $100.

A. Yes.

Q. Has Germany not got one?

A. So far as I know, there are only two provinces in Germany where they enforce the guarantee system. In other provinces it has drifted into a voluntary system but under their conditions that seems to be quite satisfactory.

Q. In the two provinces there are penalties?

A. Yes, if I remember correctly. The volunteer guarantee system also obtains in Switzerland.

The effect of this advancement in those countries to which we export seeds most largely, brought about an adverse reaction on our home trade. To meet this demand for a high class article, our Canadian exporters equipped themselves with modern apparatus for recleaning grass and clover seeds. According to their own statements, from 10 to 25 per cent of these seeds that are gathered in from farmers in Ontario, is taken out as cleanings to make the article sufficiently good for export. It is much to be regretted that there has been a large demand for these cleanings in our home trade. I am very glad to say that that demand is not now so large as it was two or three years ago.

By Mr. Christie:

Q. The demand for the screenings?

A. Yes.

By Mr. Wilson (Lennox):

Q. Not as seed?

A. For seed. I have some of it here that we got from the trade last year and the year before.

Q. Do I understand you to say that the clover seed that is prepared for export for seed, that after they clean it, the screenings are sold for seed in this country.

A. That is it.

Q. Don't they have great difficulty in finding purchasers for that kind of seed?

A. The trouble is that the demand for that seed has been coming from local seed vendors to supply to farmers who do not live in the districts where the seed is grown.

Q. Could not a person by comparing the two tell the difference?

A. They are very small seeds and it is very difficult to judge their value from their appearance.

By Mr. Cochrane:

Q. Is it a known fact that farmers make application for screenings for seed? Is'nt it more likely to be the fact that they make application for seed and that the seed merchant sends them that stuff that they have on hand.

A. This quality of seed is not sold to the farmer directly by reliable seed merchants. It reaches the farmer through the medium of the local dealer, and the farmer

in buying that seed would perhaps have three different grades to inspect and on his own account selects the inferior and cheaper grade.

By Mr. Wright (Renfrew):

Q. The farmer comes in and wants cheap seed?

A. That is it.

Q. And the dealer gives the price of the cheap seed. Supposing a farmer wanted five cent cotton, the dealer would give it to him, and if he wants 10 cent cotton he gets it?

A. A person would have to be almost an expert to tell the difference between these samples of seed. Of course any person can see it is not pure, but many farmers would not fully appreciate the evils that would result from using this quality of seed.

By Mr. Christie:

Q. My experience is the very opposite. The farmers in our section who want seed are always particular to get the best seed to sow, because there is a big difference in the price when they come to sell it.

A. You are living in a district where red clover seed is grown very largely. The farmers in South Ontario have learned to appreciate the value of good red clover seed, because they raise the seed to sell.

By Mr. Cochrane:

Q. I would suggest that you amend your statement. I understood you to state that the farmers applied for that cheap seed themselves.

A. They buy it in stores from samples shown with their prices.

Q. I do not think that farmers as a general thing buy poor seed if they know it.

A. They are demanding a much better quality of seed now than they were three years ago.

By Mr. Wilson (Lennox) :

Q. I would like to ask if these screenings are sold as screenings when sold ?

A. It is all sold on sample.

Q. Without any reference as to whether it is screenings or not.

A. Without any reference so far as I know. It is difficult to obtain that information.

By Mr. Blain :

Q. What is the difference in price between the good seed and the seed you term screenings?

A. Seed of this quality (showing sample) last year would perhaps be retailed, we will say in the maritime provinces or Quebec, at 9 cents a pound. Seed of this quality (showing sample) would be retailed at about 15 cents a pound. I have here a chart that will illustrate that.

By Mr. Wilson :

Q. Would the Bill passed recently interfere with the selling of screenings.

Hon. Mr. FISHER.—Certainly, but that Bill is not in force yet.

Mr. WILSON.—It will ?

Mr. FISHER.—Certainly.

Mr. BLAND.—It will be in force for next year's crop ?

Mr. FISHER.—I hope so. I may say here that while in the districts of Ontario where seed is grown the farmers know pretty well about seed, there are large areas in Quebec and the maritime provinces especially where the farmers do not grow seed and buy it almost entirely from Ontario, and I fear too many of them will buy the cheapest seed they can get, and if there is only a few cents difference the screenings will be bought, when, as a matter of fact, instead of two cents' difference in the price, there should be 10 cents' difference according to the real value of the seed. The farmer does not understand it, and purchases the article which seemingly costs him a couple of cents less per pound, whereas if he had bought the better sample he would have been paying less in the end. The farmers are not as familiar with the quality of seeds there as they are in such districts as Mr. Cochrane or Mr. Christie spoke of.

WITNESS.—I have a chart here that will illustrate the difference in the quality between seeds that we obtained two years ago.

TABLE showing comparative germination of different seeds and the comparative cost value of each estimated by their respective germination.

RED CLOVER.

Where obtained.	Market price per bushel.	Weight of pure and germinable seeds in 100 lbs.	Actual cost of pure living seed per bushel.	Number of weed seeds per pound.
	$ cts.	Lbs.	$ cts.	
Toronto, Ont	6 60	95	6 94	.....
Ottawa, Ont	9 60	62	15 47	20,565
St. Anne de Bellevue, Que	9 60	94	10 24	315
St. Jacques, Que	8 70	63	13 85	42,660
Bathurst, N.B	8 40	49	17 14	40,635
Yarmouth, N.S	9 00	25	36 00	8,775
Morell, P.E.I	8 10	77	10 51	19,350
Mount Tolmie B.C	9 60	84	11 42	11,160

ALSIKE.

Ottawa, Ont	9 60	47	20 42	14,496
Pembroke, Ont	12 00	87	13 79	181
Galt, Ont	9 50	60	15 83	14,043
St. Norbert, Que	12 00	90	13 36	900
Yamachiche, Que	9 50	66	14 75	8,460
Montreal, Que	9 00	67	13 47	47,070
Fredericton, N.B	10 20	84·6	12 05	2,610
Halifax, N.S	10 80	59·7	18 09	15,300
Abbotsford, B.C	9 60	94·2	10 19	180

TIMOTHY.

St. Catharines, Ont	3 00	95·8	3 13	10,239
Barrie, Ont	4 80	97·8	4 90	91
St. Johns, Que	3 84	74·9	5 14	257,690
Weedon Sta. Que	3 75	97·8	3 83	.....
Perth Centre, N.B	4 00	97·9	4 08	90
Andover, N.B	3 25	89	3 65	30,510
Weymouth, N.S	4 00	72·9	5 48	2,520
" "	3 90	83·5	4 67	42,930
Alberton, P.E.I	4 32	81·5	5 29	34,470
Nanaimo, B.C	6 00	86·1	6 96	28,710
Chilliwack, B.C	4 80	74·2	6 46	123,750

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A Red Clover seed that contained 93·8 per cent of pure living seed was retailed at 16 cents a pound. After the rubbish was taken out the pure living seed cost the purchaser 17 cents a pound. It had 315 weed seeds per pound. It is a very clean sample. Another sample contained only 62·8 per cent of pure living seed. That was sold at 14½ cents a pound, as against 16 cents for the better quality. The real cost to the purchaser of the pure living seed in the sample was over 23 cents a pound. He got with each pound 42,660 weed seeds. I want to mention that of these 42,660 weed seeds, perhaps a very small proportion of them would be of the most noxious weeds.

By Mr. Wilson (Lennox) :

Q. They would all grow, I suppose?

A. Probably most of them would grow. To illustrate the same with Alsike. One sample contained 89·8 per cent of pure vital seed. It sold at 20 cents a pound. With the rubbish and dead seed taken out the price was raised to 21 cents. It only contained 900 weed seeds per pound. Another sample contained 65 pounds out of 100 good reliable seeds. That was sold at 16 cents—four cents cheaper—but the actual price of the pure living seed was 27 cents per pound. It contained 8,460 weed seeds per pound. Another lot of Alsike seed contained over 47,000 weed seeds per pound.

By Mr. Cochrane:

Q. Is that sold in Montreal?

A. It was sold at Montreal.

By Mr. Fisher:

Q. It was not grown near there.

A. No; no Alsike seed is grown there.

By Mr. Blain:

Q. How many of these seeds can be sold under the new Bill?

Mr. Fisher.—I would not like to say off-hand, but I should think only the first ones mentioned could be sold as No. 1. I am not sure about any others. The first could be sold as No. 1, could they not, Mr. Clarke?

A. Yes.

By Mr. Cochrane:

Q. What are the most noxious weeds? I understood you to say that that second quality contained a relatively small proportion of seeds of the worst kind of weeds.

A. Those mentioned in the Seed Bill.

The following table gives the names of fifteen species of weeds, the seeds of which were found with more or less frequency in the grass and clover seeds that were collected for investigation by the Seed Branch of the Department of Agriculture at Ottawa. The number of samples analyzed were: Timothy, 536; Alsike, 293; Red Clover, 567. The table shows the number of these samples which contain seeds of the weeds named, together with the average number of the seeds per pound of the commercial article:—

Kind of Weed Seed.	Timothy Seed. (536 samples tested.)		Alsike Seed. (293 samples tested.)		Red Clover Seed. (567 samples tested.)	
	No. of samples containing seed named.	Average number per pound.	No. of samples containing seed named.	Average number per pound.	No. of samples containing seed named.	Average number per pound.
*Wild mustard	.....	.....	7	116	32	239
*False flax	66	2,051	125	829	36	338
Shepherd's purse	33	802	34	987	.....	.....
Pepper grass	164	582	45	640	2	45
*White cockle	60	2,655	210	1,240	299	413
Mayweed	96	824	93	486	141	341
*Ox-eye daisy	37	810	5	144	7	135
*Canada thistle	71	344	72	193	97	205
*Per. sow thistle	20	850	.....	.....	3	60
*Ribgrass	74	209	55	182	351	596
Lamb's quarters	167	689	187	500	378	564
Sheep sorrel	180	1,741	224	2,617	228	614
*Curled dock	37	187	103	307	321	503
Cinquefoil	343	2,755	56	1,406	3	60
Foxtail	164	253	108	253	534	3,403

Note.—Weeds named in "Seed Control Act."

By Mr. Fisher?

Q. Was every seed of those 43,000 which was not Red Clover called a weed? When you tested the sample of Red Clover was everything in it which was not Red Clover called a weed seed?

A. No, nothing that would be considered harmless. If it was Timothy it would not be called a weed. Foxtail (*Setaria sp.*) would be called a weed, although some people do not consider that to be an injurious weed.

The more reliable seedsmen in Canada do not retail these low grade seeds. They reach the farmer through the medium of irresponsible local seed vendors, whose main business is of an entirely different character, and who are no better able to judge of their quality than the farmers who buy them. Under the present conditions of trade in Canada they are able to make a larger margin of profit from the sale of the low grade article than from the sale of seeds of the quality that is exported.

WORK OF THE SEED LARORATORY.

In the early spring of 1902 I was authorized to instal the necessary equipment for a modern seed-testing station, and to procure, for the purpose of investigation, samples of the grass and clover seeeds from lots that were being retailed to farmers in the various districts where they are offered for sale. A circular letter was addressed to the farmers' institute lecturers and secretaries of agricultural societies, asking them to co-operate with us in obtaining these samples. Each of them was supplied with small cotton bags that were already addressed for return, and with blank form cards on which to fill in information regarding the place where, and the price at which it was being retailed; also the name of the retail merchant, and the wholesale merchant or farmer from whom it had been obtained. This work of seed investigation has been continued each year, and extended to other kinds of seeds. I will read you a copy of the circular letter and a blank form card that was sent out this spring. This is a copy of the letter that we sent out in March of the present year:—

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DEPARTMENT OF AGRICULTURE, OTTAWA.

SEED BRANCH.

DEAR SIR,—We are desirous of having your assistance in again obtaining for the purpose of investigation samples of the agricultural and garden seeds offered for sale by seed merchants or farmers in your locality. It has been found expedient to continue to collect samples of the seeds offered for sale each year in order that we may be able, more accurately, to determine the extent of the evils connected with the seed trade. We will be glad to have your co-operation this year in obtaining samples from any Timothy, Alsike or Red Clover seeds that may be marked 'No. 1,' or otherwise represented to be of first quality, or from seeds that may appear to be of decidedly inferior quality; samples of all other kinds of grass and clover seeds that may be offered; samples of seed corn or other cereal seed that may be of questionable vitality; small samples (from 200 to 400 seeds) of root crop and garden vegetable seeds, and samples of coarsely ground mill feeds that may appear to contain whole seeds of noxious weeds.

The Seed Branch will be pleased to remit to you such amounts as you may find it necessary to pay out in the purchase of such samples, on receipt of your account for same. It is also distinctly understood that this investigation work is done to obtain information for educational purposes and that the names of persons obtaining such samples, and also of the seed merchants from whom they are obtained, will be kept confidential by the department, except that report showing results of their analysis will be sent to persons obtaining the samples.

I am sending you, herewith, a few information cards which we would like to have filled out as completely as possible, and returned inclosed in cotton or paper bag together with the seeds. With the inclosed labels attached, the seeds will be carried free by mail.

G. H. CLARK,
Seed Commissioner.

The cards which were sent out were marked as follows:—

Seed Laboratory Test No.....

Sample marked.....
Name under which seed was sold.....
Grade name.....
Name of seller.....
Address of seller.....
Selling price.....When grown.....
Origin of seed (farmer or name of seedsman).....
Name of sender.....
Address of sender.....
Date.....

By Mr. Cochrane:

Q. I would like to ask for information regarding Alfalfa. What kind of a crop is it for fodder?

A. As a soiling crop I do not think you could get anything better than Alfalfa.

Q. That is for ploughing under, a soiling crop, do you mean?

A. No, to cut for green feed during the spring and summer months. From my experience with Alfalfa on the farm I cannot recommend it as being a very desirable crop to grow in large areas for hay. Our difficulty was that we did not as a rule get favourable weather for curing the first cutting which, in an average of years, would be taken about the 15th of May.

Q. How is it for ploughing under?

A. It would not be a suitable crop for ploughing under. It takes too long to get a stand of it. It is a perennial and will continue to produce paying crops for a number of years. It is not nearly so desirable a crop for ploughing under as Red Clover.

Q. Is'nt it more certain? The trouble in our section is to get a crop of clover to stand.

A. In that respect, I think you would find as much difficulty with Alfalfa as with Red Clover.

By Mr. Jackson (Elgin):

Q. Do you know anything with reference to the danger of turning stock on it? In our seed catalogues they warn us against it.

A. If you turn hungry cattle on it when the crop it wet with dew they are liable to bloat, but if they are turned on when it is dry or when perhaps they have had a chance to fill up on other grass, I do not think there would be much difficulty with it.

Q. It is almost prohibitory to have it if you cannot turn cattle on it without endangering them?

A. It would be a little risky to turn on hungry cattle if the Alfalfa were wet, but if dry I think the risk would be very little.

By Mr. Bland:

Q. It would be bad when there is a little white frost on it?

A. Yes.

Five hundred and thirteen samples were obtained and tested for both purity and vitality in 1902. The results showed a startling state of affairs, particularly in respect to the quality of the clover seeds that were being offered by local seed dealers outside of the district where the seeds are produced. I have here some of the samples to show you. Perhaps you would prefer to look at them after the meeting is over. We were able to trace most of those samples back to the large seed firms who are engaged in the export trade.

A summary of the information obtained from this work was prepared in advance of any publications and supplied to farmers' institute lecturers in all the provinces, together with printed charts like the one I have shown you. We supplied 35 of these, one to each farmers' institute lecturer, and specimens of the weed seeds found in grass and clover seeds, to enable them to bring the matter clearly and forcibly before the farmer. The information was also supplied in concise form to the agricultural press, and to newspapers in all parts of Canada, and a more complete report of the investigation of that year was published in Bulletin No. 8.

By Mr. Wilson (Lennox):

Q. That chart will appear in your report?

A. Yes. Here is a collection of weed seeds similar to those used by the farmers' institute lecturers. These collections have been supplied to seed merchants for the use of their travellers. They contain specimens of all the weed seeds mentioned in the Seed Bill. They are really the most noxious weed seeds that are common in grass and clover seeds.

By Mr. Blain:

Q. Were some of these samples obtained from farmers who are growing seed on their farms?

A. Not of these samples.

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Q. Those you have referred to a few minutes ago ?

A. No, we have had quite a large number of samples from farmers, but we find them a little more difficult to get than those obtained from seed merchants. The seedsmen themselves have this year supplied us with a large number of samples sent in to them by farmers.

In this educational work the main object sought after was to demonstrate the false economy of buying the lower grades of seeds, and the far-reaching evils that would follow their use—the evils that would follow the use of the weed seed. Pressed and mounted specimens of the weeds themselves, whenever they could be obtained, were supplied to the lecturers, but the demand for these was most difficult to meet. To overcome this difficulty and to enable us to pursue this educational work in a more effective way we have had coloured drawings made of 50 of the most dangerous Canadian weeds, and for our next season's work we expect to have these printed in their natural colours, together with information about their nature of growth and reproduction and the best methods of combating them.

Following this educational work our department received many appeals from individual farmers and from agricultural associations for legislation that would serve to check the more serious evils connected with the seed trade. To enable seed merchants to carry on their business the more intelligently the Seed Branch offered to test their seeds for them, in the meantime, free of charge; also to provide them at a nominal cost with a comprehensive reference collection of economic seeds, with the use of which they could pick out the noxious weed seeds from the seeds they sell, and be able to determine what they are. I have here one of these collections to show you (see cut last page). It contains specimens of all the weed seeds named in the Bill. There are about 65 species of weed seeds in this collection and the others are made up of seeds of grasses and clovers that are not all well known, but are sometimes wanted by farmers or seed merchants.

By Mr. Wilson (Lennox):

Q. You have the names of all the seeds shown there?

A. Yes. The samples are all numbered and labelled with their common and botanical names.

Q. Do you furnish one of these to each lecturer?

A. This form of collection was thought to be too cumbersome to carry around by the lecturer. They were furnished with a smaller collection.

Q. That is a pretty good one.

A. The cost of the empty cardboard cases, getting them in quantity, is one dollar for each. The one hundred bottles cost a little more than a dollar. We put up the collections in the seed laboratory, and we offered them to any man engaged in the seed trade for $2 each.

Q. I would not think that was too big for the lecturers. If you had them smaller they would be hard to show.

A. I am in doubt as to whether it would be desirable to use a collection of that kind in a farmers' institute meeting, especially where the meeting is held at night.

Although we have on our mailing lists more than 6,000 merchants in Canada, who sell grass and clover seeds, all of whom have been advised about these collections of seed, we have had applications for only 78 collections from seed merchants.

In 1902, when we started this work, we did not test any seeds for farmers or seed merchants.

The following table gives the number of samples of different kinds of seeds that have been received for test, and reported upon to farmers and seed merchants in each province during the calendar year of 1904:—

Designation of Seeds.	Quebec.	Ontario.	New Brunswick	Nova Scotia.	Prince Edward Island.	British Columbia.	Manitoba and North-west Territory.	Total.
Timothy	58	60	24	7	18	6		173
Alsike	21	45	10	4	7			87
Red clover	74	74	14	7	19	6		194
White clover	6	1			5	1		13
Crimson clover					1	2		3
Lucerne		8	1		1	2		12
Vetch	1	1						2
Red top		3	1	1		1		6
Sainfoin		4	1					5
Orchard grass	1	3	1					5
Brome grass						1	1	2
Fescues		1						1
Corn	9	61						70
Wheat	1		1				2	4
Oats	2	10		1			6	19
Barley		2						2
Millet		1				1	1	3
Mangel	1	11	9	3	4	1		29
Sugar beet			1	1				2
Garden beet					3	3		6
Turnip		1	1			1	1	4
Carrot						1		1
Rape		1	1			1	1	4
Flax							1	1
Onion						3		3
Spruce		1						1
Pine		3	1					4
Total	174	291	66	25	58	30	13	656

Q. I understand that the department at the Experimental Farm tests seeds for any person that sends them in?

A. They have tested seeds for farmers ever since the Experimental Farm was established.

Q. You say that only for the last two years you have done it. Yours must be an entirely separate thing in that respect?

A. Our seed laboratory was established in the first place to conduct the investigation work. In the first year, 1903, all of the work we did was confined to the investigation work, and was concerned mainly with the seed trade.

Q. The seed that would be tested would be sent in by farmers, not to your department but to the Experimental Farm?

A. The seeds come now direct to our department.

Mr. FISHER.—For many years the Experimental Farm has been testing seeds for farmers who sent them in. When the work of the seed division began Mr. Clark did investigation work to deal with the trade. Work at the Experimental Farm was not dealing with the trade at all. That work has developed and grown very much in Mr. Clark's division. We propose after this year that all testing of seeds will be done in Mr. Clark's division, and that the work of testing seeds at the Experimental Farm will cease.

Mr. WILSON (Lennox)—There are two divisions now.

Mr. FISHER.—Yes, the old one at the Experimental Farm and the new one developed for the trade, but as Mr. Clark's laboratory has been fitted up much more

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elaborately than the laboratory at the Farm, I propose to transfer the whole of the seed testing to his division. I will issue a circular to that effect, so that next year the farmers' samples will be sent to him and not to the Farm.

Mr. BLAIN.—I would like to ask for information as to the testing of vitality of seed corn. Will this new Bill provide for that?

Mr. FISHER.—The Bill does not deal with corn, except in the first section, but of course corn would be tested at the laboratory just like any other seeds.

Mr. BLAIN.—We had a great deal of trouble in Western Ontario last year with the seed corn for ensilage purposes. Only one-third of it grew.

Mr. FISHER.—I would test corn as I would test barley or anything else.

Q. The Seed Bill would not affect the corn?

A. No.

I shall be pleased at any time if you can, either individually or collectively, make it convenient to come down to the Seed Laboratory in the Imperial Building, 138 Queen street, and inspect the work that is being done there, when we will be able more clearly to give you details of information regarding that part of the work of the Seed Branch. Gentlemen, I thank you one and all for your kind attention.

Having read over the above transcript of my evidence, I find the same correct.

G. H. CLARK,

Seed Commissioner.

THE SEED CONTROL ACT, 1905.

An Act respecting the Inspection and Sale of Seeds.

His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

1. This Act may be cited as 'The Seed Control Act, 1905.'

2. This Act shall come into operation on the first day of September, nineteen hundred and five.

3. No person shall sell, or offer, expose or have in his possession for sale, for the purpose of seeding, any seeds of cereals, grasses, clovers or forage plants unless they are free from any seeds of the following weeds:—Wild Mustard or Charlock, (*Brassica Sinapistrum,* Boiss); Tumbling Mustard (*Sisymbrium sinapistrum* Crantz.); Hare's Ear Mustard [*Coringia orientalis* (L.), Dumort]; Ball Mustard (*Neslia paniculata,* Desv.); Field Pennycress or Stinkweed, (*Thlaspi arvense,* L.); Wild Oats, (*Avena fatua,* L. and *Avena strigosa,* Schreb.); Bindweed, (*Convolvulus arvensis,* L.); Perennial Sow-Thistle, (*Sonchus arvensis,* L.); Ragweed, (*Ambrosia artemisiaefolia,* L.); Great Ragweed, (*Ambrosia trifida,* L.); Purple Cockle, (*Lychnis Githago,* Lam.); Cow Cockle, [*Vaccaria Vaccaria* (L.), Britton]; Orange Hawkweed or Paint Brush, (*Hieracium aurantiacum,* L. and *Hieracium praealtum,* Vill.); and from Sclerotia, known as Ergot of Rye, (*Claviceps purpurea,* Tul.), unless each and every receptacle, package, sack or bag containing such seeds, or a label securely attached thereto, is marked in a plain and indelible manner—

(*a.*) with the full name and address of the seller;

(*b.*) with the name of the kind or kinds of seed;

(*c.*) with the common name or names of the aforenamed weeds, the seeds of which are present in the seed sold or offered, exposed or had in possession for sale.

2. The provisions contained in this section shall not apply to the sale of seed that is grown, sold and delivered by any farmer on his own premises, for seeding by the purchaser himself, unless the purchaser of the said seed obtains from the seller at the time of the sale thereof a certificate that the said seed is supplied to him subject to the provisions of this Act.

4. No person shall sell, or offer, expose or have in his possession for sale, any seeds of timothy, red clover, alsike, or any mixture containing the said seeds, in or from any receptacle, package, sack or bag upon which is marked "No. 1" or any other designation which represents such seeds as of first quality, unless they are free from the seeds of weeds named in section 3 of this Act, and are also free from the seeds of White Cockle, (*Lychnis vespertina,* Sibth.); Night-Flowering Catch-fly, (*Silene noctiflora,* L.); False Flax, (*Camelina sativa,* Crantz.); Canada Thistle, (*Cnicus arvensis,* Hoffm.); Ox-eye Daisy, (*Chrysanthemum Leucanthemum,* L.); Curled Dock, (*Rumex crispus,* L.); Blue Weed, (*Echium vulgare,* L.); Ribgrass, (*Plantago lanceolata* L.); Chicory, (*Cichorium Intybus,* L.), and contain out of every one hundred seeds not less than ninety-nine seeds of the kind or kinds represented,or seeds of other useful and harmless grasses and clovers, of which ninety-nine seeds ninety seeds must be germinable.

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5. The Governor in Council may make regulations determining the maximum proportion of seeds of the weeds named in sections 3 and 4 of this Act, that may be tolerated in any seeds without affecting their character as being within the meaning of the said sections free from the seeds of the said weeds.

6. No person shall sell, or offer, expose or have in his possession for sale, for the purpose of seeding in Canada, any seeds of timothy, alsike or red clover, or any mixture containing the said seeds, if the seeds of the weeds named in sections 3 and 4 of this Act are present in a greater proportion than five to one thousand of the seed sold, or offered, exposed or held in possession for sale.

7. The provisions contained in this Act shall not apply to—

(*a.*) any person growing or selling seeds for the purpose of food in respect of seed sold, or exposed or had in possession for sale, for such purpose;

(*b.*) any person selling seeds direct to merchants to be cleaned or graded before being offered for sale for the purpose of seeding in respect of seeds sold, or exposed or had in possession for sale, for such purpose;

(*c.*) seed that is held in storage for the purpose of being recleaned, and which has has not been offered, exposed or held in possession for sale for the purpose of seeding;

(*d.*) seed marked "not absolutely clean" and held or sold for export only.

8. Every person who, by himself or through the agency of another person, violates any of the provisions of sections 3, 4 and 6 of this Act shall, for each offence, upon summary conviction, be liable to a fine for the first offence not exceeding one dollar, and for each subsequent offence not exceeding five dollars, together with the costs of prosecution, for each receptacle, package, sack or bag in or from which seeds are sold, offered, exposed or had in possession for sale contrary to such provision; provided that the total amount of the fine shall not exceed, in the case of a first offence, five dollars, and in the case of a subsequent offence, twenty-five dollars, and in default of paying such fine and costs, shall be liable to imprisonment, for a term not exceeding one month, unless such fine and the costs of enforcing it are sooner paid.

2. Nevertheless, if the accused proves to the magistrate before whom he is tried that the package, sack, bag or receptacle containing the seed respecting which the complaint or information is laid, was purchased by him directly from a seed merchant domiciled in Canada, and was not opened, or the state of the seed was not altered, while it was in his possession, and he had no reason to believe that the seed did not comply with the provisions of this Act, he shall, upon disclosing the name of the person from whom he purchased the seed, and the place and date of the sale thereof, to him, not be liable beyond the costs of prosecution.

3. Every magistrate who has disposed of any case under the foregoing subsection shall, within one month from the date of his judgment therein, send to the Minister of Agriculture a report of the case, giving the name of the accused, the name of the person who sold the seed to him, and the date and place of such sale.

9. The person on whose behalf any seed is sold, offered, exposed, or had in possession for sale, contrary to the provisions of the foregoing sections of this Act, shall be *prima facie* liable for the violation of this Act.

10. Any person charged with the enforcement of this Act may enter upon any premises to make any examination of any seeds, receptacles, packages, sacks or bags of seeds, with respect to which he has reason to suspect or believe that any provision of this Act is being violated, whether such seeds, receptacles, packages, sacks or bags of seeds are on the premises of the owner, or on other premises, or in the possession of a railway or steamship company, and may take any samples of the said seeds from any receptacle, package, sack or bag, for which samples the owner of the seed shall be paid in accord-

ance with the amount of seed thus taken and its current value; and any person who obstructs or refuses to permit the making of any such examination, or the taking of any such samples of seeds, shall, upon summary conviction, be liable to a penalty not exceeding five hundred dollars and not less than twenty-five dollars, together with the costs of prosecution, and in default of payment of the said penalty and costs, shall be liable to imprisonment for a term not exceeding six months, unless the said penalty and costs are sooner paid.

11. Any purchaser of seeds, with respect to which he has reason to suspect or believe that any provision of this Act has been violated, or any person charged with the enforcement of this Act, at his request, may take a sample from the said seeds and forward it to such person as the Governor in Council appoints as an official seed analyst to examine and report upon any seed submitted for analysis under the provisions of this Act.

12. Any sample of seed taken for official analysis under the provisions of this Act shall be taken in the presence of—

(*a.*) the person who sold or offered, exposed or had in his possession for sale the said seeds, or

(*b.*) two impartial or non-interested witnesses, and—

in acordance with the rules for seed testing prescribed by the Minister of Agriculture and shall be inclosed in a sealed package together with a certified statement of the person taking the sample, which statement shall include the name and address of the person who sold, or offered, exposed or had in his possession for sale, the seeds from which the said sample was taken, the manner in which the receptacle, package, sack or bag was marked, and the section or sections of this Act in violation of which the said seeds were found or suspected to be sold or offered, exposed or had in possession for sale.

13. Any sample of seeds taken from any seed which are found or suspected to be sold in violation of the provisions of this Act shall be taken and forwarded to an official seed analyst—

(*a.*) from seeds that are sold in sealed packages, sacks, bags or receptacles, at the time of the breaking of the seal thereon: and

(*b.*) from seeds that are not sold in sealed packages, sacks, bags or receptacles, within seven days from the date on which the seeds entered into the personal possession and became the property of the purchaser.

14. It shall be the duty of any official seed analyst to examine any seeds sent to him in accordance with the provisions of this Act, by following the methods for testing seeds prescribed by the Minister of Agriculture, and to send one certificate of analysis of the said seeds to the inspector, informant or complainant from whom they were received, and one certificate to the seller of the said seeds, and to place one certificate on file in the Department of Agriculture.

15. The certificate of analysis of any official seed analyst on any sample of seeds forwarded to him under this Act shall be accepted as evidence in any prosecution of any person charged with having sold or offered, exposed or had in his possession for sale, in violation of the provisions of this Act, seeds from which the sample purports to have been taken, or of any person from whom such person purchased the seeds.

16. In any complaint, information or conviction under this Act, the matter complained of may be declared, and shall be held to have arisen, within the meaning of Part LVIII. of *The Criminal Code*, 1892, at the place where the seed was sold or offered, exposed or had in possession for sale.

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17. The Governor in Council may make such regulations as he considers necessary in order to secure the efficient enforcement and operation of this Act; and may by such regulations impose penalties not exceeding fifty dollars on any person offending against them, to be recoverable on summary conviction; and the regulations so made shall be in force from the date of their publication in *The Canada Gazette* or from such other date as is specified in the proclamation in that behalf.

18. Any prosecution against any person, pursuant to a report made to the Minister of Agriculture respecting that person, under subsection 3 of section 8 of this Act may be commenced within twelve months from the time when the matter of complaint or information arose, and not later.

GENERAL DIRECTIONS TO THE PRACTICAL APPLICATION OF THE SEED CONTROL ACT, 1905.

It is not the object of this Act to require farmers to purchase for their own use any seeds of a better quality than they desire, except (section 6) in so far as noxious weeds are held to be a public nuisance. The Act is intended to provide the means by which the users of seed may protect themselves against the introduction of noxious weeds on their lands; and to fix a minimum standard in respect to purity and vitality for timothy, alsike and red clover seeds that may be represented to be of first quality, and thus provide the means by which careful seedsmen may protect themselves against the designs or carelessness of unscruplous seed vendors.

To assist seed merchants in the conduct of their business under the Act, the Seed Branch of the Department of Agriculture at Ottawa has prepared for distribution, at a nominal cost of $2, to seed merchants and agricultural institutions such as agritural schools, farmers' institutes and agricultural societies, collections of authentic specimens of seeds of 100 species of weeds, and other economic plants—including all of those mentioned in the Act. With one of those collections of seeds in his possession, any person of ordinary intelligence would have the means for testing seed in respect to the provisions of the Act.

GENERAL EXPLANATIONS AND INSTRUCTIONS.

Section 3.—When the seeds of weeds named in section 3 are present in seed of cereals, grasses, clovers or forage plants that are sold or offered for sale, for the purpose of seeding, by any seed merchant, information required by the said section, showing such weed seeds are present, may be given after the plant of the following form:—

(Name of seed merchant).... ....

(P. O. address).. ....

Containing seed of.....(name or names of weeds).....

Any seed merchant may, at his own discretion, state the proportion in which such weeds are present as impurities.

Section 3, clause 2.—Any farmer may, at his own discretion, supply purchasers of seeds with a certificate which may contain information as outlined in the following form.

This is to certify that the .....bushels of seed of.....which I have this day sold to..... ....of..... ...., is sold by me subject to the provisions of the Seed Control Act, 1905.

(Signed)

....

Dated at..... ....this .....day of 190

Without such certificate, no person who purchases seed for his own use and eccepts the same from any farmer who is on his own premises and on which the seed was grown by him, may hold the said farmer subject to the provisions of this Act in respect to the seed so purchased. In all other cases farmers may be held to be liable under the Act, except as provided in Section 7.

Section 4.—'No. 1,' 'Finest,' 'Best,' 'Choice,' 'XXX,' 'Fancy,' 'Selected' and 'Prime,' are some of the terms that are generally held to indicate first or superior quality in articles of commerce. The purity standard for No. 1 or first quality of seeds may be computed with reasonable accuracy by, 1st, making sure that the seeds of weeds named in Sections 3 and 4 of the Act are not present, and 2nd, counting the total number of other noxious seeds in one ounce avoidupois.

The following table gives the maximum, minimum and average number of grains of seeds per ounce as determined in the Seed Laboratory by counting the seeds in one gram taken from each of 17 samples of each of timothy, alsike and red clover seeds. To obtain the maximum number of seeds per ounce, one sample of pure seed of the smallest obtainable seeds of each kind was used. For the minimum number of seeds per ounce one sample of pure seed of the largest obtainable seeds of each kind was used. The average number of seeds per ounce was determined from 15 samples of pure seed of each kind that had been received direct from farms, in various part of the provinces of Ontario and Quebec.

	Number of Seeds.		
	Maximum (Small seed).	Minimum (Large seed).	Average.
Timothy, 1 ounce	130,410	56,700	82,215
Alsike, 1 ounce	70,875	39,690	42,525
Red Clover, 1 ounce	36,855	12,757	18,427

Taking the average number of seeds per ounce as a basis, 99 pure or harmless seeds in 100 would allow of other noxious seeds, such as lamb's-quarters, foxtail, black medick, &c., in Timothy seed, 822; in alsike seed 425, or in red clover seed, 184 per ounce. Fresh, plump and well preserved seeds of Timothy, alsike and red clover can usually be counted upon to germinate 90 per cent or over, under the Standard Seed Germinator Test. A germination test of these seeds may be conveniently made by placing 200 seeds between a folded piece of heavy blotting paper and keeping the same moist but not wet, and in a room having a temperature 60 to 86 F., for a period of ten days for alsike or red clover seeds, and 14 days for Timothy seeds. The seeds that have germinated should be counted and removed on the third or fourth day, and every other day thereafter.

Section 5.—Any regulations made by the Governor in Council, as provided for in Section 5 will be given as instructions to the official seed analyst, who may be appointed as provided for in Section 11.

This section is made to recognize that absolute purity in respect to seeds of the weeds named, is not possible of attainment under the present conditions of the supply of seeds in Canada. Under Sections 3 and 4 of this Act, seed merchants are expected to exercise reasonable care in determining whether such weed seeds are present in any seeds they may sell or offer for sale. Section 5 is intended to provide an allowance for the possibility of error or oversight that may result from the examination of seeds with such reasonable care.

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Section 6.—The minimum standard of 5 to 1,000 of seeds sold or offered for sale for *seeding in Canada,* would allow of the seeds of weeds named in Sections 3 and 4, approximately, 411 in one ounce of Timothy seed; 212 in one ounce of alsike seed; or 92 in one ounce of red clover seeds.

Section 11. 'To such persons as the Governor in Council may appoint as an official seed analyst,' samples may be addressed 'To Official Seed Analyst, Seed Branch, Department of Agriculture, Ottawa.'

Section 12.—'In accordance with the rules for seed testing,' see appendix to this bulletin, 'Rules for Seed Testing.'

Section 13, Clause (a).—Retail seed vendors may not be held liable under the provisions of this Act in respect to the sale of seeds that have been put up in sealed packages or bags by another seed merchant domiciled in Canada, so long as the seed therein remains intact. Samples of seed may be taken from such sealed packages by means of 'seed tryers.'

Clause (b).—'Within seven days.' Any wholesale or retail seller of seeds that are not sold in sealed packages may not, under this Act, be liable in respect to the sale of such seeds beyond a period of seven days, unless a sample of such seeds be taken and inclosed within a sealed package as required under Section 12 and within the period of seven days from the date on which the seeds entered into the prsonal possession of the purchaser.

Section 14.—'Methods for testing seeds,' see appendix 'Directions by the Seed Commissioner,' &c., page 100.

DIRECTIONS BY THE SEED COMMISSIONER HOW TO PROCEED WITH THE VARIOUS OPERATIONS WITH SEEDS, NECESSARY IN CONFORMITY WITH 'SEED CONTROL ACT, 1905.'

HOW SAMPLES ARE TO BE TAKEN.

Sampling Seeds.—Samples for analyses must be drawn in the presence of,—

'(*a.*) the person who sold or offered, exposed or held in possession for sale the seeeds, or

'(*b.*) two impartial and non-interested winesses.'

In order to insure that the samples sent to the official seed analyst represent the bulk of the goods, the contents of packages, sacks or bags, should be emptied out, mixed thoroughly, and small quantities taken from different parts to make the sample sent to the official seed analyst for analysis. If the seeds be taken from sealed sacks or bags containing more than one bushel of seed, or if it be impracticable thus to mix the goods, small quantities should be drawn to make the sample; from the top, middle and bottom of each sack or bag, when there are not more than six sacks or bags; from the top, middle and bottom of every second sack or bag when there are from seven to twelve sacks or bags; and from the top, middle and bottom of every fourth sack or bag, when there are more than twelve sacks or bags. 'Seed tryers' and grain tryers may be used for this purpose. The sample thus obtained must be inclosed in a suitable package, sealed and forwarded to an official seed analyst.

Samples of seed must be accompanied by a certified statement of the inspector, informant or complainant, which shall include the name and address of the person who sold or offered, exposed or had in his possession for sale, the seeds from which the said sample was taken; the manner in which the receptacle, package, sack or bag was marked; and the section or sections of this Act in violation of which the said seeds were found or suspected to be sold or offered, exposed or had in possession for sale.

The minimum of weight of seedes to be forwarded for official test to any fficial seed analyst shall be—

2 ounces of grass seeds of all kinds, white and alsike clovers.

4 ounces, red clover, alfalfa, millet, and seeds of like size.

1 pound of cereals, and seeds of like size.

METHODS FOR TESTING SEEDS.

How Purity Tests Shall be Conducted.

The Average Sample.—The sample that is examined in the laboratory to determine the amount of impurities shall be carefully drawn from the larger amount forwarded for analysis, and shall consist of not less than—

2 grams of agrostis spp., poas, yellow oat grass.

5 grams of alsike and white clover and all grasses except agrostis, the poas and yellow oat grass.

10 grams melilotus, medicago spp., millet, and all species of clover seed, except alsike and white.

50 grams of cereals, peas, beans and other large seeds.

When the amount of impurities is unusually large, two average samples shall be drawn and examined.

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The report of purity tests shall state:—

(*a.*) the name of the kind or kinds and the number of the seeds of weeds named in section 3 of the Seed Control Act, which are found in the weighed sample.

(*b.*) for timothy, alsike or red clover, and names of the kind or kinds and the number of the seeds of weeds named in sections 3 and 4 of the Seed Control Act which are found in the weighed sample;

(2) the total number of seeds of weeds named in sections 3 and 4 of the Seed Control Act per 1,000 of the kind or kinds of seed examined; and

(3) for timothy, alsike and red clover seeds that are marked 'No. 1' or otherwise represented to be of first quality, the common and botanical names and the total number of the useless and harmful seeds of other than the weeds named in the Act, and the total number of seeds of useful and harmless grasses and clovers found in the sample per 100 of the seeds examined.

How Germination Tests of Timothy, Alsike and Red Clover Seeds shall be Conducted.

1. All germination tests shall be conducted in the Standard Seed Germinator.

2. The seed for germination tests shall be drawn from pure seed that has been thoroughly mixed for the purpose.

3. Two hundred seeds shall be acurately counted for each single test.

4. The seed to be tested for germination shall be placed between folds of heavy sterilized blotting paper, which shall be kept moistened until the test is completed.

5. In the case of all germination tests of timothy, alsike and red clover seed, the seeds shall be examined each day while the test is in progress. Those which have germinated shall be counted and removed from the germination bed and the number of such seeds recorded.

6. The duration of all tests of timothy seed shall be fourteen days, at the end of which time only those seeds which have germinated shall be considered as capable of germination. The number of such seed shall be stated in the report.

7. The duration of all tests of alsike and red clover shall be ten days, at the end of which time all seeds which have germinated shall be recorded. In addition, one-third of the number of seeds which have remained hard and sound shall be counted as capable of germinating, and included with those which have germinated, in making out the report.

8. Each germination test shall be conducted in duplicate, simultaneously and under identical conditions. When the duplicate tests vary more than five per cent, they shall be discarded and other tests made. The average result of the duplicate tests shall be stated in the report, but seeds marked No. 1 shall not be held to be falsely marked in respect to their vitality unless the per cent of germinable seeds, as shown by the said report, be more than five per cent below the minimum number required for seeds marked No. 1, as provided in clause 4 of the Act.

9. The temperature of the germinating chamber, during germination tests of timothy, shall be kept as nearly as practicable at 20° C. for eighteen hours per day, and raised to 30° C. during six hours per day, each day until the test is completed.

10. The temperature of the germinating chamber during germination tests of alsike and red clover seeds shall be kept, as nearly as practicable, at 20° C., during eighteen hours per day, and lowered to 18° C., during six hours per day until the test is completed.

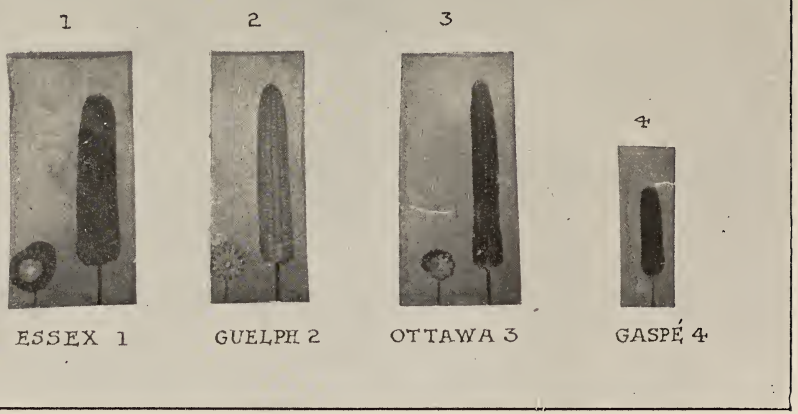
11. In no case shall the temperature be higher than 32° C., or lower than 15° C., during these germination tests.

PRESERVING SAMPLES.

A sufficient amount of seed for a complee test for both purity and germination of each sample shall be kept in the seed laboratory for one year, in a dark, dry and cool place.

RECORD.

Records shall be kept of all samples received, together with all information regarding their origin, time received, dates on which tests are made, and a complete report of the results of their anaylsis.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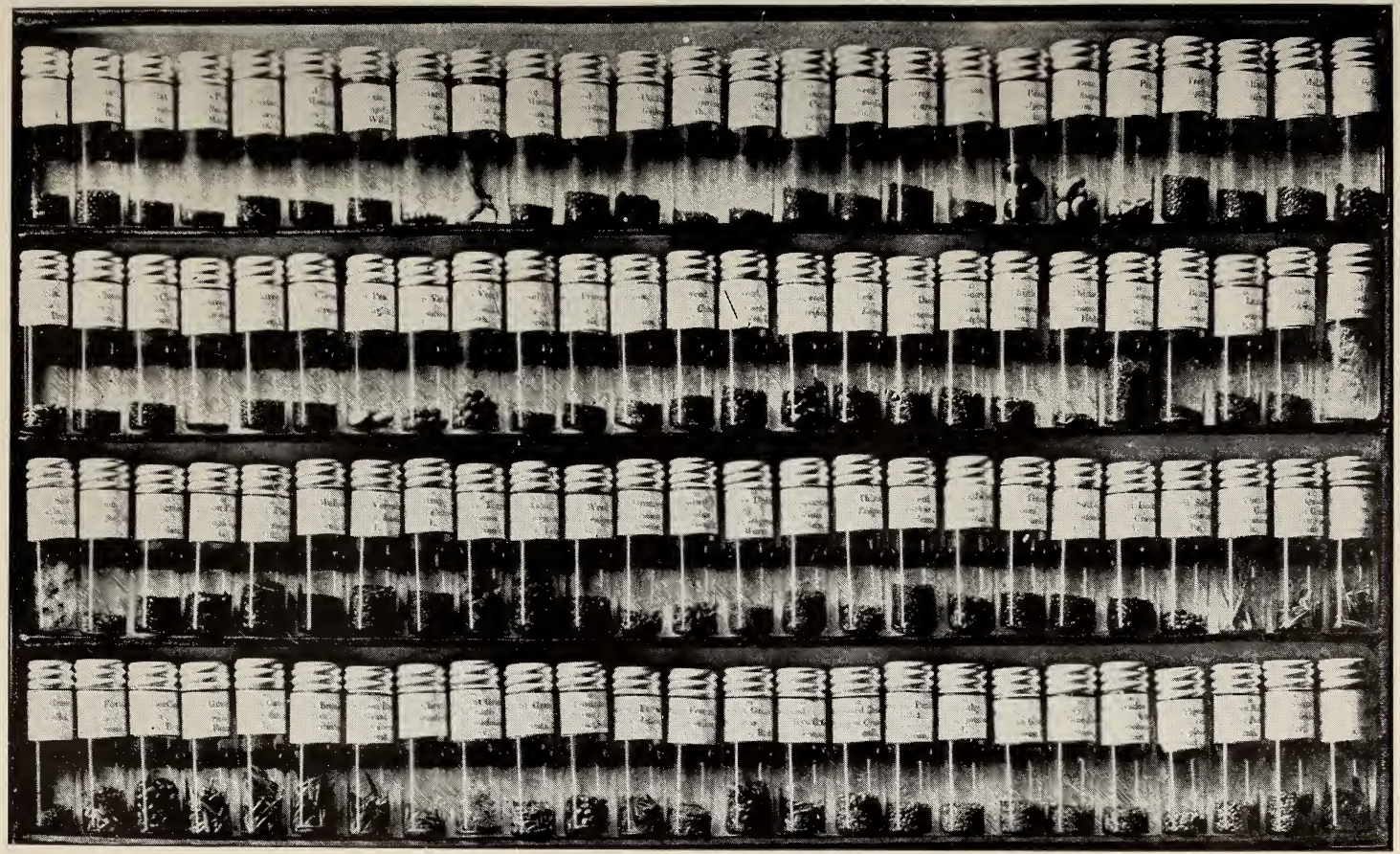

Reference Collection of Seeds

Prepared in the Seed Laboratory, Department of Agriculture, Ottawa, for distribution to Seed Merchants and Agricultural Institutions. Price $2.00.

ADVANCEMENT OF AGRICULTURE IN CANADA

HOUSE OF COMMONS,
COMMITTEE ROOM No. 34,
TUESDAY, February 21, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at ten o'clock a.m., Mr. Thomas Greenway, Chairman, presiding.

Prof. Saunders, Director of Experimental Farms, appeared before the Committee and made the following statements:—

Mr. Chairman and Gentlemen, I esteem it a great privilege to have the opportunity of coming before you again to render some account of my stewardship in connection with the work of the experimental farms. It is 18 years ago since the Government entrusted me with this work, which I have been at incessantly since that time, and I hope it can be shown that this work has been of very great use in advancing agriculture in the Dominion and in bringing it up to that state of efficiency in which we find it at present.

THE CROPS OF 1904.

The season of 1904 while favourable for some crops in some districts has not, on the whole, been a very profitable one for the Canadian farmer.

In the Maritime Provinces very dry weather prevailed during June and the greater part of July, which considerably reduced the hay and grain crops; the straw was short, but rains late in July brought the grain up to a condition of plumpness which was fairly satisfactory. Later in the season the weather in the Maritime Provinces was more favourable and roots and other late crops were harvested in very good condition and in very satisfactory quantities.

In Quebec and Ontario better conditions prevailed, but rust on the grain was general, which reduced the weight of the wheat and oat crops very considerably. Barley, however, as usual escaped with very slight injury. The Fall wheat in western Ontario was considerably injured by winter, and this crop which has given an average for the past 23 years of 20·3 bushels per acre gave this year only 15·1 bushel.

In Manitoba the spring opened late, but there was sufficient moisture throughout the season and good growth was had, but rust was unusually prevalent on both wheat and oats in many localities, which reduced the weight of the crop considerably and lowered the value of the grain. The crops, however, in Manitoba, have turned out fairly satisfactory on the whole. Wheat has averaged 16·52 bushels per acre, and the total crop has been a little under 40,000,000 bushels, oats 36,000,000 and barley 11,000,000, giving a total grain crop of over 87,000,000 bushels. The wheat crop of the Territories has averaged a somewhat higher yield than in Manitoba and has, it is estimated, brought the total crop up to nearly 60,000,000 bushels. This added to the 13,000,000 produced in Ontario and the wheat grown in Quebec and the Maritime Provinces, will bring the Canadian wheat crop up to nearly 80,000,000 bushels, not a bad showing for a comparatively poor year.

COMPARATIVE EXPORTS OF WHEAT AND FLOUR.

While the exports of wheat and flour from Canada are large and her capacity for increase in wheat growing is almost unlimited, the exports of wheat from the United States are declining rapidly. Great Britain has taken the larger part of the United States surplus for many years. In 1902 the United States furnished Great Britain with nearly 81,000,000 bushels, about 54 per cent of her total needs. In 1903 the United States supplied only a little over 45,000,000 and in 1904 about 12,000,000. I might say that with regard to flour also the decrease is very marked. In 1903 the number of barrels of flour shipped to Great Britain was something over 7,000,000, and in 1904 it was a little over 4,000,000. From these figures it would appear that the United States will require for home consumption in future nearly all its own wheat and that shortly it may become a consumer of a considerable portion of the Canadian crop.

Such an unlooked for shortage in the United States might have produced serious inconvenience, but for the fact that unusually good crops have been had in Russia, India, and Argentina, which, added to the Canadian quota, made up the deficiency. The shortage of wheat in the United States is said to be so great now that some of their large mills must soon get more or less Canadian wheat or shut down.

In this contest with other countries for the production of wheat, Canada has many advantages. Within her borders there is an immense area of fertile land, there is a good climate which grows good crops of wheat of the highest quality. A large portion of the available wheat area in Canada is being gradually occupied by a steady influx of settlers. The relative productiveness of the soil in the Canadian North-west is shown by a comparison of the yields of the past year 1904. While the wheat crop of Manitoba has averaged 16·52 bushels per acre, and that of the North-west Territories about 18 bushels. North Dakota has averaged 11·8, Minnesota 12·8, and South Dakota 9·6.

These are figures from a recent publication of the United States Department of Agriculture. The total wheat crop of the United States for 1904 is given as follows:—

Winter wheat—acreage		26,865,855
" crop	Bushels	332,935,346
Average yield per acre		12·4 bushels.
Spring wheat—acreage		17,209,020
" crop	Bushels	219,464,171
Average yield per acre		12·8 bushels.
Total acreage		44,074,875
Total crop of 1904	Bushels	552,399,517
Crop of 1903	"	637,821,835

showing a falling off in production during the past year of something over 80,000,000 bushels.

Now that the United States is not likely in future to be a large exporter of her north-western wheats, our chief competitors in the British market will probably be Russia, Argentina, and India.

QUALITY OF CANADIAN WHEAT COMPARED WITH WHEAT OF OTHER COUNTRIES.

How the quality of our grain compares with that sent to the market of Great Britain by the countries named may be estimated by the prices they severally bring. Recent quotations in Liverpool were as follows.—

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	Per bushel.
Canadian No. 1 Northern	$1 14
" 2 "	1 11
" 3 "	1 04
Best Russian	1 05
Argentine	0 99
Indian	0 91

showing a considerable margin in favour of such Canadian wheat as we have been able to send this year, which is below in grade what we usually produce.

There is practically no No. 1 Hard now on the market, but in past years No. 1 Hard has formed a very considerable part of our Manitoba and North-west crop. While the needs of Great Britain for wheat to feed her increasing population are growing greater from year to year the land under crop with wheat in that country is rapidly lessening in area.

The British wheat crop of 1904 is the smallest on record. The shortage is due partly to reduced acreage and partly to an unfavourable season. The total crop has been about 39,000,000 bushels as compared with 50,000,000 bushels in 1903, and 60,000,000 bushels in 1902. The average of the crop in Great Britain in 1904 was 27·72 bushels per acre as against an average of 31·97 bushels for the past seven years, showing that the British farmers also have had a very unfavourable season for their wheat crop.

SPECIAL WORK BY THE DOMINION EXPERIMENTAL FARMS.

Special work is being done in connection with the Dominion experimental farms to aid and stimulate wheat growing in Canada. Yearly demonstrations have been made of the best methods of cultivation, as to tillage, time of seeding, manner and depth of seeding, with illustrations as to how the several questions affect the yield. The great advantages of summer fallowing in the North-west and of early seeding in the East have been repeatedly proven. While no encouragement has been given to any varieties of wheat of inferior quality the desirability of sowing earlier maturing sorts of good quality in those districts where the season is short has been repeatedly urged. The work of originating new varieties by selection and by cross-breeding has been greatly extended, also the improving by selection of the yield and quality, and increasing the earliness of the best types among the standard varieties in cultivation; also to the breeding and selection of rust resisting sorts. In all such work progress is necessarily slow, but a broad foundation has been laid which promises well for the future.

The facilities now available at the Central experimental farm in Ottawa have been greatly improved by the recent purchase of a small roller mill by means of which two or three pounds of wheat can be operated on and flour produced which will compare favourably with that made from the same wheat in a commercial mill. An oven for bread making has also been provided so that a complete test as to the value of any wheat for the making of flour or bread can be thoroughly and rapidly made. A more reliable test can now be made of the quality of a wheat by the use of two or three pounds of the grain than could have been made ten years ago with several hundred bushels ground in a large mill. The fact that most of the larger mills in Minneapolis, also laboratories in Chicago, use these small mills with a baking plant to make determinations to guide the millers who have charge of the large mills, affords strong evidence of the reliability of the work done by these small plants. At a recent meeting of the Grain Growers' Association of the North-west Territories, Mr. Angus Mackay of Indian Head submitted he following regarding the early ripening of some of the new cross bred wheats produced at the experimental farms when compared with the red fife: 'In 1903 red fife was some five days earlier in field crops than huron

and stanley'—these are the names of two of the cross bred wheats—' and was seven days later in ripening. In 1904 Red Fife was sown one day later than Preston and was ten days later in ripening. While Red Fife is one of the finest milling wheats in the world, it is late in ripening and in many districts it is liable to be injured by frosts before it is ready for harvesting. A variety equally good for flour and for the market which ripens even a few days earlier must prove a great boon to the settlers in the more northern districts and will do much towards extending the area of wheat culture.'

EFFORTS IN GREAT BRITAIN TO IMPROVE QUALITY OF WHEAT CROP.

While the acreage devoted to the wheat crop in Great Britain is decreasing, efforts are being made there to improve the quality of the crop grown by introducing wheats of better quality from other countries. It is over three years since this work was begun by the National Millers' Association of Great Britain and Ireland. A committee was appointed known as the Home Grown Wheat Committee, which was subsidized by funds from the National Millers' Association and also from the Government Department of Agriculture. The end and object of the labours of this committee has been to endeavour to obtain a wheat for growing in Great Britain which shall combine increased strength with great productiveness, so that those high yields per acre which have placed the United Kingdom at the head of all wheat growing countries may be maintained. One fact demonstrated by the experts who are conducting this inquiry is that the strong wheats of other countries can be grown in England without losing much of their strength. In carrying on this work wheats have been brought from many countries for test, but none have given better satisfaction than the high class wheats brought from Canada. It is seldom, however, that any of these give the large number of bushels per acre which the best of the winter wheats at present grown in England yield. These experiments are being continued along several different lines with the hope of getting more productive sorts. Much cross-breeding is also being done with the object of originating varieties of high quality specially suited to the climate. To expedite their work the British Committee have installed a small roller mill much like that which has been secured for similar work at Ottawa, a mill capable of handling a few pounds of grain and giving satisfactory flour therefrom. This small mill has given exactly the same results as to the strength of the flour as those which have been obtained from grinding the same wheat in a large mill.

By the Chairman:

Q. Have you made any test as to white fife ?

A. We are making them. Dr. C. E. Saunders will appear before the Committee later on and submit, I think, some of the tests he has made with white fife. We are testing the different varieties of wheat as rapidly as possible.

By Mr. Henderson:

Q. Was not the production of wheat in the United States last year very considerably under the average?

A. I think not. Speaking from memory, it has usually averaged from 12 to 13 bushels.

Q. I meant the aggregate production?

A. Oh, yes, that has been about 80 million bushels less. There the area sown has also been less than it usually is.

Q. The question is, can we look upon this reduction in the United States production as of a permanent character?

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A. Much will depend upon the price that can be got for wheat. The United States have a very much larger area of land in corn than they have in wheat, and some of that corn land can be converted into wheat land if it can be shown that the wheat crop would be a better paying one than the corn crop. Speaking of the actual crops, the crop last year of 637,000,000 bushels was, I think, one of the largest crops they have had.

Q. I thought that last year's crop was only 500,000,000 odd bushels?

A. I was speaking of 1903. The crop for 1904, was 80,000,000 less than that of 1903.

By Mr. Derbyshire:

Q. Is it not a fact that they are consuming more of their own productions at home?

A. Yes, the proportion of the wheat crop consumed in the United States is very large indeed, and I think fully three fourths of the corn produced is consumed at home.

By Mr. Cochrane:

Q. We understand that you have been experimenting in the production of flour, and in the quality of flour; how does the flour compare from wheat which you have produced by crossing new varieties with that which you have produced from the older varieties—in the production of flour and in the quality?

A. The flour made from some of the cross-bred wheats is of excellent quality and the quantity produced is satisfactory, but you will have fuller particulars on this subject when the Experimentalist comes before you. He will give you the report of what has been done; he has done much work along that line, and I do not wish to anticipate any statements he may have to make.

Q. What is the most productive wheat you have now?

A. The Preston wheat stands higher in yield at the experimental farms, on the average, than any other variety.

Q. What is the name of that wheat?

A. The Preston. It is a Red Fife cross.

Q. Is it a spring or a winter wheat?

A. A spring wheat.

By the Chairman:

Q. Have you any evidence as to whether it is more likely to be affected by rust? That it is more liable to rust than fife wheat?

A. We have had no reports to that effect and we have tested it thoroughly on our experimental farms and have not found it specially liable to that disease.

By Mr. Henderson:

Q. Is it as prolific as red fife?

A. A little more so, at least it has been in our eight or nine years' tests.

Q. Which winter varieties have you found to give the largest yield in Ontario?

A. The winter varieties we have not been able to test fully because we have no experimental farm where we can grow winter wheat with certainty. The Ottawa farm is the only one on which we grow it, and there about one year in three the plots are more or less winter killed, so that we cannot carry on experiments with winter wheat very successfully.

By the Chairman:

Q. Do you know anything about winter wheat grown in Southern Alberta?

A. Yes.

Q. What kinds are used?

A. The names of some of them are not known, but among others the turkey red and odessa are grown considerably. The total amount of winter wheat grown in Alberta is comparatively small as yet. It did not amount to quite 100,000 bushels out of 10 or 11 million bushels produced, and 60,000,000 produced in Manitoba and the North-west, so you will see that the growing of winter wheat there has not advanced yet very much. In my visits to the Mormon colony, and they are supposed to be the largest growers of winter wheat in Alberta, I found on the last occasion I was there that they were growing less winter wheat for the reason they can get a better price for their spring wheat and they say they can grow the spring wheat just as well. Much had been written about shipping flour from that district to Japan, for the reason that it was made from fall wheat, and was specially adapted for the purpose. I went to the mill to inquire into the matter, and the miller told me that it was all spring wheat they were grinding. So that, while winter wheat can be grown in that country, it has not yet been grown to any very large extent. The fact that it can be grown there is exceedingly interesting.

By Mr. Henderson:

Q. Does that apply to all parts of Alberta?

A. My remarks are intended to apply only to Southern Alberta.

By Mr. Herron (Alberta):

Q. I think I have understood that the country between Calgary and Edmonton was very suitable for winter wheat?

A. I think that this crop is only in the experimental stage there. There is not one that I know of that has produced any considerable area of winter wheat in that country. Some small plots have, I believe, been tried, and some claim to have been successful while others report unfavourably.

Q. With reference to fall wheat grown in the vicinity of Pincher Creek, we have been growing fall wheat there about 15 years, anywhere from 3 to 10 acres on each farm. I know one man in particular, who has grown it that long, and I can certify that he has never had less than 35 bushels to the acre under ordinary conditions for that length of time.

A. Is that at Cowley?

Q. No, that is at Catto's. I think you have met him.

A. Yes, I think I have.

Q. Last year in the vicinity of Pincher Creek we have grown, I think, over 100,000 bushels, and it was a poor season for fall wheat. Our wheat averaged 35 bushels to the acre there. As I say, there have been 100,000 bushels or more grown and we expect before long to grow half a million bushels there. There is ground enough under seed within ten miles of where I live to produce that quantity.

A. I wish it to be understood that I am not speaking disparagingly of the growing of winter wheat in Alberta. I have seen as good fields of fall wheat near Cowley, Alberta, as I have anywhere in the Dominion. I saw the year before last some very fine fields there.

Q. I gave you some samples from my own place there?

A. Yes, I had forgotten, I didn't recognize you for the moment. I think where fall wheat can be grown to produce 30 or 35 bushels to the acre from year to year it would be a profitable wheat for the farmer. The idea that fall wheat ripens so much earlier than spring wheat does not seem to be generally borne out. It is earlier in some districts, but in others it seems to take nearly the same time as the spring wheat does. That is what the settlers tell me; some varieties may possibly ripen later than others.

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By Mr. Schell (Oxford):

Q. You said the average return in Manitoba was 16·52 bushels and in the Territories 18 bushels?

A. I was speaking only of one year. The average of ten years in Manitoba has been about 19 bushels. I was only speaking of 1904.

By Mr. Blain:

Q. Can you give us the average yield of wheat in all the provinces for 1904?

A. The information is not all available.

Q. As far as it is available, how much is it?

A. I have given you Manitoba and the Territories and as to Ontario, the spring wheat averaged 15·4 bushels per acre.

By Mr. Henderson:

Q. You said the returns in Ontario last year were 15·1?

A. Yes, that was the winter wheat. That occupies in Ontario a much larger acreage than the spring wheat.

By Mr. Miller:

Q. You have pointed out that the yield of wheat is much greater in the North-west and Manitoba than in the wheat growing States of New England. Do you consider that due to the different nature of the soil and climate or to the fact that the Americans have been overcropping their wheat land and reduced the yield? And is it probable that in our North-west wheat growing districts that by pursuing the same methods of cultivation as are now being pursued, and growing wheat year after year, that the yield will be reduced to the figures which you have given of the yield in the United States? And if that be true, can you suggest any better method of cultivation or use of the soil in the wheat growing district which would keep the yield up to a higher standard?

A. That is a problem we have been considering and experimenting on ever since we began work on the experimental farms in the west. There is no doubt that if you continue to take from the soil its fertility and do not put anything back, in process of time the crops will grow less. I do not think that is the cause of the present small crops in the United States, because their fields, many of them, have not been cultivated much longer than some of the fields in the older settled parts of Manitoba, and yet they do not get the same crops—I think mainly for the reason that they are such poor farmers. I was through North Dakota last year just after harvest, when the wheat was in stock, and while in Manitoba and the Territories almost every second farmer had more or less of his land in summer fallow—which is well known to be a great factor in helping to bring up the average of the crop—when I got past the boundary a little way I saw no more summer fallows. That in itself is evidence that the cultivation of grain in the American North-west has become of a careless and indifferent character. The farmers do not appear to lack industry. It happened to be Sunday when I was passing through, and I noticed in many places that threshing was in progress. Our people do not believe in working more than six days in the week and by treating their land intelligently they bring out much better results.

By Mr. Christie:

Q. In that part of Dakota I have always understood that they are almost all Canadians, old Ontario farmers who went there?

A. If so, it does not speak well for them.

Q. Fifty per cent at least are Canadians ? I only tell you what I saw.

A. I do not know as to that.

THE CHAIRMAN.—They got badly contaminated.

By Mr. Jackson (Selkirk):

Q. The Chairman raised a question. In the district from which I come one of their crop is prestion wheat, and it suffered much from rust.

THE CHAIRMAN.—That is my experience.

WITNESS.—Many farmers have reported the results they have had with Preston wheat, but I cannot recall any instance where it has been said to be specially liable to rust.

Mr. CRAWFORD.—If you grow it on very heavy clay soil the yield is fine.

Mr. JACKSON.—It is liable to rust.

By the Chairman:

Q. Last year was our first experience of rust to any extent?

A. It was a very unusual year, and it is an experience that we may not have again. While we are on Preston wheat, I happen to have a letter here——

By Mr. Lewis:

Q. What is Preston wheat a cross of ?

A. Red fife with ladoga, and one of the advantages of this wheat is that it is from four days to a week earlier in ripening, and strange to say when the season is a late one like last year the period of ripening of the later sorts is drawn out and these early varieties are able to assert their early ripening tendency more strongly in a season like that of last year, making them an average of ten to twelve days earlier than red fife.

By Mr. Lewis:

Q. Is it a bearded wheat?

A. Yes.

Q. What is ladoga wheat ?

A. It was a wheat brought from Lake Ladoga, north of St. Petersburg, the first year the experimental farms were started, and it was found to be a week earlier than any of our wheats under cultivation then in the North-west. Its cultivation was continued until we could get enough of the wheat to have its value for flour making tested in a mill. It was found that the flour was decidedly yellower in colour than red fife, and as this was considered to be a serious objection to its general introduction, we ceased to distribute it or to recommend it for cultivation. In the meantime samples were sent to the Peace River country, where the season is short and there farmers have found it to be so advantageous on account of its earliness that they grow no other wheat. They don't mind the little yellow tint in the flour, and it makes very good bread.

By Mr. Jackson (Selkirk):

Q. Manitoba wheat buyers are much down on Ladoga?

A. Very few of them know it when they see it. There is a good deal of sentiment in these things. I understand last year that a man wrote and asked a certain buyer how much he would give him for Preston wheat and he replied, 'I only buy red fife.' The farmer asked if he bought Mr. So and So's wheat, and the buyer replied that he did and paid him the highest price for it, whereupon the farmer informed him that that was prestion wheat.

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By Mr. Conhrane:

Q. Here is a point. You put great stress on summer fallowing. How does that add to the fertility of the soil—by cultivation or by some scientific process?

A. The cultivation of land in that way—summer fallowing as carried on in the North-west—has a good effect in several ways. It conserves moisture by breaking up the capillary structure of the soil and turning the moisture down where it is retained, and does not find its way to the surface as under ordinary cultivation. The land is turned over to the action of the sun and air, and insoluble plant food in the soil is changed to soluble and available forms. It also destroys a vast host of weeds which would otherwise during their growth pump the moisture from the soil and deprive the growing grain of the water needed for the crop.

The CHAIRMAN.—I think your exposition of it is about correct.

By Mr Schell (Oxford):

Q. I suppose more comes from the loosening or making available th constituents that are in the soil for plant food, putting it in a soluble form?

A. There is no doubt that is a very important point. Some people say the moisture is the most important part. The killing of the weeds is also of the utmost importance because no man cultivating in the North-west can entirely keep out weed seeds. They are blown over the plains all winter long and the wind scatters the seed no matter where a man may be. But by this method much may be done to keep the land clean for the season. The conservation of moisture is also an important advantage arising from summer fallowing.

By Mr. Cochrane:

Q. Do they plough and cultivate the crop?

A. In summer fallowing the land is left vacant for the year.

Q. I understand that. I am talking about the cultivation.

A. The land is ploughed once and usually cultivated a couple of inches deep with a shallow cultivator twice during the season. The cultivator breaks up the surface, and this forms a mulch which serves to keep the moisture in the ground from finding its way to the surface.

By Mr. Crawford:

Q. The result of our experiments has been that we have given up summer fallowing because we cannot clean our farms with it.

A. Why? Cannot you cultivate it?

Q. We cultivate it, but when we do we get too much straw, and not enough crop.

A. In a wet season the growth I know is very strong with such treatment, but taking the average of a series of years, the farmer will, in my experience, be much better off if he summer fallows his land every third year.

By the Chairman:

Q. The result of my experience is that I would rather have two crops of barley.

A. You would sow it thick, I suppose, to keep down weeds?

Q. The barley cleans it out. We have so much heavy vegetable mould.

A. It blows when it is summer fallowed?

Q. Yes.

A. But taking the country where the soil is firm, a good clay loam, and I do not think you will find one farmer in ten who will not stand up for the advantages of summer fallow.

Q. Where you have land that is very heavy, in summer fallow, you are almost sure to have too heavy a crop.

A. That is sometimes a source of trouble on a very fertile soil when the season is wet. There is another point involved in the question asked as to how the fertility of the soil might be retained. The experiments we have been trying in the past have been mainly along the line of substituting for the bare summer fallow a crop of clover. We have tried the common red, the mammoth and the alsike We have had a certain amount of success with these experiments and it seems to me that that is probably the only way in which large areas of land in Manitoba and the Northwest can be fertilized. It gives them a supply of humus which they will need eventually, and also a quantity of nitrogen.

Q. Has the growing of clover been a success at Brandon?

A. It has to a considerable extent. The half acre plots grown last year were quite a success; this year we are working on larger sized plots.

With red clover ?

A. Yes, red clover.

Q. Can you give any reason for the average of the crops in Manitoba and the Northwest being so very much less than those reported at the branch farms?

A. That is a subject not easy to explain. It is the same in Ontario. You take the different crops we get at the experimental farms of oats which in field cultivation will give us 50 to 60 bushels, while the average of the province is about 38 bushels. We treat the land just as any farmer ought to treat it.

Q. You manure it extensively, perhaps?

A. That is all explained in our reports; we do not manure it any heavier than most good farmers would, and many use manure more freely than we do, but there are many poor farmers and they bring down the average very much. Take potatoes, which is a still more striking example. We get from 300 to 400 bushels; the average in Ontario for the past twelve years has been only 115 bushels.

By Mr. Cochrane:

Q. That is on the experimental plots?

A. Oh, no, we often get 500 bushels per acre on the experimental plots,; the 300 bushels is for field cultivation

By Mr Lewis:

Q. You said the English farmers grow very much more wheat to the acre than we do. Would the fact that they sow thinly in Manitoba have anything to do with the difference? and would continual cropping for several years effect the result?

A. The conditions in England and this country are very different. Their wheat is nearly all winter wheat, their land is different, prepared with greater care and the climate is mild and favourable and their growing season is longer.

Q. What do they sow to the acre?

A. They sow a larger quantity of grain to the acre than our farmers do; one reason why they sow heavily is that they get by doing so a heavier crop of finer straw, and straw with them is worth almost as much as the grain.

By Mr. Cochrane:

Q. Do not climatic influences and the seasons have something to do with it, the longer season and the moister climate, and the fact that they have sunlight much longer?

A. These are all important factors, but we have not found thick seeding specially advantageous in this country. We have been carrying on experiments at the farm

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at Ottawa for several years in the sowing of different quantities of seed, with oats beginning with a bushel and a half and carrying it up to four bushels, on plots alongside each other. We have also conducted some similar experiments with barley and some with wheat. With oats we find we get the better crop by using from 2 to 2½ bushels; with three to four bushels we have usually had much lighter crops. There are very few farmers in England or Scotland that sow less than four bushels of oats to the acre, and they say they get much better results than with lighter seedings.

By Mr. Kennedy:

Q. How did you find the farmers doing in British Columbia, where the climate is somewhat similar to what it is in England?

A. They sow about 2½ bushels in British Columbia; I do not think they exceed that. We sow about two bushels, and our crops, I think, are as heavy as theirs.

By Mr. Herron:

Q. Doctor, I want to ask if you have any record of the cultivation of sugar beets in the Northwest, showing whether there is a large area of our country adapted to the growing of sugar beets, and if they are a success where they are grown?

A. That question seems to come as a break in the middle of this wheat business. I would like to finish with that.

Would you allow me just to read this letter I have in my hand in reference to preston wheat. It is from Sergeant Major F. Coles (late 20th Hussars), Moffatt P. O., Assiniboia, N.W.T.

14th November, 1904.

Dr. SAUNDERS:

Dear Sir,—I beg to inform you of the great success of the Preston wheat in this district. The demand for seed this year is greater than ever. Many who tried it for the first time this year, intend sowing a great deal more next year. Preston wheat has done much good in this district. You will be doing the farmers in the Northwest Territories (where it is difficult to grow Red Fife successfully) a very great favour by drawing the new settlers' attention to this excellent early variety. I cut my Preston wheat on the 20th of August; many of my neighbours could have cut it at least seven days earlier. The yield on my farm was 35 bushels to the acre.

Trusting you will long be spared to continue in the work you are engaged in.

Believe me,

Yours truly.

That is the only letter I brought about preston wheat, and I thought it well to bring it to show that while some may have had unfavourable results, others speak favourably of it. The results at the experimental farms were favourable. I wish again to repeat that we do not advocate the growing of other varieties of wheat where red fife can be grown successfully, without injury from frost. We believe this is one of the best wheats we can grow, and that in many districts, especially in Manitoba, if red fife is sown early enough it will ripen well in most years.

By Mr. Christie:

Q. Red Fife is not so good in Ontario?

A. We find it a good wheat here. We have done more work in the way of disseminating pure red fife than with any other wheat, but we cannot ignore other varieties, especially the earlier sorts, some of which seem equal in quality and almost equal in productiveness. I am one of the strongest advocates for red fife, but if

a farmer writes and tells me that he has tried it and it has ripened too late in his locality, I advise him to try some earlier ripening sort.

By Mr. Sproule:

Q. You spoke of the total wheat production of the United States being 600,000,000 bushels. Have you any data to indicate what is the consumption of wheat in that country?

A. For some years past, until 1902, they have had a surplus, speaking roughly about 200,000,000 bushels to export.

Q. It is claimed by some that their consumption has almost overtaken their production. Have you any figures comparing last year with two or three years previous to that?

A. Were you not present when I gave these figures——

The CHAIRMAN.—Dr. Saunders gave the figures before you came in.

WITNESS.—In 1902 the United States sent to Great Britain over 80,000,000 bushels, in 1903 they sent only 54,000,000 bushels, and last year it came down to 12,000,000, and there was a decrease also in their exports of flour.

HOUSE OF COMMONS,
COMMITTEE ROOM No. 34,
THURSDAY, February 23, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Greenway, Chairman, presiding.

Professor Saunders, Director of Dominion Txperimental Farms, again appeared before the Committee and was heard, as follows :—

THE GROWING OF CANADIAN WHEAT IN ENGLAND.

Mr. Chairman and Gentlemen, When I was with you on Tuesday I was talking over the subject of wheat, and I made the statements that the experts of the National Miller's Association in Great Britain and Ireland had been trying the red fife wheat of Canada and had grown it for several years without its losing anything material in quality. Yesterday I happened to get a sample sent to me of red fife grown three years in Great Britain from a bag of Red Fife grown at Indian Head which I sent over from here.

By the Chairman:

Q. How long has it been grown ?

A. Three years. It was sent over in 1901 from Indian Head, and grown in 1902 at Wye in Kent. I have not the record of 1903, but in 1904 it was grown at Faversham, and it produced a crop of 43¾ bushels per acre grown alongside the Golden Drop, one of their soft varieties, which produced 41 bushels, showing that it not only has maintained its quality, but that it has in this instance developed an extraordinary crop producing power. The expert tells me that their baking tests are indicated by a series of numbers running from 1 to 100, and that while the golden drop rated 56 in the baking contest this red fife rated 87, showing the high quality of the wheat.

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I thought it would be interesting to bring this sample to your notice as all these experiments in England with our wheats help to bring Canada into notice.

OATS AND BARLEY.

Passing on to the subject of oats, these cover the largest acreage of any of the grain crops in eastern Canada. In Ontario alone, the area occupied by this crop in 1904 was 2,654,936 acres, which gave a crop of 102,173,443 bushels, equal to 38·5 bushels per acre, which was about 3 bushels above the average of the past 22 years, showing that we are not only growing an increased acreage, but that we are obtaining a higher yield per acre. In Manitoba also this crop has increased considerably and last year nearly a million acres were under cultivation, giving a crop of 36,250,000 bushels, with an average yield of 38·8, showing that Manitoba is quite equal to Ontario in regard to the average yield of oats. I do not think it is on account of any better conditions, but mainly for the reason that the Banner oat is grown nearly all over Manitoba, which is one of the most productive varieties and it is largely perhaps a question of variety. The oat crop of Manitoba in 1904 was four times what is was in 1900, showing how this crop is increasing. The production of barley is also increasing rapidly. For the ten years prior to 1890, the average barley crop of Ontario was 20,000,000 bushels. Of this amount 10,000,000 bushels approximately were sent annually to the United States, for which on an average about $6,500,000 was received by the Ontario farmers. When the McKinley Bill came into operation, with its prohibitive duties, I think it was in 1890, this market was suddenly and totally cut off, which obliged Canadian farmers to rearrange their crops, and they forthwith dropped a large part of the barley crop, so that two years later the total barley production of Ontario, instead of being 20,000,000, was reduced to less than 10,000,000. In the meantime, however, the farmers became convinced that the surest outlet for their surplus products was Great Britain and their best plan to adopt was to feed these coarse grains and convert them into finished animal products, notably cheese, butter, eggs, beef, pork and mutton. Following this plan, a large trade has been built up and the barley crop increased until this last year it amounted to 24,500,000 bushels in Ontario alone, with an average crop of 31·8, whereas in 1890 the average crop was about 21 bushels, showing that not only has an increased quantity of barley been produced, but by improving the land, feeding this barley or oats to stock, and putting the manure obtained on the land, it has been brought into better condition, so that the average crop has been raised very materially.

SMALL QUANTITY OF COARSE GRAINS NOW EXPORTED.

It is interesting to notice in this connection how small a proportion of these two large and important crops, barley and oats, is now exported. The total oat crop of the Dominion is upwards of 200,000,000 bushels per annum, and the total exports for the past year were 4,695,000 bushels. Part of this we know went over in seed to Great Britain, as there is a considerable demand there now for our Banner oats, but the figures given show that the exports are very trifling when compared with the production. The barley crop will probably amount to 50,000,000 bushels, and of this 1,057,470 bushels were exported last year. By feeding these coarse grains at home and the use of the manure produced, the Canadian farmer is enabled to restore to the soil a very large part of the plant food which the crops have taken from it during their growth.

MAINTAINING THE FERTILITY OF THE SOIL.

The maintenance of the fertility of our land so as to provide for a continuance of good crops is a subject of the greatest importance, and has been carefully con-

sidered and experimented with on the experimental farms ever since their organization. The preservation and handling of barnyard manure so as to avoid waste has claimed much attention. Convincing testimony has been furnished by the results of experiments on the farms of the great value of manure fresh from the barnyard as compared with rotted manure. It has been shown very clearly that a ton of fresh manure is equal in crop producing power to a ton of rotted manure and that it takes two tons of fresh manure to produce one ton of rotted manure. When you consider that the manure produced in solids and liquids by the farm animals in Canada amounts to about 100,000,000 tons per annum, which is considered a conservative estimate, and that each ton of this valuable fertilizer may be estimated as worth about one dollar, it is easy to see the importance of this question. On the use of this material the farmer's hopes of maintaining the fertility of his land are mainly based, and while many handle it with judicious economy, many others recklessly waste this useful material.

Q. Burn it?

A. Burn it, yes.

By Mr. Wright:

Q. Is that really so, that this green manure is equal in value to the rotted manure?

A. In explanation of that statement I might say that we have carried on experiments along this line for 16 years. For the first 10 years a plot of land was manured each season with rotted manure and another plot alongside with green manure, and for ten years the oat crop on the average was four or five bushels more per acre on the land where the green manure was used than on the rotted. The wheat crop was just about equal on both plots, and in the case of the barley crop the advantage was a little in favour of the green manure. But practically it is safe to say that in crop producing power a ton of green manure from the barnyard is equal to a ton of manure that has been rotted. The reason for that is apparent, when you consider that the liquid manure, which is by far the most valuable and richest in plant food, is nearly all dissipated in the process of rotting; the nitrogen it contains is lost in the form of ammonia, and the potash and phosphoric acid is more or less leached out and wasted during the process. The results of these tests conducted for a series of ten years on the same crops, on the same ground, and applying the same quantity of manure each year showed there is no advantage so far in rotting manure, while there is a loss of at least half the weight of the manure.

By an Honourable Member:

Q. Is the green manure not more dangerous for carrying weeds?

A. There is an objection to fresh manure on this account, but we always use manure on a root or other hoed crop, where a few more weeds would not materially signify, as they would all be destroyed in the clean cultivation which follows. This, however, is a point every farmer should consider for himself.

By an Honourable Member:

Q. Your green manure would include a lot of unrotted straw, would it not?

A. Yes, more or less. Straw rots in the soil more promptly in eastern Canada. That would be an objection to it in Manitoba, where the moisture is often not sufficient to rot the straw in the ground. There the manure would need rotting before it is applied.

By Mr. Wright:

Q. Then you have the advantages of the heating properties of green manure. While it is rotting the underheat helps very materially?

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A. Yes, it would give additional warmth to the land, and probably hurry the crops along more or less.

BENEFICIAL RESULTS FROM THE PLOUGHING UNDER OF CLOVER.

Much attention has also been given to the growing of clover and other leguminous crops, and ploughing them under with the object of adding to the fertility of the soil. These crops take nitrogen, which is one of the most expensive of fertilizers, from the air and store it in their tissues, and when ploughed under these decay and furnish food for subsequent crops. The results of many experiments have shown quite a large increase, both in grain and straw, where clover has been ploughed under as a fertilizer. In these experiments clover seed has been sown with the grain in the spring. After the grain has been harvested the growth of the clover has been rapid, and by about the first week in October a thick mat or foliage has been produced ten or twelve inches in height. This has been turned under about the middle of the month so as to be ready for the sowing of a grain crop very early the following spring. By this method the greatest advantage is realized from the clover without interfering with the regular succession of other crops. In these experimental plots we have always had alongside some beds containing no clover for purposes of comparison. Clover in common with other leguminous plants has the power, as I have already said, of taking nitrogen from the air. That is accomplished through the agency of minute bacteria, which attach themselves to the roots of these plants, forming thereon small nodules varying in size from a pin's head to a pea, in which these bacilli or bacteria are colonized. The nitrogen taken in by these colonies is converted into soluble compounds and stored in the tissues of the roots, stems and leaves.

By the use of clover in the manner I have indicated, the soil is enriched by the addition of nitrogen taken from the atmosphere. There is also an increase in the store of mineral plant food in the surface soil from the deep rooted system of the clover which forages deeper than almost any other plant can reach and brings up phosphoric acid and potash, and places that also at the disposal of subsequent crops. Further, there is a large addition of humus from the decaying roots, stems and foliage of the clover, and this added humus or vegetable matter enables the soil to hold more moisture, and as all plants must take up their food by means of water this is of very great importance to all crops during the growing season. The clover also acts as a catch crop during the autumn months retaining and utilizing fertilizing material brought down by the rain. The bacteria referred to colonized in the nodules on the roots of the clover are necessary for the vigorous growth of clover, and the fact that clover can be grown successfully in most of the settled parts of Canada is evidence that these bacteria are almost universally present. There are, however, localities where it is said the bacteria are scarce or wanting. In such cases a few sacks of soil taken from an old clover field and scattered over an area where clover has failed to grow will usually give it a start, the bacteria multiply rapidly and clover may usually be grown thereafter on that soil without difficulty. As the transportation of soil to start bacteria is rather cumbersome, concentrated cultures of these micro-organisms have been made and the seed of the clover treated with them before sowing. The first cultures of this sort made in Germany were tested at the central experimental farm in 1897 to 1899, and the results published in the annual reports for those years. The culture used was known as 'Nitragin', and while some increase of crops was had from its use, the preparation soon lost its vitality and the results were not such as to warrant any general recommendation of its use and its manufacture was subsequently given up. Recently an improved culture has been made which is said to retain its activity for a much longer period and to be much more effective than any of the older forms. This preparation is mainly the result of the work of Dr. Geo. T. Moore, one of the staff of the United States Department of Agriculture, and this new method of inoculating the soil most of you have probably seen references to in recent

magazines and newspapers because it has been the subject of a great deal of comment. By the use of this culture the seed may be inoculated before sowing and very excellent results have been obtained in districts where the land is poor and unfavourable to the growth of legumes. Fortunately in most parts of Canada these bacteria are abundant in the soil and most of the leguminous crops grow well, hence there is not the same need for inoculation. Experiments with the cultures referred to are, however, being made at the several experimental farms, and we shall be able to report more fully on this matter in another year or two. Where clover grows freely it is an indication that inoculation is not of much importance, but where there is any difficulty in growing clover then the usefulness of this system of inoculation will no doubt be much greater. Where the land is poor and clovers have not hitherto been grown, the use of such culture will often prove a great benefit by giving the crop a successful start.

EXPERIMENTS WITH CLOVER DURING 1904.

During the season of 1904 the experiments in the ploughing under of clover resulted in a large increase in crops. Seven experiments with banner oats gave an average increase of 12 bushels 11 pounds of grain per acre, and an increase in weight of straw of 1,352 pounds per acre. Six experiments were tried with Indian corn, which resulted in an average increase of 5 tons 1,516 pounds of corn cut green for ensilage. Eight experiments were also made with potatoes, which gave an average increase of 39 bushels 37 pounds per acre. Fuller particulars of these experiments will be found in the Annual Report of the experimental farms.

ANNUAL DISTRIBUTION OF SEED GRAIN FOR TEST.

The annual distribution of grain for the improvement of seed among the farmers is again in progress, and up to the present date (February 27) 11,604 samples have been sent out, these samples weighing, in the case of barley and wheat, 5 pounds each, and in the case of oats, 4 pounds each. I have here with me samples of some of the leading varieties of grain that we are distributing.

By the Chairman:

Q. You are speaking of banner oats; do you find them the best ?

A. We find the banner oats give the largest crops of any of the oats that we have been growing, taking them all over the Dominion, and it is the principal oat grown in Manitoba. I think the large crops had in Manitoba are largely due to the sowing of that variety. The oat crop in Manitoba is usually the last to be considered, and is generally put in on any sort of land which happens to be left, or which is more or less unfit for wheat.

By Mr. Wright (Renfrew):

Q. Do these manufacturers where they manufacture so many cereals, say at Peterboro'—is there any particular kind of oats they prefer for the manufacture of their breakfast food?

A. The breakfast foods are usually made from wheat. I do not know of any of them made from oats except oatmeal and rolled oats. The oatmeal manufacturers require an oat fairly long, and they can use the banner very well. They have also found the holstein prolific a good variety. That is a subject we have under investigation just now. We are corresponding with the oatmeal millers, and have submitted samples to them to find out which they prefer in certain parts of the Dominion. The welcome and the Scotch potato oat, both of which are short, are most satisfactory for this pur-

pose. We have had this matter in mind in our distribution of grain, and have endeavoured to avoid sending out any variety of oat, to any extent, which would not be acceptable to the oatmeal miller, because this is an industry that ought to be encouraged.

By Mr. Rousseau:

Q. How does the Siberian oat compare with others in yield?

A. It does not stand as high as the Banner. The relative position they occupy can be easily found by reference to one of our crop bulletins. The Banner stands first, and the Siberian will vary from the 10th to perhaps the 15th in the list. There is no very great difference, and the Siberian has done well on the whole. It is an oat we are growing regularly alongside of the other varieties, and in some parts of the country it does better than it does with us. Samples of the Banner oat were sent to Scotland at the request of the Superintendent of the Agricultural Farm at Glasgow some four or five years ago, and this oat is now very generally distributed over Scotland. The information we have from there shows that it is an oat which readily adapts itself to different conditions of climate and soil, and it seems to have an advantage there over many other sorts.

Q. Are these samples of seed grain you are distributing grown in Ottawa?

A. No, they are mostly from Indian Head.

By the Chairman:

Q. This Red Fife?

A. That is from Indian Head.

By Mr. Schell (South Oxford):

Q. Have you any experience with the Black Mane oat, which was formerly grown rather extensively in some districts?

A. We have not found it to be such a heavy yielder as some of the white varieties, although it has a good reputation in some quarters. It has never yielded as heavily as the Banner or some other white varieties. The oat mill men will not buy an oat which has been grown in a district where black oats are raised, if they know it, for fear that black oats will be mixed with the white, and that their product will thus be injured by the mixture. Oats grown in a district where there are no black oats raised will bring one cent a bushel more as a rule. Black oats are not as good sellers, and not as good croppers, and we have not encouraged growing them, and have thought it best not to distribute them, although we always grow a few varieties of black oats in our experimental plots so as to be able to give information regarding them.

Q. How does the Green Russian do?

A. That is an oat with which we have had no experience, except during last season at Brandon. It is said to have done well there. We heard of it during the winter, and have procured some for sowing in the spring at the different experimental farms. We are not in a position yet to say how it will turn out.

By Mr. Clements:

Q. Do you advocate the sowing of these samples in Ontario?

A. Certainly. These Banner oats for instance (referring to sample) are from the field crop at Indian Head, which gave 115 bushels to the acre. I am firmly of the opinion that it is an advantage to sow seed from a prolific strain; that it is much better for a farmer to have a sample for improving his seed that comes from a field where 100 bushels or more per acre were produced than where 50 bushels only were grown.

By the Chairman:

Q. Do you change from here to Manitoba for instance?

A. We get some for distribution from Manitoba.

Q. Do you change from here to Manitoba?

A. We have sometimes procured seed from Manitoba, for test here, but there are so many things affecting the crop every year we have not been able to say how far any difference in crop may be due to the change of seed. This is a very difficult problem to deal with.

By Mr. Clements:

Q. Can you grow Manitoba wheat here with success?

A. Yes, quite successfully. Red Fife grown in this district last year was milled in Minneapolis in comparison with Red Fife from Manitoba and the Territories, and produced just about as good flour with but a very small shade of difference. I had been under the impression that it would gradually deteriorate here, but the experiments I have referred to which have been tried in England point to a different conclusion, and I always hold myself ready to change my views when necessary to bring them in accordance with the facts.

Q. In either case, you sow Manitoba wheat here in the spring?

A. Yes, this Red Fife from England (referring to sample) was, I understand, sown in the autumn. They have tried sowing in the autumn and in the spring, and I think the large crop spoken of is probably due to the sowing in the autumn. It was sown in comparison with the Golden Drop which was a winter wheat.

Q. A number of people in my section sow their spring wheat in the autumn?

A. What section is that?

Q. West Kent, near Essex, on hard clay land.

A. I did not know that that was customary there.

Q. Their average yield has been about 23 to 24 bushels to the acre. I did not know this myself until last season.

A. That is about the same yield as winter wheat. I am glad to get that information.

By Mr. Wright (Renfrew):

Q. Our mills in Renfrew stopped bringing wheat from Manitoba to distribute to the farmers to sow because they found it does not mature properly?

A. I am surprised to hear that. Your growing season in Renfrew is, I think, quite as long as it is in Manitoba. Do you think this matter has been investigated with sufficient care?

Q. It does not grow quite as well?

A. And does it not produce as good a crop?

Q. No?

A. This difference may arise from an unfavourable season, and the only way to show that it is due to the variety would be to grow other varieties alongside of Red Fife in the same soil on the same farm and compare them.

I was just beginning to refer to the distribution of grain. This goes on quietly every year and very few people know what an amount of labour and preparation is required to carry it on. During the past six days we have received 6,670 letters from farmers applying for samples of grain—over 1,100 a day—and we had been getting 500 or 600 per day for a month or so before this. This will not last long now, as the time for receiving applications expires on March 1, and after that date they fall off rapidly. There go out from the farm at Ottawa every year about 35,000 samples, to about that many farmers in different parts of the Dominion, and since this work was begun 18 years ago, over 450,000 samples have been sent out. Some farmers apply

every year for a sample of some sort, while others apply only two or three times, and then having some of the best sorts, they are satisfied. I think that the probabilities are that we have supplied somewhere in the neighbourhood of 200,000 farmers during that time with good varieties of grain. There is not a part of the Dominion from the Atlantic to the Pacific where you would not find progressive farmers who had received samples from the Experimental Farm, and in most instances they are doing well with them.

By the Chairman:

Q. While you are on that point, there is an agitation in some parts in favour of sending out larger samples. I wish you would point out to the committee the difficulty of that?

A. That agitation has been going on more or less for some years, and has been confined, I think, to Manitoba and the North-west Territories. The objectors say that the quantity now sent out is too small, and that we should send to each farmer not less than two bushels. It would be quite impossible to supply the quantity of grain which such a distribution would require unless it were limited to comparatively few individuals, which would be unfair and impolitic. It has been the practice at both the western farms for many years to sell to farmers in quantities of two bushels and upwards all the surplus stock remaining after the samples have been supplied.

By Mr. Barr:

Q. How much do you send out?

A. We send out four pounds of oats and five pounds of wheat or barley, which is enough for one-twentieth of an acre in each case. Instructions are given as to the size of the piece of land to sow it on, and when the return is sent in we can figure out how much it has yielded per acre.

By the Chairman:

Q. How does that come? Is that the largest weight the mail will take?

A. Yes.

By Mr. Schell (Oxford):

Q. There is no charge for the samples?

A. No.

By Mr. Gunn:

Q. Any farmer can get it?

A. Yes. A circular is prepared, usually in November or December in each year, announcing that the authorization of the minister has been received for another distribution of grain, and the names of the different varieties available are given. The farmers are advised that a sample can be obtained by writing to the Experimental Farm. No postage is required, and everything is made as easy for the farmer as it is possible to make it. This notice is sent to every newspaper in the land, from the Atlantic to the Pacific, about 900 of them. Some of them do not put it in because it is not sent as an advertisement but as an item of news. If the editor thinks it is of sufficient importance to publish in his paper as a news item he is asked to put it in the next issue. I suppose one-half or perhaps two-thirds of the newspapers put it in, so that it gets a wide circulation in that way, and the announcement reaches a large proportion of the farming community. There is another way in which the distribution is widely advertised. As soon as the samples begin to go out, which is early in December, farm-

ers receiving them tell their neighbours about it, and in the country such items of news travel rapidly.

By Mr. Henderson:

Q. Must the application for samples be made personally, or can one farmer apply for himself and a half a dozen others?

A. The rule is to have them made personally, although it is not strictly enforced in every case. Farmers in a community who cannot write sometimes put their mark opposite their names on a neighbour's list, or a farmer may ask a neighbour who is writing to apply for him also. Whenever we are satisfied that the applications are from individual farmers, and that the samples are simply for themselves they are sent; that is, when only two or three names are included in one letter.

Q. Would you send one farmer one sample?

A. Just one sample.

Q. One sample of each?

A. No; one sample only.

Q. Supposing I might request three or four samples to be sent to certain farmers, you will pay no attention to that?

A. I would, most certainly. I would send them, with the greatest pleasure. But if you sent me a list of 200 or 300 names I should hesitate to supply such a list, as it is quite probable that in such many would receive samples who had already applied for themselves. It is bad policy to duplicate such samples. Some years ago it was the custom to take such lists from members, when our distribution was not so large as it is now, and some would send as many as one or two hundred names in a list. We kept account of these for some years, and we found that the returns which we ask from each party to whom samples are sent, on a circular accompanying each sample, were very seldom received. On this circular were questions as to the date of sowing, the date of ripening, how the soil was prepared and how the seed was sown, with the weight of threshed grain harvested, the character of the straw, and the comparative earliness of ripening and weight of crop, &c. We asked them to make the returns upon that circular. Such information is very useful, as it permits of a reliable opinion being formed as to the suitability of any special variety of grain to a particular district. From names sent in on these large lists only four per cent gave us the information asked for, whereas we obtained replies from 30 per cent where we had sent samples in reply to individual applications. When this fact was brought to the notice of the minister, instructions were given me to send the samples only on personal application.

Q. What provision is made against farmers clubbing together and sowing a number of sample packages in the one patch?

A. There is no objection to their doing that. We want to get the individual sample to every farmer who desires one. We have been carrying on this distribution for many years, and the result is that there is hardly a district in the Dominion in which there is not now more or less good seed which has been obtained in this way. Farmers are sometimes very careless about cleaning their seed properly, and they will get their Red Fife mixed with a bearded wheat, which lowers its value. When that happens they become impressed with the importance of making a new start with clean seed, and they send to the Farm for a sample of Red Fife in order to make a new start. I have some letters with me which, with your permission, I will read to you as examples of the beneficial results obtained from the distribution of these samples of seed and from the annual reports and bulletins.

LETTERS FROM CORRESPONDENTS RE SAMPLES OF SEED AND REPORTS.

Here is one from a farmer at Moscow, Ont., Mr. John R. Brown, who says:—

'The Improved Ligowo oats I received three years ago, we sowed thirty bushels and threshed eight hundred bushels, and when we had done threshing the men looked

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into the granary and said that was the best turn out they had seen this year, and we were last to thresh around here. There was a lot of them wanted to get fifty or one hundred bushels, but we could not spare so many, but we are going to exchange with some of them and grind theirs for feed; so now we can see the good of experimental farms. Wishing you all success, I remain.'

Q. How do they address you when writing for samples?

A. At the Central Experimental Farm, Ottawa. There is no postage required.

By Mr. Miller:

Q. Do you give them a list from which they may make a choice of varieties?

A. We do that in the circular announcing the distribution, where the chief varieties we have are named. We have up to this date received over a thousand more applications than last year. From the North-west Territories there are a great many, from Galicians, Russians, Germans and others who cannot speak or write in English, and they get their neighbours to write for them.

Mr. C. F. Sundberg, of Sawyerville, Que., writes:—

'The oats I received two years ago are excellent. Everyone wants to get some for seed. From the four pounds you sent me I now have forty bushels of large, clean oats, the best I ever had. The name of the oats was the Tartar King.'

Another says: 'We are well pleased with the oats which I got in 1903. We sowed about three bushels on two acres that had been growing wheat for four years, and I got one hundred and seven bushels of oats.' These are all from samples two or three years from the start.

Mr. W. J. Donahoe, of Lenore, Manitoba, says:—

'Re improved Ligowo oats: Of the three pounds got in the spring of 1903 I had a bag and a half that fall. In the spring of 1903 I had ninety bushels, and I sold about forty-five of these and sowed about forty bushels myself, being the third crop and not considered good land for oats. I put eight loads of sheafs in the barn and threshed one thousand bushels. Some of those I sold oats to have pronounced them, this fall, to be the best oats they ever saw. They are certainly a good oat.'

Another man writing, Mr. T. Smith, of Morden, Manitoba, says: 'I have been trying this year the General Gordon potatoes. They do good here. My son-in-law planted three pounds got from Brandon Experimental Farm. I cut them, two eyes in a set; they gave eighty-five pounds of fine potatoes. You sent me eight pounds Improved Ligowo oats in 1901. Also done well; seventy-five bushels to the acre. The sample bag of Red Fife you sent me last did well. I have two hundred and fourteen bushels this year for seed.'

Mr. A. Beech, of Kells Post Office, Ontario, says: 'I would like to obtain a sample of oats from the free distribution this coming season, and would prefer Tartar King, or other good "side" oats. It is a great pleasure to me to receive the annual report and bulletin issued from time to time, showing the great and noble work being carried on. I consider them my school books on agriculture. Hoping you may live long and see the fruits of your labour mature, so that every thinking farmer will hold you in the same esteem as I do.'

Mr. Albert Oldroid, Devil's Lake Post Office, Assiniboia, writes: 'I take great pleasure in being able to tell you that from a sample of oats which you sent me two years ago I have now got seventeen bushels of splendid oats for seed. They are simply great.' It is evident he did not handle them very carefully, or he might have had ten times the quantity mentioned.

This is from a stranger in the country, writing from Fort William:—

'I write to thank you for the splendid reports and bulletins you sent me in answer to my application. Being a stranger to this country, it greatly surprised me to see the vast amount of valuable information to be had from your department. It is indeed a credit to the men taking part in it. Yours very sincerely,

'J. BLINCO.'

J. L. Sparrow, of Medicine Hat, writing for the last Experimental Farm Report, says:—

'I value these reports very highly, as they are really an education in themselves.'

Another man, a Frenchman in Quebec, says: 'I consider that book a real treasure for the farmer.'

Still one more. This is from J. Woodward Manning, Boston, one of the first landscape gardeners in the United States:—

'I wish to acknowledge the receipt of Bulletin No. 47, and to bear testimony to the value of this and the other publications on trees and shrubs tested in Canada. I consider them of the highest usefulness, and moreover a peculiarly convincing argument as to the salubrity of a climate too frequently understood in the State as bordering on to perpetual arctic frigidity.'

From these letters it is evident that if a farmer takes care of the small sample sent him for two years he thereafter has a good variety of seed, clean, true to name, without cost to himself beyond his own labour. One can readily understand what a great benefit this must be to the strangers coming to the country who don't know much about our varieties of seed or what is the best to grow in their special district.

By Mr. Lefurgey:

Q. Might it not readily happen through the uncertain method of advertising, depending upon an article in the newspapers, that a whole section might be left out?

A. It is just possible.

Q. Is there any method of checking up to find out whether all the sections are being served in this distribution?

A. There are scores of papers received to show that the item announcing the seed distribution has been published, but we have not adopted any regular system of checking the proportion received or of corresponding with the newspapers on this subject.

By the Chairman:

Q. But your general distribution would give you an idea of whether the country is covered?

A. Yes, it does, and I don't think there is any district of the country from which applications do not come in.

By Mr. Lefurgey:

Q. At the same time I think the method is faulty in that regard. You don't know whether all the districts are being served?

A. We watch this very carefully as the samples go out to see that every province is getting a fair proportion. Up to the present the number of samples sent out this season is 11,604, which have been distributed as follows: Ontario, 1,948; Quebec, 3,380; Prince Edward Island, 421; Nova Scotia, 1,053; New Brunswick, 945; Manitoba, 1,272; North-west Territories, 2,483, and British Columbia, 102.

By Mr. Derbyshire:

Q. You could not send one full bag to a constituency if they made a special request——

CLOVER GROWING IN ALBERTA.

By Mr. Herron:

Q. I would like to draw the professor's attention to the remarks he made about clover. I think he said clovers grow generally all over Canada successfully?

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A. When speaking on that subject I had reference more particularly to the usefulness of clover to the farmers in the eastern provinces, Ontario, Quebec and the Maritime Provinces.

Q. Have you any reports regarding experiments with clovers in Alberta—anywhere in Alberta?

A. We have had a few. We have not been distributing samples of clover seed, and for that reason we have not had the amount of correspondence on that subject which we have had on varieties of grain. The government has generally said that we are expected to confine our distribution to samples of such grain as we have produced on the Experimental Farms, and not to buy seed for that purpose. Clover seed is so easily and cheaply obtained that any farmer who desires to try it can do so in an experimental way at a very small cost.

Q. I believe they have been experimenting with clovers in Alberta for many years, and I think so far with success. I would like to draw your attention to another feature—that is, that the Experimental Farms or branch Experimental Farms should be introduced to localities like Alberta, where climatic conditions are entirely different from what they are at Indian Head or any other place. I want to draw your attention to that, and at a later time I hope to get some information upon it.

A. There is no doubt that the establishment of branch Experimental Farms in Alberta would be of very great service to the farmers there.

HOUSE OF COMMONS,
ROOM 62,
WEDNESDAY, March 1, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 a.m., Mr. Greenway, Chairman, presiding.

IMPORTANCE OF THE EARLY GROWING OF GRAIN.

Dr. W. Saunders was present by recall and continued his evidence as follows:—

Mr. Chairman and Gentlemen, in continuing my evidence on the general progress of agriculture, I desire first of all to call your attention to the great importance we have found at the Experimental Farm of early seeding. Some five or six years ago a series of experiments was concluded, which had been carried on for ten years, with wheat, barley and oats, where we had six successive sowings each year beginning at the very earliest time at which seed could be got in the ground, following it up week after week with a fresh seeding and then harvesting these plots all separately and threshing them separately, and publishing the results. The results for the ten years' work thus carried on gave the following returns:

Experiments with wheat sown at intervals of a week showed that a delay of one week after the time when the seed could be favourably got into the ground entailed an average loss of over 30 per cent of the crop, two weeks 40 per cent, three weeks nearly 50 per cent and four weeks 56 per cent. With oats a delay of one week resulted in an average loss of over 15 per cent, two weeks 22 per cent, three weeks over 32 per cent and four weeks about 48 per cent of the crop. In the case of barley a delay of one week resulted in an average loss of 23 per cent, two weeks 27 per cent, three weeks 40 per cent and four weeks nearly 46 per cent. These were on plots all alongside of each other, the conditions uniform in every respect, and using the same seed, the only difference being the date of sowing. The results of these experiments, which have been

made widely known through the publications of the Farms, have led farmers to pay attention to early sowing, and in this way crops have been improved.

ADVANTAGES FROM THE EARLY SOWING OF FIELD ROOTS.

For many years past similar experiments have been carried on with field roots, but no special attention, beyond publishing results in the Farm publications, has been called to them up to the present time. I bring this matter before you on this occasion on account of the great importance of field root crops, especially in the provinces of Ontario, Quebec and the Maritime Provinces.

By Mr. Crawford:

Q. Do your experiments apply to Manitoba and the West the same as here?

A. Not to the same degree. The statements I have made with regard to wheat, barley and oats are applicable to Ontario, Quebec and the Maritime Provinces. We have found a smaller falling off in Manitoba from delay in seeding. The conditions of weather in the North-west seem to influence the crops so much as to counteract part of the benefit which might otherwise be expected from early sowing.

LOSS FROM DELAY IN THE SOWING OF ROOTS.

With regard to the question of roots, the plan adopted has been to sow the first sowing of roots when the ground was in good condition to receive the seed after the ordinary seeding of grain was over. The time of sowing of the first plots has generally been about the middle of May, sometimes the first week in May, depending upon whether the season was early or not. Then two weeks after the first sowing a second sowing was made under precisely similar conditions, the soil in each case being got into the same state of tilth and cultivation. Although there was an interval of two weeks between the sowings, the plots were gone over with harrows before the second sowing, so as to stir the soil and bring it into the same condition as it was at the first sowing, so that there might be no difference on that account. The gain from early sowing has been quite remarkable. In turnips at the Central Experimental Farm, taking into consideration all the varieties sown, which have usually been about twenty, and taking the average results from a five years' test, there has been a gain from early sowing averaging 10 tons 1,136 pounds per acre. Last year (1904) the gain was unusual. It was 16 tons 1,598 pounds. The conditions under which the later sowings were made otherwise were exactly similar to the first sowing.

By the Chairman:

Q. What was the difference between the times of sowing?

A. Two weeks.

By Mr. Cash:

Q. What space did they occupy?

A. There were usually four rows of a kind, and the two middle rows taken and the area of land they occupied ascertained, and that multiplied so as to ascertain the yield per acre.

By Mr. Elson:

Q. How much seed do you sow?

A. About four pounds per acre of turnip seed. From a similar series of experiments with turnips at Nappan, Nova Scotia, carried on also for five years, the gain

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from early sowing has averaged 7 tons 1,908 pounds per acre. With turnips grown at Brandon, Man., for the same time the gain from early sowing has averaged 6 tons 1,515 pounds per acre; at the branch Experimental Farm at Indian Head the gain from early sowing has been much less, averaging 1,630 pounds per acre during the five years' trial. At the Experimental Farm at Agassiz also the gain from early sowing is small compared with that obtained at Ottawa, Nappan and Brandon, the average gain there being 1 ton 1,140 pounds per acre. During a similar series of experiments with mangels carried on during the past five years, the following gains have been made by early sowing: At Ottawa, Ontario, an average of 12 tons 125 pounds; at Nappan, 5 tons 1,468 pounds; at Brandon, 2 tons 1,164 pounds; at Indian Head, 1 ton 1,538 pounds, and at Agassiz 3 tons 527 pounds. In a similar series of tests applied to carrots the average gain each year from early sowing was for the five years as follows:—

	Tons.	Pounds.
Ottawa	3	979
Nappan	3	666
Brandon	3	1,090
Agassiz	1	1,913

At Indian Head, where we have found great difficulty in growing carrots successfully, and where we seldom have much of a crop, the average gives a loss from early sowing of 443 pounds. That, however, would scarcely interfere with the general deductions one might feel justified in drawing as to the benefit of the early sowing of this crop.

EXPERIMENTS WITH SUGAR BEETS.

With regard to sugar beets, the average gain for five years from early sowing has been as follows:—

	Tons.	Pounds.
Ottawa	8	1,660
Nappan	3	164
Brandon	1	1,614

At Indian Head there has been an average loss of 828 pounds, and a gain at Agassiz of 923 pounds. From these figures it is evident that the question of early sowing of roots is not of so very much importance at Agassiz or at Indian Head, but at Brandon and in all the eastern provinces it makes a very large difference indeed, so large that it is well worthy of the attention of every grower of roots, since it involves losses of from 25 to 40 per cent.

By Mr. Lewis:

Q. Was that carried on for more than one year at Indian Head?
A. Yes, I have given the average of five years.
Q. Were there any special circumstances in these cases?
A. No; that was the average loss for the time named.

By Mr. McColl:

Q. How many tons of sugar beets do you grow to the acre?
A. At Ottawa the average has been 28 tons 1,287 pounds for the five years. At Nappan it has been 25 tons and 796 pounds; at Brandon, 21 tons 1,016 pounds; at Indian Head, 16 tons 728 pounds, and at Agassiz 23 tons 1,016 pounds. Those are the averages of the sugar beets grown on experimental plots.

By Mr. Gordon:

Q. What has been the sugar content of the beets?

A. That has varied considerably. Mr. Shutt, our Chemist, has given the particulars every year in the Annual Report. Speaking from memory, it runs from 12 to 14 per cent, occasionally running up to 15 and sometimes to 16 per cent. With beets in Alberta we have had it run to 16 per cent and over several times, which is a high percentage.

Q. Has the government done anything in the way of making scientific tests to see what improvements could be made in the sugar content of the beets?

A. Yes; we have imported the very best high-bred seed obtainable, which has been carefully sown in different climates and under different conditions, and the samples of the beet have been analyzed each year by the Chemist. Mr. Shutt will no doubt come before the Committee in a short time, as soon as he is required, and will be able to give you all the particulars. The average of beet sugar in Germany last year was very good, a little over 15 per cent, and Germany stands the highest of all the European countries as to yield. Russia was but little below Germany. In the United States the average was 7 tons per acre. There are fifty-three factories in the United States situated in different parts of the country. In Utah and California the percentage of sugar realized was about 10 tons. I cannot remember the particulars in the other states, but the average was 7 tons, as against 15 in Germany.

Q. The average as given by those factories does not fairly represent the tonnage. Those factories will probably have 6,000 acres contracted for, but not over 4,000 actual acres.

A. The particulars I have given have been gathered by the Statistical Branch of the United States Department of Agriculture. They have agents employed to collect the figures, and they are no doubt reasonably accurate.

By Mr. Elson:

Q. When you sow turnips earlier do you find much trouble with the turnip fly eating the leaf?

A. Of late years we have had very little difficulty with the turnip fly. Dr. Fletcher, our Entomologist, will be able to give further information on that point.

Q. You recommend sowing early? We find we must sow a little late, otherwise we are apt to lose our crop.

A. We have not found any difficulty from that cause here.

By Mr. Herron:

Q. Have you the records of the Raymond sugar factory in Alberta?

A. No; I have not been able to obtain them yet. The run, I believe, was a satisfactory one. I have seen some newspaper paragraphs to that effect, but have had no particulars from the factory itself.

Q. I think it was a very satisfactory season?

A. Yes. We have sugar beets from that district, and also from Northern Alberta, and they have given higher percentages of sugar than the beets from any other part of Canada.

Q. Well, they have given a higher percentage in the South than they have from the Calgary district. I know that from the manufacturer there?

A. Sugar beets have been sent to the Experimental Farm from up towards Edmonton from two or three different points. Later we shall be able to give information as to the results of the analyses which have been made by our Chemist.

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By Mr. Wright (Muskoka):

Q. What kind of soil do the beets seem to do best in?

A. We find they do best on a good clay loam soil mixed more or less with sand. They should be grown where the soil can be got in a good condition of tilth, and if it is well stirred and cultivated to a good depth this crop will succeed very well.

Q. I come from a comparatively rough section, where there is a good deal of rock and stone, the Muskoka district, and roots of every kind do remarkably well there. I was wondering what the reason was for that?

A. We generally find in those rougher rocky districts that the soil which fills the interstices between the rocks is unusually rich, and beets and roots generally do well where you can get such soil sufficiently cultivated to give them a chance.

The only other point I wish to bring before the Committee is in reference to the progress being made in the production of cross-bred apples of a hardy character for the North-west country.

By Mr. Blain:

Q. Before you leave the subject, are there any particular kinds of roots that you would recommend for those who are compelled to sow late or sow in bad weather? What kinds would you recommend?

A. We have not found any great difference in the varieties. We have found a difference in yield, but they have all been sown at the same time. There are none of the ordinary winter-keeping roots, which seem to mature so very much earlier than others, as to give them any special advantage. In our experiments the aim has been to get information as to the best strains of seed to produce a large crop, and also the best methods of preparation of the ground, and the best time for sowing. All the details connected with that work are given in our Annual Report, so that every farmer who gets a copy of that publication can understand exactly how we have treated our roots, and there is no difficulty in his treating his land in the same way, and I presume if he did so he would get corresponding crops. Unfortunately the average farmer seems to be either deficient as to a full knowledge of the subject, or he is not careful to carry his knowledge into practice, and we find as a matter of fact that the average crops of roots in the provinces of Ontario and Manitoba where we have the details are not nearly as large as the average we get at the Experimental Farms. I do not think it would be difficult for any farmer who is on a fairly good farm, if he would treat his land in the same way as we do, to get just as good crops as we do. At present the difference is quite remarkable. The Report from the Ontario Statistical Bureau shows that the average production of field roots in Ontario falls far below the yields obtained at the Experimental Farms. There is in this respect wide margin for improvement among the farmers generally throughout the country. Therefore I thought it was well to call attention to this matter, so that the importance of early sowing might be impressed on the minds of farmers generally. The whole of our efforts are directed along the line of trying to make farming more profitable, and the more we can do in that way the nearer shall we approach the end which it was desired to gain by the establishment of experimental farms.

CROSS-BRED APPLES.

I desire now to devote a few moments to the question of cross-bred apples. As most of you are aware, the possibility of apple growing in Manitoba and the North-west has commanded a great deal of attention ever since the settlement of the country. Almost every settler who has aimed to make a homelike place of his farm has tried more or less experiments in growing trees. Naturally the orders went to nursery agents, who travelled through the country and showed fine pictures of the fruits offered. Much money was spent on trees, and in too many instances the next year found them

all dead. That was a common experience, and after a time farmers began to entertain the opinion that there was no use trying to grow fruit at all, that the climate was too unfavourable. When work began at the experimental farms all the varieties for which any special hardiness was claimed were tried; some were imported from Russia, others from Norway, Sweden and other northern European countries. Those also which had been produced in the United States were tested. At one or two points in Manitoba some of the varieties obtained from Russia have succeeded fairly well. There is an orchard of apple trees at Nelson, near Morden, in Southern Manitoba, on the farm of A. P. Stevenson, who I think came before you last year, from which he has got very good crops. Most of his trees were sent from the Central Experimental Farm to him at different times for trial. They included some of the hardiest Russian sorts, and from the outset they did very well. He has a remarkably well sheltered place. There is a very heavy piece of wood to the north of his orchard, and he has planted evergreens and other trees for shelter through his grounds, which have done well, and he has the best sheltered place I have seen in Manitoba. For the last seven or eight years he has grown very fair crops of fruit, and some years very good crops. At the same time that we sent these trees to Mr. Stevenson we sent two or three times as many to Brandon and Indian Head. We have planted them there under various conditions of shelter, but we have never grown an apple from any of them, although it is twelve or fourteen years since we began these experiments. Hence we have reached the conclusion that the average farmer in Manitoba and the North-west Territories cannot grow these Russian apples; neither can he grow any of the commercial apples which are raised in other parts of the world. There may be a few localities discovered as time goes on something like the one at Nelson, where exceptional conditions can be had, but as a general rule the average farmer cannot grow any of the varieties of apples found in commerce. In 1887, the year the farms were started a package of seeds was received from the Imperial Botanic Gardens at St. Petersburg for test in Canada, and among these was a small package of the seed of a wild crab, *Pyrus baccata,* which grows in Siberia, and which produces a fruit about the size of a cherry with a long stem. This crab from the outset has proved remarkably hardy wherever it has been planted; in the open or in shelter, it makes but little difference. At Indian Head and at Brandon many of the trees grown from these seeds have been tested, and they have all come out alive to the tip every winter for the past 13 or 14 years, showing that the tree is perfectly hardy. That hardiness led us to consider the question of the improvement of the fruit. We crossed that variety with pollen from quite a number of the best apples grown in Ontario, and produced a race of seedlings which have fruited. There are about twenty out of two or three hundred that have been fruited which are of a size and quality that make them worthy of general cultivation throughout those districts where ordinary commercial apples will not succeed.

I have here an advance sheet, a plate which has been prepared for our Annual Report, showing the results of this work. These are some of the best of the crosses represented of natural size.

By Mr. Crawford:

Q. In the city of Winnipeg I know of several fruit trees that have borne fruit for the past three years.

A. What kind, may I ask? The Transcendent Crab?

Q. I do not know the name. It is an apple about the size of the largest apple you have there.

A. That is no doubt the Transcendent Crab, which has been more successful about Winnipeg than any other variety tested.

By Mr. Wright (Renfrew):

Q. It is a dark red apple?

Mr. CRAWFORD.—Yes.

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A. I know of several trees in Winnipeg, and several at Brandon, that have borne fruit, and we have had fruit at the Experimental Farm at Brandon for two years past of this variety; but I do not think any farmer in any of these localities could order a dozen trees and calculate that he would have the same percentage of success in growing them that he would in the eastern part of Canada. I know in our experience at Brandon we have rarely saved more than one or two trees out of a dozen, and to-day we have only one tree I can recall that is living, although we have planted many, and have taken as good care of them and much better care than the average farmer would give them.

Q. Is the wild crab useful for commercial purposes?

A. The wild crab, *Pyrus baccata,* from which these cross-bred apples originate, is too small for commercial purposes, but the fruit makes excellent jelly, and for settlers who want to use them for that purpose I do not know of anything better. Then the trees themselves are quite ornamental when they are in blossom in the spring, and when they are hung with fruit in the autumn, and as they fruit so freely the fruit is prized very much by those settlers who have them.

Q. Did you ever cross the Canadian crab, our own crab, with the pollen of larger apples?

A. We have tested our own crab as to hardiness in the North-west. We sent 500 young trees to each farm, early in their history, and there is not a survivor of them now. Some of them lived for a year or so.

By the Hon. Mr. Fisher:

Q. You have misunderstood the question. You were asked whether you have crossed them with the Canadian crab?

A. No, we have not. Excuse me, I did not understand the question. We have not done so, because this native crab is not very hardy, and any crosses between it and our better apples would almost certainly be killed by winter. The crosses I have referred to with *Pyrus baccata* are very hardy, and are likely to be useful to the whole North-west country, and they are large enough to serve most ordinary domestic purposes. Those figured on the plate that I have passed around are some of the best that we have grown. Having gained that much success, we are following along two or three other lines of work. One is to recross those best crosses, and put in another quota of the blood of the larger fruits into them, with the view of getting them much larger. The first trees of these second crosses were planted last year in the orchard at Ottawa—one-year old trees—but it will be three or four years yet before we shall see what the fruit is like, and after we have tested the fruit, if it is valuable, we have to propagate and then test them in the North-west country. Unfortunately these experiments are necessarily slow, and they take a good slice of one's life before you can get very far. A horticulturist should live for a hundred years if he is to accomplish much.

By Mr. Cochrane:

Q. Under the care of Dr. Osler?

A. I do not know as to that.

By Mr. Jackson:

Q. Are you aware there is a large apple orchard in Stonewall?

A. Yes; I think I have referred to that.

Q. Now, I saw at least between fifty and a hundred trees last year, and each of them would have a bushel of apples on them—not these small Russian apples, but large apples.

A. Many experiments have been made with crabs in several parts of Manitoba.

Q. That was in the district where I reside, and a few years ago they planted maple trees there too.

A. Whose place do you refer to?

Q. Mr. Franklin's, of Stonewall.

A. I visited his place several years ago, and did not see any large apples such as you speak of then.

Q. These were large apples. This was the year before last; last year the frost came. He has been at it for fifteen or twenty years. I was with him for a while, but I gave it up. He has stuck to it, with the result that I have stated.

A. The year before last was a phenomenal year in Manitoba for apples. A few Duchess ripened at Brandon, and when I learned that I was in hopes that perhaps we had struck a hardy strain of Duchess, one which would produce every year. But unfortunately most of them were killed to the ground the following winter. What is wanted is a tree that will stand year after year, endure the climate and fruit regularly; that is what the average farmer wants. If he gets a taste of apples one year and all his trees are frozen the next it discourages him, but he will thoroughly appreciate a real hardy specimen which will fruit year after year. In the districts west from Winnipeg the altitude is much greater, and that increases the difficulty. Winnipeg is 740 feet, and the height above sea level at Brandon is 1,100, at Indian Head 2,000, at Calgary it runs up to 3,200 or 3,300 and the difficulties of growing fruit increase as you get to the higher altitude. These new cross-bred sorts are being tested at 200 different points between Winnipeg and the foothills of the Rocky Mountains, varying from 740 to 4,200 feet. They are all proving hardy, and in another year or two will begin to bear fruit, when their value will soon be ascertained. Several of our leading nurserymen in Canada have been supplied with scions of some of the best of these fruits, so that they may be propagated in a large way and soon become available to the public generally. These cross-bred apples are not of any value for Ontario or the eastern provinces, where much better sorts can be grown, but when a settler goes to the west and finds that he is not able to grow any sort of apples for family use unless he is fairly well off he is deprived of a very important and healthful article of diet. If he can afford it he can buy apples from Ontario, but the great bulk of farmers have very little fruit of that sort to consume, and it will be a great boon to them to get an apple of the quality or size of these cross-breds to grow freely on their own farm without any protection or special care.

By Mr. Wright:

Q. This apple is larger than the ordinary Transcendent Crab?

A. They run about the size of the Transcendant Crab. Some of these shown on the plate are a different shape, and one or two are larger than the average Transcendent Crab.

Q. Which picture represents this apple (indicating one of the samples)?

A. This one in the lower corner of the sheet of illustration.

NEED OF EXPERIMENTAL WORK IN ALBERTA.

By Mr. Herron:

Q. Have you ever taken into consideration the advisability of establishing branch experimental farms throughout the North-west? Of course you know I spoke here the other day of the large country there, and have you considered the great advantage it would be to have small farms in the various districts at which to carry on experiments with grasses of the various kinds, for instance. I believe it would be a very good thing, and it could be carried out in a small way without enormous expense. If you take into consideration the size of that country, with an entirely different climate from that of any other part of Canada, and even varying considerably in one part from another, I think it is surely worth a great deal of attention from the department. I

have no doubt that this question is receiving consideration, and I believe that the establishment of branch farms would be of very great advantage to that country in the testing of grasses in particular—Timothy, Alsike and other varieties. We have had a great deal of difficulty in getting any kind of grass suitable for some districts.

A. We have done as much as we possibly could do to help farmers all over the Dominion by sending them samples of grasses and other seeds of different sorts to test on their own farm. There are so many different climates in the Dominion that it would require a good many sub-stations to cover the ground well. There is no doubt that the existing experimental farms have been exceedingly useful to the districts in which they have been established; influencing and improving the character of the farming in the district for a great distance in every direction, and there is no doubt that if others were established in other districts they would be equally beneficial. I am not, however, in a position to discuss that question, because it is a matter for the Minister to consider.

Q. Our conditions are entirely different from those which exist in any other part of Canada?

A. The work I know has been carried on right up to the very limit that the Act permits. The Experimental Farm Act only authorized the government to establish five farms; these have been established, and have been carried on with very great success. To partially overcome the difficulty to which you have referred, we have adopted the plan of getting the farmers to co-operate with us in experiments on their own farms, and we have now about 32,000 farmers in every part of the Dominion who get samples from us, and who are in correspondence with the farms as to the testing of various varieties of cereals suitable for their district. They also write us in regard to other crops, and as you will gather from what I have said we are endeavouring to provide for them fruits which will be hardy enough to thrive in all the settled districts. It would afford me much pleasure if the good work we are doing could be much extended.

Q. The ploughing season is now on?

By Mr. Henderson:

Q. Is it in the newspapers they are ploughing or in the fields?

A. I cannot say that. I know that in some districts the farmers are very anxious to be the first in all such things. I have sometimes seen this at harvest time, when a farmer will go in and cut into his grain although it is not nearly ripe, for the sake of having it said that he was the first to cut grain in that part of the country.

I think you were asking me at a former sitting some question in regard to the sugar beet. Did you get what information you wanted?

By Mr. Herron:

Q. Yes; I wanted to know whether you had any reports or any information whether it would be a success over a very large area?

A. We have analyzed sugar beets from many different points in Alberta, and have found them to give a satisfactory percentage of sugar. Whether sugar can be produced profitably in Canada depends much on the situation in Europe. The sugar market has been in a very unusual condition for some years owing to over production, and to the policy of bounties in Europe; but the bounties are now abolished, and the whole industry is on a different basis. The bounties were discontinued in September, 1903, and at that time there was a surplus crop of sugar in the world of over 3,000,000,000 pounds. Since the abolition of the bounties the beet sugar area in Europe has been reduced by about 1,000,000 acres, the production has been less, and the excise duties on sugar have been reduced in several instances, so that the home consumption has been much greater. In this way the surplus is being much reduced, and it is expected by the end of this present sugar year that it will be all disposed of, and after

that there will be a fair contest between the cane sugar and the beet sugar, without any bounties or any interference on the part of the governments to stimulate production.

By Mr. Cash:

Q. Have you any reports of sugar beet in the section of the country between Saskatoon and Regina? Whether that will be suitable for wheat growing in comparison with the other sections of the North-west?

A. We have had no samples of sugar beets from that district. With reference to wheat growing there, I have been over that section twice during the last two years, and have seen very good crops of wheat, especially north of Regina.

Q. About Dundern?

A. Yes, all about there, and also at Saskatoon. Two years ago I drove from Saskatoon up to the Elbow, crossed the Saskatchewan there, and went on to Battleford on the north side, and down from Battleford to Saskatoon on the south side, a drive of about 200 miles, and I have never been in any part of the Territories where I have found the land so uniformly good as I did during that drive. There was no settlement there to speak of, just an odd settler here and there, but as far as the soil goes certainly it is all that can be desired, and I have no doubt that for mixed farming it will be one of the best sections of country in Canada when it is settled. All around Saskatoon settlement has gone on very rapidly during the last two years, and the same may be said of the country between Saskatoon and Battleford and for 100 miles west of Battleford.

Q. Do you think that the conditions existing at the farm at Indian Head give a very good idea of the conditions existing throughout the Territories, or do you think the conditions there are exceptional?

A. The Indian Head district is a very good district. I do not know of any better, but I think the land is about equally good in many other localities. In some other parts of the Territories, however, the land is not so uniformly good, and when compared with such districts the land about Indian Head may be truly said to be exceptional.

Q. I know that it is excellent land. Of course we have some dips and some brush?

A. Yes; when you cross the Qu'Appelle it is a little more wooded, but when you go a little west of Indian Head you strike a poor piece of land, which extends for a few miles, where the soil is light, and south of this again portions of it are light; it varies a good deal in the different districts. But the crops of wheat which have been grown on the better lands all through that country have been remarkable for the last ten years, and there seems to be no diminution in the yields they are getting. It is difficult to speak of such a big country in a general way. It is necessary to go over each locality carefully to find out what the differences are and how far these differences in the quality of the land extend before you can venture to offer an opinion on them.

Having read the foregoing transcripts of my evidence, I find them correct.

WM. SAUNDERS,
Director Dominion Experimental Farms.

CARE OF FARM HORSES,—CATTLE FEEDING

HOUSE OF COMMONS,
ROOM 34,
WEDNESDAY, April 12, 1905.

The Select Standing Committee on Agriculture met here this day at 10 o'clock a.m., Mr. McKenzie (Bruce), in the absence of the Chairman, presiding.

The CHAIRMAN.—We shall this morning hear Mr. J. H. Grisdale, Agriculturist of the Experimental Farm, on 'The feed and care of farm horses, and results obtained from some cattle feeding experiments.'

Mr. GRISDALE.—Mr. Chairman and honourable members of the Committee on Agriculture, I think no excuse is necessary if I ask you to consider for a short time this important subject, for if we may judge by the present state of the horse market, and by the prospective future horse market in Canada, we certainly have in the Dominion to-day no more important line of live stock industry than horse raising. I do not propose to enter into an exhaustive discussion of the whole subject, but I want to submit to you some results or conclusions drawn from our work at the Experimental Farm in connection with our care of horses at that place, and, incidentally, to introduce some other rather important points.

STABLES FOR HORSES.

Naturally the first consideration will be the stables. Any horse stable, to be a good one, must have several peculiarities, or several distinct features. It must in the first place, in this climate where we have to contend with so much cold weather, be economical of space, for we do not wish the horses to have to warm up too large a space. In the second place, it must be convenient, for we have to consider the amount of work that is necessary in looking after horses. We find that the care of the horse constitutes about one-fifth of the cost of keeping the animal, therefore the more economical we are of space, and the more conveniently things are arranged, the less will be the total cost of keeping the horses. In the next place we must look after the comfort of our animals. If we are going to keep them in good health, comfort is essential, and it will economize not only in doctors' bills but also in the amount of feed. There is a great deal of difference in the healthfulness of different stables. I have here a plan of what I would consider a very good kind of a stable for this district, or for the whole of Canada. You will notice this is a floor sketch. Here we have six stalls in a row, a box stall, a spare stall, a harness room and a feed room. The harness room and feed room should be boarded off tightly to the ceiling in order to save being heated by the horses. In the case of the box stall, the partitions should go only part of the way to the ceiling, because this would be too large a space for one horse to heat alone.

THE FLOOR.

We have from observation, and partly from experience, found that the best kind of a floor for the horse to stand on is a wooden one, and under that if we are going

to ensure sanitary conditions cement is needed. Planks under a horse are expensive, but it is much easier on a horse's legs, and where they have to stand for any considerable amount of time, as for instance on Sundays or holidays, there is always more or less danger of their legs going wrong if they have a hard floor to stand on. In laying the cement in the passage it will be necessary to make it as rough as possible. I have seen cement floors that were as smooth, or almost as smooth, as glass, and on which the horses were continually slipping. That kind of floor is a very serious menace to soundness, particularly in this country, where there is sure to be more or less ice at certain times of the year. It is also rather more dangerous if the floor should happen to get wet, as it is almost certain to do at some time. Just behind the stalls, which by the way I would like to have about six feet wide for an average sized horse—a good sized horse I had better say—there should be a shallow gutter, not more than a couple of inches deep, just deep enough to gather the urine.

The feed room should be located as convenient to the door as possible, and should have good light. I have here arranged what I consider from experience to be about the best type of feed room. You want bins for four or five kinds of grain—oats, bran, mixed meals and shorts. You might also say for small amounts of different kinds of feeds for supplementing the regular rations. To have only one or two places for meal is to give a whole lot of trouble. Then you want a considerable space wherein to mix the feed if it is desired to use cut feed and mix the meal with it. The harness room should have a stove in it to keep the place warm when it is necessary to clean the harness or repair the same. It should be provided with a single window, should have two lines of good strong hooks on either side, and a few shelves whereon to store materials to be used in looking after the harness. If it is desired to have a room for the caretaker or for a hired man it might be right over this room, and would be warmed by the pipe from the stove below. Right over the feed room I would suggest having a granary.

By Mr Wilson :

Q. Are you talking of a stable that would be adopted by the ordinary farmer ?

A. Yes, sir.

Q. Most of them do not get as much furniture in it.

A. Of course a feed room and a harness room are essential to every man who is building a stable.

By Mr. Jackson (Elgin) :

Q. And keep a stove in the stable?

A. In the harness room. For the ordinary former that would be right. He need not keep it running all the time, but if he has a small stove it will be a great convenience. He does not have to put it in, but I would suggest that he should do so.

By Mr. Wilson :

Q. What sized stable ?

A. That would accommodate six or seven horses, say eight horses, at a pinch.

Q. What sized stalls ?

A. The stalls would need to be about nine feet long and would require an eight-foot passage behind them or better nine-foot.

Mr Wright (Renfrew) :

Q. I never could understand why it is that in a horse-stable they do not have a feeding alley for horses just the same as in cow-stables, especially where you have cut hay and do not carry the feed in the rear ?

APPENDIX No. 2

A. We have at the Experimental Farm a feeding alley in front of the horses, and I find it no considerable convenience. Most of the time our men prefer to go up alongside the horses rather than run the feed along in front. It means usually more or less going around about, and it is almost impossible to have a feeding alley if you have two rows of stalls. If you have two rows of stalls you have either got to have two passages behind the horses or two feeding alleys. If you have one row then there is so much waste space that it is very difficult indeed to keep the temperature of the stable up to the pleasant point.

By Mr. Martin :

Q. How do you feed your hay?

A. We carry it along up to the horses. If the farmer prefers to have a feeding alley it is very easy to build, but I would rather not have one. I would rather have the inconvenience of feeding horses by going up alongside of them with their feed, and have their stable comfortable.

By Mr. Wright (Renfrew):

Q. How do you carry your hay?

A. Carry it in a basket unless you have a small wagon to travel along in front of you. You will notice this feed room is boarded off and is quite apart from the stable. The feed room, of course, does not need to be in the stable ; you could have it elsewhere. I am just giving what I think are the principal points to be considered in making a good stable.

By Mr. Meigs :

Q. Where do you stow your loose hay?

A. Overhead.

Q. For what reason ?

A. By having the stable detached it gives a better chance for ventilating, a better chance for light, and it is much more sanitary. Of course, if a farmer were erecting all his buildings at one time, I would advise him to put the horse-stable as an 'L' to his barn.

By Mr. Wilson :

Q. You would have a time keeping the hay upstairs.

A. I would have a double floor, in fact a triple floor, putting a double floor on top and a single board underneath. It would have various advantages if built in that way.

Q. Tell us some ?

A. It would prevent the hay being affected by the odours which are sure to emanate from the urine and it would prevent deposition of moisture on the ceiling. The presence of a dead air space in the ceiling keeps the layer of boards next the air in the stable at a temperature uniform with the air in the stable, and there will be no precipitation of moisture. Where there is no dead air space, or where there is more or less circulation between the ceiling and the upstairs floor, owing to a badly constructed ceiling, there is sure to be precipitation and more or less moisture in the stable, and as you know, such moisture is very unpleasant.

By Hon. Mr. Fisher :

Q. You would have a double thickness of boards over the joists and a single thickness below ?

A. Yes, and in that way you would be practically certain to have no precipitation during the winter. 'Sweating' of the ceiling and walls, as it is usually spoken

of, is the greatest nuisance in all the horse stables I have visited, and it is our greatest difficulty at he experimental farm.

By Mr. Bland :

Q. What kind of manger do you recommend ?

A. I would have a manger raised about two and a half feet from the floor. I do not think it necessary to have in that manger an oat box, as one frequently sees. Sometimes where a man decides to feed his grain apart from the hay it may be an advantage to have a small bin or box apart from the rest of the manger in which to put the meal or grain.

By Hon. Mr. Fisher:

Q. I take it then you are advocating the feeding of cut hay altogether?

A. As a rule, yes.

By Mr. Bland:

Q. Yes, but where the farmer feeds oats regularly?

A. I would advise him to have a small box. Supposing the manger extends right across, then in one corner have a small box a little higher than the manger bottom, but inside the manger.

By Mr. Wright:

Q. We mix our oats with the cut hay?

A. Well, that is what we would do if we were feeding cut hay.

By Mr. Bland:

Q. I asked the question for this reason: I think most farmers generally prefer to feed oats when their horses are working steadily?

A. A great many of them do.

By Mr. Wilson:

Q. Do you approve of feeding oats and cut hay together?

A. Yes.

Q. Rather than apart?

A. Yes, sir. I intend to take that up later if you will excuse me from discussing it at this minute.

LIGHT IN THE HORSE STABLE.

Now, another consideration is light in the stable. An abundance of light is absolutely necessary if you are going to have a sanitary stable. It is preventive of disease, it is inspiring and cheerful, it keeps the horses in much better spirits and shape for work when they go out, and it is conducive to cleanliness. If you go into a dark stable the chances are there will be lots of spots where there will be small heaps of refuse, which get wet by some means or other. There is fermentation going on, and the air is almost certain to be bad. Therefore light is not only one of the most powerful factors that go to insure cleanliness, but also one of the most healthful factors in a stable. And the light should come, if there is no feed passage, through a small window in front of each horse, high up and protected from the horse by means of iron rods. There should also be light coming in at either end, or at least at one end, and light on either

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side. The question of light is one which does not receive nearly sufficient attention, I find. Most farmers are satisfied to have a little bit of light windows about a foot by two feet every here and there in the side wall, so that the place has always a sort of subdued light, very suitable for funerals, but certainly not conducive to health. I think these are points which ought to receive a good deal more attention than we give them in our stables, whether horse stables or cow stables for that matter. Then again, the windows should be sliding or hinged, so that they may be opened in summer or whenever it is necessary to have a current of air in the stable to cool the place.

WARMTH OF THE STABLE.

Another consideration is warmth. The maintenance of the right temperature is quite a problem in this part of the country. To keep the stable at the proper temperature, say from 40 to 45 degrees, is very difficult. You need some artificial heat if you have much spare space, and that is why I suggested that feed and harness rooms be cut off completely. If the box stalls were not occupied, then I would have it also cut off. Have as small a space as possible, but of course have as free circulation of air through that space as is entirely compatible with the requirements of the animals. To insure a free circulation of air some efficient system of ventilation must be introduced. We have been trying for years to find some good system of ventilation to introduce into old buildings. When we are erecting new buildings it is a comparatively simple matter to introduce a system of ventilation, but when old buildings are being ventilated, as must be the case over a great part of this country, where cattle and horses have been kept for many years, it is a very difficult problem, indeed, as it frequently involves very heavy expenditure. This system I have displayed on the wall is very efficient indeed, very effective, and has given us entire satisfaction, not in our horse stables, because we have another system in our horse stables, but in some other stables. You will notice that this is a cross section of the stable. We are supposing it is cut through transversely, and it shows the ceiling, the floor, the right wall and the left wall. We will suppose the wind is coming from this left side. The air enters in here at C, ascends through this tube, and gets into the stable by the passage D. It circulates through, and leaves the stable at the bottom, entering the tube at D, and goes up this tube and out at B. You might say, 'cold air will not rise,' but you will notice while it is lower in temperature than the inside air, it is warmer, or at least soon gets warmer than the outside air, as it will be more or less warmed by the inside air, and so caused to ascend. Cold air is denser than warm, and will exert pressure. It will go in here, especially when there is a wind blowing, and will drive the air up to this point. Here at D the light air, that is the warm air, will be rising continually as you know. Thus the warm air, or at least part of it, will rise and go out at the point B. You have not only the pressure of the wind on the side where the air enters but the suction of the wind in this side where the air goes out, so that this is an unfailing system of ventilation where you have it arranged according to this plan. I have never seen it fail where it was so fixed. The air is sure to come in at this point where we want it to come in and sure to go out there. The only trouble is, and that is one reason why I would like to have stables detached, that if the wind should shift to the other side in the night, and you have ventilators on two sides only, it will not work very well till the traps at A, B, C, D are reset. If the wind should shift and come from this side when the traps at A, B, C, D are set for the other direction it will not work very well.. You notice these red marks here; these are moveable doors or traps. When the wind is blowing from the right the doors are set as you see them, but if the wind is blowing from the left we would close this door towards B, and this one towards A; this one would be closed towards D and the other one towards C, so that the air instead of coming in at A would come in at D, entering the room at this point B and coming out here at D. I have never seen this system fail, and we have tried it at the experimental farm, and I have tried it elsewhere and it has given perfect satisfaction wherever it has been used.

You can have the warm upper air coming out of the top by closing that door A, here, and letting this door B hang down; or if you choose to hang that door so that it will open up inside, as might be done, it will be even more effective.

By Mr. Wilson :

Q. You would prefer to have that arrangement on all four sides of the building instead of two?

A. Yes, if it is on the four sides it is much more useful, since the wind always strikes some traps right. Then, too, if the stable is detached the light is better, and as a rule it is very much more sanitary than in stables which constitute a part of another building, and in which you cannot have these ventilators on all four sides.

Now then, we have another system (diagram 2), and this system we have in use in the horse stables at present at the experimental farm. By this system the air comes in at the floor. You see two tubes, here at D, and on the other side a similar point to D. That little patch is a tube which goes up about two feet on the outside of the stable. The air enters there, comes under the wall of the stable, enters at the floor, and then circulates through the building, and goes up and out through that big tube leading to he roof ridge, there. We have not one big tube at the central farm. We have several smaller tubes. As I stated, these stables were not properly ventilated when they were built, no air inlet was provided and it was found necessary to change this and do the best we could with it. We have these inlets and outlets, but the outlets are not exactly in the middle, although I think the middle outlet is the better. This is a good system in very full stables, where there are a great many horses, or in a small stable in which you are not desirous of having a great deal of air. The circulation is controlled at the point at the top of the shaft, there is a swing door there at B, which is controlled by ropes running down to a point here within reach, so that a man can control the exact amount of air going out, he can have an opening of one inch or one foot, just as he chooses. This system works very well indeed.

By Mr. Wright (Renfrew) :

Q. Are you ever troubled—I know I am with my own—with the dampness from the stable which collects on the sides of that ventilator where it comes up through the roof and it freezes, and when it gets warm the ice melts and the water runs down ?

A. If you have the ventilator fairly large it will be overcome to a large extent.

Q. Mine is about three feet square.

A. Is that so ? Of course there is more or less of that collection of moisture, just as I said. Wherever there is a current of warm air coming into contact with a cool surface, you will have dampness there.

Q. One year the whole blessed business got frozen up completely.

A. We have never had that happen at the farm.

Q. Do you believe in stone walls for horse stables ?

A. I would not have a stone stable unless I put boards around inside. I have no objection to whatever material the building is made of so long as it is insulated with lumber inside. Putting horses in a stone stable means lots of moisture on the walls, simply because the stone is certain to collect moisture and be wet. We have a stone cow stable and the walls are always wet.

Q. We have two stone stables, and we are not bothered with moisture.

A. You are not bothered with moisture ?

Q. No.

A. What locality is that—you have not the low temperatures that we have here ?

Q. We get 15 below zero.

A. Very rarely, I fancy.

Q. Do you have double windows ?

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A. Any stable to be properly built should have double windows, for this reason that when the horses need light most that is just the time they do not get it, because the windows get covered with ice. This thaws later on, runs down and wets everything, and it is a great advantage therefore to have double windows.

By the Hon. Mr Fisher :

Q. We will have to rebuild that barn, I am afraid.
A. I wish you would.

By Mr. Wilson :

Q. We will suggest that it be put in the supplementary estimates.
A. All right, I shall remember that. The importance of good ventilation or the advantages of perfect ventilation are these, it keeps the horses in better condition, it aids digestion, it prevents the frequent occurrence of distemper and it prevents pneumonia. If there is not perfect ventilation there are very frequent attacks of distemper, and in the spring when things are warming up, as it is bound to do every spring in the stables, there is a tremendous amount of moisture around the walls, and if the building is not properly ventilated this is conducive to pneumonia. We had frequent attacks of that disease until we got these ventilators in, and we have had very little trouble with it since, and not nearly so frequent attacks of distemper. Our horses are in very much better health; of course I think the food has something to do with that also.

BEDDING FOR HORSES.

After stable conditions the next consideration is bedding and caring for the horses. We found that short litter, cut straw for bedding, was better than long straw. But if the question of economy of straw is of any importance then short straw is more expensive, because it takes nearly twice as much cut straw as long straw to keep the horses in nice condition. In addition to the straw, if there could be a small amount of peat, moss or leaves put into the stall, it would be of great advantage. The placing of the straw we find to be another important consideration. In nearly all stables which I have visited, the bedding was scattered any old way under the horses, and they were more or less uncomfortable in consequence. If the bedding is placed properly it will be a little higher against the sides of the stall, and a little lower in the middle, and then the horse can rest much better. I have seen horses stand up all night just because of the way the bedding was laid down, when the horse laid on it it hurt him, probably it was high in the middle and low at the sides, and so the horse would rather stand up all night than lie down.

By Mr. Findlay:

Q. What about bedding with sawdust?
A. That is very economical; that is if you can get sawdust at the rate we get it—for nothing. It is very sanitary also, but if you have light land or if you have much horse manure and cannot mix it thoroughly with other manures it is likely to hurt the soil. The only kind of soil in which sawdust manure can be used to advantage is heavy clay, where it opens up and mixes better. We are experimenting with that at present. Here is a little point of economy in bedding which we found to save from 25 to 40 per cent of the bedding. Our practice is to shove the bedding up under the manger in the morning. As soon as the man goes into the stable and has fed the horses, he is expected to gather the dry bedding and shove it up under the manger, or far enough forward not to be contaminated with the urine or manure during the day. By that practice there is considerable saving, from 25 to 40 per cent as I said.

BLANKETING.

Now, as to blanketing or care of the horses themselves. We have found it will pay to blanket carefully. The horses are in better shape when they go out, they are more easily cleaned, they look better in the hair and they work better when outside. A heavy or double blanket is better than a single or light one. The advantage is not only in the saving of feed, but also in the grooming; there will be less labour required to keep the horses in shape. Of course I do not pretend that good blanketing will do away with the necessity for grooming, because good grooming is as essential to the health of the animal, and is as important as at least part of the feed. Groom your horses in the stable and you will save a considerable percentage of the food, and one cannot be too careful of how it is done, for one has to consider the kind of horse that one is grooming, and should use instruments suitable to that particular horse.

HOURS OF FEEDING.

Now then, as to the feed. Let us first consider the hours of feeding. They should be regular. The horse knows when it is meal-time just as well as a man with his watch to look at. He can tell the minute when he should be fed. They should be fed regularly. As to the morning meal, the best time is about an hour before going out, but an hour and a half is somewhat better. At noon half an hour is sufficient if necessary, but an hour is better. Then in the evening of course they have lots of time at their disposal.

WATERING.

As to the watering, we find that it is better to give them water about fifteen minutes before the grain or hay is fed, and in the evening again after they have their meal and hay. About two hours after feeding they should have all the water they will take. It is advisable to give a horse water whenever he needs it, or cares for it, a small amount at a time. They will require a considerable amount in a day, from sixty to seventy pounds, according to the weather and the work they are doing.

AMOUNT TO FEED.

As to the method of feeding, the amount of material to feed daily is according to the size of the horse, and a very safe rule is one pound of hay and as much meal for each one hundred pounds that a horse weighs. If the horse is working very hard it is necessary sometimes to change the proportion to say three-quarters of a pound of hay and one and one-quarter pounds of meal for each one hundred pounds of the horse's weight. The method of feeding will depend somewhat on the work the horse is doing. We find a good plan is a small amount of hay, perhaps one-fifth or one-sixth of the daily ration of hay and one-third of the meal in the morning, and about the same at noon. This leaves about three-fifths or three-fourths of the hay for the night feed and only one-third of the meal. This gives the best results, as the horses are able to fill themselves at night, and store up a stock of energy for the next day's work.

PREPARATION OF FEED.

One important point which is quite frequently neglected or overlooked is the allowing of any food to remain before the horses after they are through eating, after they are satisfied. That is a point where many farmers make a great mistake in putting in a lot of hay and saying, 'They will eat what they like.' A horse does not like fodder that has been breathed upon, and will not eat it with the same zest as he

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would under other conditions. We have been experimenting in the preparation of feed. We have fed it mixed versus separate—that is, we have fed hay by itself and the meal by itself, and then have fed them together. We find under average conditions mixed hay and meal is the best thing to feed. The prepared mess would have to be changed slightly, however, because in the morning it should be about two of meal to one of hay and the same at noon, while at night it should be three or four of hay to one of meal. So you will have to have two or three mixtures ready, or mix it up as you feed it. There is a considerable saving in quantity of food by feeding the hay cut and the meal ground and mixed together, and there is also a considerable advantage in the health of the animals. They seem to be able to digest it better, do better upon it, and on the whole it is to be recommended. Then, we have been experimenting with grain as to whether it is better to feed it ground or whole. In an experiment conducted some three or four years ago we found that where the horses were young and the grain ground and fed apart from the hay there was no particular gain. We fed the ground oats and barley mixed, and the same mixed whole, and there was very little difference, a slight showing in favour of the ground grain, I think about thirty pounds a horse in the five or ten weeks. We tried it for five week periods. At the end of five weeks there was a gain of about thirty pounds in the weight of the horse in favour of the ground grain, a very small amount indeed. Then another point experimented on: we tried feeding it wet, and we have found that under average conditions damping the meal is an advantage, particularly is it an advantage when you mix the ground meal and the hay, because any dust which may exist in the hay is settled, and there is less danger of the horse being attacked by indigestion under these conditions.

By Hon. Mr. Fisher:

Q. Have you fed hay dry mixed with grain ?

A. Yes, and we prefer to feed it slightly dampened. We have a man who prepares feed for all the horses while they are out and he gives them their portion of mixed hay and meal, and then takes a pail of water and goes along and throws some on the hay and meal mixed in the manger, gives it a stir up and passes along. This is the preparation that our horses seem to like best, and upon which they do the best. Where the hay and meal are mixed and dampened it will be found necessary to give careful attention to the mangers, because they are apt to get sour if not cleaned out thoroughly every time. That is the only precaution necessary.

By Mr. Kennedy:

Q. Do you ever give them any roots ?

A. Yes, I am coming to that.

ROUGHAGE OR COARSE FEEDS.

Now, then, as to the different kinds of roughage. We have found, of course, that the best hay from a healthful standpoint is timothy, and clean timothy hay cut when fairly well matured and properly cured in the sun, not too wet, but sufficiently cured to prevent any mould occurring in the barn. This hay is better when it is cut than when it is long, although horses like to have a certain amount of it fed long. After timothy, a mixture of timothy and clover gives the best satisfaction, and after that probably the best feed we have fed, is lucerne. It is a crop that gives a large return—but I am not going to enter into that—and it is a very profitable feed for horses. Horses that are not working do not require meal when fed on alfalfa, and it will keep them in high flesh.

Q. It is very important to cut that alfalfa before it gets too old.

A. Yes, just when it is coming into blossom, when it has about five per cent of blossoms, because when it stands long you will get very poor hay. It gets coarse in

the stems and loses the leaves. Red clover also, if cut when young and well made is an excellent feed. But it must be well made and cured in the barn or there will be too much dust and then it is very difficult to feed it economically as it seems to give indigestion to the horses. Alsike is a clover which we have not fed very extensively but which is reported upon elsewhere as being very useful for horses. Oats and pea hay we have experimented with, and find it will take the place of timothy to a certain extent, but where we fed pure oat hay it did not do very well, probably on account of the pure hay being cut a little late. Last year we fed it in an experimental way and the horses that we fed on oat hay lost in weight. The first lot gained seven pounds, the second lot lost three pounds, the third lost thirty-six pounds, the next one six pounds, the next ones thirty-four pounds, and the last lot forty-nine pounds, in forty days. Whereas, when we put them on timothy with the same meal mixtures every lot gained, the figures ranging from eleven pounds to thirty-two pounds, in ten days. The horses liked timothy much better and did so much better upon it than on the oat hay. Where oat hay is in prime condition it is possible it might take the place of timothy, but we find we cannot replace timothy entirely, judging from the experiments we have had. Orchard grass hay is another thing that has been found very valuable as a food for horses. It is somewhat coarse, however, and is not as satisfactory as any of the other hays mentioned.

HOUSE OF COMMONS,
COMMITTEE ROOM No. 34.
THURSDAY, April 13, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. McKenzie (Bruce) presiding.

The CHAIRMAN.—Mr. Grisdale will this morning continue his address, began yesterday, on the feeding and care of farm horses.

Mr. GRISDALE.—Mr. Chairman and Gentlemen: Yesterday in talking on this question of the care and feeding of farm horses, I got as far as the discussion of some of the rough feeds or hays that may be used with economy in feeding farm horses, and had taken up timothy, red clover, alsike, lucerne or alfalfa, and started to talk about orchard grass. Orchard grass is a kind of hay which we have grown and fed more or less extensively. It has not, however, given us very great satisfaction, as we find it too coarse and it has a tendency to get wiry; if we wish to get a paying crop off a given area it has to be mixed with some other hays and the hays that mix best with it are not the hays that are the most suitable for horse feeding. Therefore, we never advise the growing of this hay for horse feeding purposes. Another hay which has been experimented with is brome grass. Now brome grass is a hay which is fed very extensively in the west to cattle, also to horses to a limited extent, but while it will do for heavy working horses it has been found quite unsuitable for light horses, because it is rather laxative in character, and affects them very much in the same way as does new hay or new oats. It is a good cropper, however, and might be fed to a limited extent. It is usually fed with whole oats, and gives fairly good results when fed in that way. It is better if cut up as the horses seem to like it better, and it seems to agree with them better. Red top, the most common wild grass, has been fed also and with fairly good results, but of course it falls far short of timothy and very far short of good clover hay or alfalfa.

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By Mr. Wilson :

Q. How does it compare in quantity to the acre ?

A. With alfalfa?

Q. With timothy, I mean ?

A. Well, it is pretty nearly the same. We count a ton and a half of timothy a very good crop. In a very good year we might get two tons or two and a half tons, but a ton and a half is a very good crop and the average crop of the country is a ton to the acre. Well, red top gives pretty nearly the same crop if properly cared for.

Q. And not nearly so good?

A. Not nearly such a good feed for horses. Another feed that we have tried, very cautiously, however, is millet. Now, where the hay crop promises to be short, as you can usually tell about the middle of June, it is a pretty safe thing to sow millet at that time, and you may expect a good amount of hay to the acre. But millet has proven quite unsuitable for horse feed, except in very limited quantities. Wherever it is fed extensively—I do not here speak from experience—it has done harm to the horses. They have gone off in health, and have proven quite unequal to the work set them. Therefore, it has to be fed very cautiously. Not more than one quarter of the hay ration fed to horses should consist of millet hay.

By Mr. Cochrane:

Q. Have you taken into consideration the effects on the soil of growing different kinds of hay?

A. Yes, sir, we have studied that question. Of course it is a little out of my line of talk at present, but I might answer it. Clover hay, particularly Red Clover and Alfalfa, are soil improvers rather than soil robbers. Timothy is probably as exhaustive of soil fertility as any crop we grow. Red Top is something the same as Timothy, but not quite so bad, because it does not give such heavy crops. As to Brome grass, while it is a soil robber it leaves such an immense number of roots in the ground—it is such a heavy rooter—that when you break the soil up the roots rot and leave a large amount of humus, which overcomes, to a certain extent, the depletion of fertility which has gone on while the crop was growing. Then as to Orchard Grass, it is practically the same as Timothy; there is no improvement in the soil at all. The only one of the grasses, that is excepting the clovers, that does any good to the soil at all, may be said to be Brome Grass, on account of the immense mat of roots it leaves, which break down and leave a large amount of humus near the surface of the soil. Millet, of course, is just like grain, and depletes the soil of its fertility to a considerable extent.

By Mr. Sproule:

Q. Do you not find millet very good for cattle?

A. It is all right for cattle; I have no fault to find with it for cattle at all. I just mentioned it in connection with the feeding of horses, and as I have already said, the great advantage of growing millet is this: About the middle of June, when you know what kind of a hay crop you are going to have, is the time to sow it, and thus you may immediately set to work to make up for the faulty hay crop.

By Mr. Cochrane:

Q. How much seed does it require to the acre?

A. About twenty to twenty-five pounds.

Q. Would you prepare the soil the same as for a crop of barley or wheat?

A. Oh, yes, prepare the soil the same as for any grain crop, and sow it as you would sow grass seed. Of course there is this about it, if you want a fine strawed millet you want to sow it a little thicker. It will give you a more palatable feed. The

thicker you sow millet the finer the hay, and it is somewhat more palatable. If you are going to feed it long it is advantageous to sow it somewhat thicker than I have mentioned.

By Mr. Sproule:

Q. There is a good deal of importance in the time you cut it for its good quality?
A. Oh, yes, a great deal.
Q. You do not want to cut it too ripe?
A. Not ripe at all, but just as it begins to turn.

By Mr. Cochrane:

Q. Do you cut Timothy when it is in blossom?
A. Well, when it is in what we call the second blossom—when the last part of the crop is coming into blossom. I am in favour of cutting all kinds of hay a little on the green side. We have much better results from feeding such hay, and I find that we also get much better returns from the land, particularly with clovers, if we cut them a little on the green side. We then get better second crops. We get second crops from all kinds of clovers, and three crops from Alfalfa, whereas in the case of grasses we never get but one crop.

MAKING CLOVER HAY.

By Mr. Wilson:

Q. It is a little more difficult to save if you cut it green?
A. We do not cut it quite so green as to make it much more difficult to save. The greatest difficulty we find in cutting it early is this: In the later part of June, when we think it ought to be cut, there is very frequently wet weather. That is the greatest difficulty we have. If the weather is favourable it is not hard to save at all. Now, there is one point here, Mr. Chairman, that is a little out of the line of my evidence, but it is a point that I mentioned to the Committee last year, and one in regard to which we carried on experiments this year. It is in experimenting in the curing of clover hay. We have cut it in the morning, teddered it, and hauled it in during the afternoon of the same day. We have also cut similar hay in the morning, teddered, raked and cocked it up and left it until next day, and hauled it in during the afternoon of the second day, and some on the third day. We now have the results of the two plans of curing hay; we moved the last mow the day before yesterday. The hay that was hauled in the day it was cut was part of it in good shape, about one-half of it probably, while the balance was in rather poor condition, having heated in the mow, and became very dark, or in some spots white and very dusty.

By Mr. Martin :

Q. What do you mean by half of it ?
A. The upper half of the mow, which was in fair shape. We put in the mow about seven tons and a half of that hay, when it came out there were only four and a half tons, so you see the immense loss there was after curing.

By Mr. Cochrane:

Q. There would have been a loss if left in the field ?
A. Oh, yes, there would have been a heavy loss if left in the field, too. The upper part, about two tons of it, when we took it out, was all right, very nice hay, indeed, and then under that there was a layer of about a ton that was badly mildewed and quite musty. Then there was a layer of about half a ton not much affected, and under

that again a layer of about half a ton that was quite musty. I am unable to account for the variation, because it was all off the same field.

By Mr. Wright (Muskoka):

Q. It might have been the way in which you loaded it into the mow.

A. Well, I cannot give you the exact reason. We started to cut about twenty minutes after seven in the morning and it was all cut before ten o'clock. It was teddered and about half past three raked up, and about half past five was put into the barn. Now, I cannot see where the difference came in unless it may be that it was wet with dew when cut and that there was still a little bit of dew on it which had not dried off. I did not notice it when it was coming in, however, and I supervised the whole thing. That is the only explanation I can offer.

By Mr. Bland :

Q. How did you put it into the barn, by a fork?

A. By hand. There was not more than twenty-five minutes between the different loads, for we have four or five teams and they all went out and loaded up at the same time. Practically the whole of it came in at once and it was loaded and unloaded as quickly as could be.

Q. If more of it was put in together and there was a heavier pressure, would it not be better ?

A. I believe it would, sir, although the hay that was on the top was the best.

By Mr. Schell (Oxford) :

Q. How was the outside compared to the inside ?

A. Well what was next the outside wall was all right. It was against an unused door but very little air could get in. It was between two other mows, and strange to say, there were two strips about two feet wide on each side that were the worst affected, while down the middle there was a strip affected but very little. It was very peculiar.

Q. I have seen clover put in very green and come out very bright. On other occasions it has been put in in a similar condition and come out very black ?

A. I have had the same experience.

By Mr. Elson :

Q. Did you ever try putting salt on your clover ?

A. I have, sir. It must be put on carefully. It is all right, but a man needs to use judgment in putting it on.

Q. About what quantity would you put on ? I have used a good deal of salt myself on clover, but I would like to know from you about what quantity should be used.

A. Well, I have usually put on a peck to the load. That would be a peck to two tons of green hay. More than that is bad for the cattle.

By Mr. Derbyshire :

Q. Do you not think it would have been better to have cut the hay at half past eight instead of half past seven ?

A. I think it would. I am going to try it this year.

By Mr Bland :

Q. Do ou not think the whole secret of the hay being affected as you said is due to the dew on it not being thoroughly removed ?

A. I am inclined to think that is the only explanation. We cut it in the early morning, thus part of the drying time was taken up in getting rid of the dew.

By Mr Cochrane :

Q. What benefit is there anyway?

A. If you have a nice bright day you get your hay done quickly. Supposing you have a nice day to-day and it is raining to-morrow, you that have had a great deal of experience with clover hay know what it means in the amount of dust and dirt. Horses do not like the hay; in fact no animals cared for it. I may say that practically all the hay we took in after two days was in good shape. One load which seemed to be the bottom load in the mow was slightly affected. I think there must have been a little bit of dew on it or some thing of that kind. There was only a quarter of a ton affected; the rest was all right, nice and bright and clean, just as good as you could wish. The hay that was taken in after three days was in good shape but was dry and not as satisfactory as that which was taken in after two days.

By Mr. Telford :

Q. Was there much difference in the weight ?

A. What was taken in after two days weighed—I did not come prepared to talk on this, but if I remember rightly, it weighed five tons 115 pounds coming in and four tons some odd pounds going out. So you see it lost about 20 per cent, whereas in the other case it lost about 30 per cent.

CORN STALKS FOR HORSES.

Now there is one other kind of feed which we have used for horses, and that is corn stalks. We have fed it when the corn was dried in the fields, and we have fed it when the corn was sown rather thickly, and cut just when there were nubbins of corn on it. That was the kind that gave us the most satisfaction. Horses fed on that kind of forage during the winter did quite as well as on average hay. It was economical too, because it gave a large crop of forage to the acre.

By Mr. Cochrane :

Q. Do you sow it broadcast ?

A. No, in rows, but a good deal closer than for ensilage. In ensilage we sow the rows forty-two inches apart, but in this case thirty inches part, not quite three feet, and in that way it gave better results, at least as horse feed.

Now the next consideration——

By Mr. Bland :

Q. Before you leave that point. Do I understand then, that of all the different kinds you referred to, Timothy is the best for horses?

A. Yes, sir. It is the best for this reason: Not because it is the best in composition, but a man will never make a mistake with Timothy. Everybody knows Timothy hay, and that is one reason why it is good. Another reason is, it is clean as a rule, and if it gets to be a little bit wet there is not likely to be nearly as much dust as in the case of other kinds.

Q. That applies to all kinds of horses ?

A. In the case of all kinds of horses cut Timothy is undoubtedly the best.

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By Mr. Christie :

Q. Not at all ages ?

A. No, I am talking more especially about working horses. If you take young horses, I would a great deal rather give them clover, nice clover hay, than Timothy. For working horses also, where the clover hay is free from dust it is better than Timothy.

By Mr. Wilson :

Q. I thought on a previous occasion you said that clover properly saved and put away in good condition is a better feed than Timothy.

A. Oh, yes, I have said that and I say it again.

Q. That does not coincide with what you said a few moments ago.

A. I tried to make it agree with what I said. A gentleman asked what was the best hay on the average for horses. Well, Timothy, because it is nearly always good. If you could get a good clover hay I would rather feed it than Timothy, but you do not usually get good clover hay in this country. There is a very great deal of clover hay that is far from what it ought to be.

Q. That is because it is not saved right ?

A. Well it is very difficult to save in good shape.

By Mr. Bland :

Q. The great trouble with clover hay is that driving horses eat too much of it.

A. Yes, they do that, but you should never give them more than you think is right, only a limited quantity, only about one pound to each 100 pounds of the horse's weight is quite enough, if they are working at all, and if they are not working, a little more and a little less meal.

Q. The practice of the farmer as a general rule is to fill the manger.

A. That is the greatest mistake a farmer can make with any kind of hay. They like clover as it is sweet and pleasant smelling and good tasting, I suppose.

By Mr. Kennedy:

Q. I think the biggest trouble with clover is that people will not cut it soon enough.

A. That certainly is one of the greatest faults to overcome in making clover hay.

By Mr. Christie :

Q. Is it not a good plan to have it mixed, do you recommend that ?

A. Yes, the hay that we like best is the second crop; sow our clover and timothy, grow clover this year, and it will be mixed timothy and clover next year, there will be a good bit of clover left, and the timothy will be strong, and that is the nicest yet for horses, and that is what we feed our horses as much as possible. It is what is commercially known as No. 2 hay, and is most excellent horse hay. Of all pure hays, however, Timothy is undoubtedly the safest.

By Mr. Wright (Muskoka):

Q. Have you found much difference in the quality of Timothy hay from the different soils?

A. I cannot say that we have studied that.

Q. There is said to be a great difference?

A. We have noticed that off mucky soils we get coarser hay; but I have never compared the feeding qualities of hays from different soils.

GRAIN FEEDS OR CONCENTRATES.

If there are no other questions as to roughage, I would like to go on to concentrates or meals. Of course as everybody knows, the staple feed for horse feeding is oats, and rightly so. There seems to be something in oats that gives mettle to the horse—something that is not found in any other grain.

By Mr. Wilson:

Q. Do you grind them always?

A. No. We have compared oats with other feeds, our chief reason for making this experiment being to determine whether we could economize in the feeding of horses. Now, if you look at our report you will notice that our working horses cost us to feed about $111 a year. Now, that is a pretty big sum for a farmer or anyone else to pay out for feeding a horse a year, and if you can reduce that cost it is an important consideration. Our experiments have been chiefly along the line of reducing the cost of feeding by substituting other feeds than oats, and by preparing the oats in different ways. As I stated yesterday, we have fed oats ground, mixed with hay, and have been able to make some considerable economy—from five to eight per cent. That was a saving; but of course there was the grinding to be considered, which amounted to considerable, and there was not, therefore, really a great deal saved by grinding the oats. But there was in the total cost of forage fed to the horses a net saving of four or five per cent, due to cutting the forage, grinding the oats and mixing them together.

By Mr. Telford:

Q. In that estimate of $111 for each horse, what price did you allow for hay and oats?

A. Seven dollars per ton for hay and the current price for oats, which was that year about a cent per pound—last year.

Now, sometimes barley is cheaper than oats, as it has been all this year, so we have experimented with barley, and we have found that we could replace oats with barley to a limited extent and under certain conditions. Where we fed one-half oats and one-half barley horses in a period of about ninety days gained seventy pounds; they were not very hard worked. Similar horses on oats gained eighty-three pounds in the ninety days, and similar horses on two parts of oats and one part of barley gained fifty-two pounds in the ninety days, showing, I think, that barley might take the place of oats to at least one-half the amount of the oats, if the price of barley is such as to indicate that feeding it would be profitable. Where we have fed barley entirely we have not had very good results. In fact the horses are apt to go off their feed.

By Mr. Cochrane:

Q. What are we to understand that the relative prices of oats and barley should be?

A. Of course that would depend upon the market.

Q. I know that; but where would the prices of each commodity be to indicate that it would be a saving to feed barley instead of oats?

A. Supposing the prices were equal there would not be any saving, but supposing the prices were such as they were this year, when oats were 40 cents a bushel of 34 pounds, say $1.25 per 100 pounds, and barley was about 45 cents for 48 pounds, or 95 cents per 100 pounds. There would be in that case a saving of 30 cents on 100 pounds of barley fed. If you could subsittute 100 pounds of barley for 100 pounds of oats, you

would save 30 cents at these prices, and our experiment shows that when barley is cheaper than oats one might economize by replacing about one-half the oats with barley.

Q. Are you handling it by the bushel or not?

By Mr. Walsh:

Q. You do not pretend to say that the horses gained 52 pounds per day?
A. Oh, no; they made that gain in ninety days.
Q. You said per day?
A. I meant in ninety days.

By Mr. Bland:

Q. Do you recommend barley for horse feed?

A. Not exclusively; but we have been able to feed one-half barley without doing the horses any harm.

Q. I know in our part of the country they have been growing barley and oats mixed, and grinding it and feeding it in the winter, and that when they do not work very much they have been subject to lymphangitis?

A. Not working is more likely to be the cause of that than the barley.

Q. Barley is very heating?

A. Barley is usually preferred to be fed boiled. It has when so fed a good effect on horses in many ways, but we have no evil results from it at all when fed whole or ground as part of the grain ration. We fed it all one winter in this experiment I mention, and you could not tell which had been fed either way. except that we had a record of it, and when we weighed out there was very little difference in gain or loss.

Q. What about carrots and turnips for feeding horses ?

A. That is the next subject for consideration, sir. Then we fed it (barley) with corn. Two or three years ago we could feed corn very much more cheaply than oats. We could get oats at a cent and a half per pound and corn at three-quarters of a cent per pound, which was a big saving, that was the year we were experimenting with corn. We found where corn and oats were fed, that while there was a slight loss in weight the horses did very well indeed when working hard. When pure corn was fed all the horses would not stand it, although some horses stood it and did very well. In fact one of them made a gain of five pounds in about 100 days, that is, he was worked and fed on corn for 100 days and kept in the usual condition. Other horses that we fed that way went off their feed in two or three weeks, and we had to change them back to the old ration. The horses that were fed on corn and oats did well and others that were fed on oats alone did well of course, but they cost us a great deal more to feed than those that were fed on one-half corn and one-half oats, and very much more than those that were fed on corn alone. In fact the ration cost 12 cents a day more for pure oats than when we fed pure corn.

By Mr. Cochrane :

Q. What was the relative value of the corn and oats ?

A. The corn was about three-quarters of a cent per pound and the oats one and a half cents, which makes a very big difference. Of course, oats are not always so dear, sometimes we can buy them here for about twenty-five cents a bushel, but sometimes we have had to pay fifty cents, there is a great range in the market price of oats here and I suppose it is the same in all parts of the Dominion.

Q. In this experiment did you feed cut hay all the time ?

A. Not always, but we are careful to feed the same kind of hay right through to all horses under experiment.

Q. When you are feeding grain by itself, when do you feed the hay ?

A. After the grain, they get impatient and irritable if they do not have the grain first.

Q. Do you water the horses before feeding with grain ?

A. Yes, about ten or fifteen minutes before giving them the grain we give them a small quantity of water, and then about two hours afterwards we water them again.

By Mr. Wright (Muskoka) :

Q. Is there much difference between the light and the heavy oats ?

A. It depends on which you mean, light on account of the varieties of oats, or on account of the different years ?

Q. On account of the weight; supposing you have a bushel of oats that goes thirty pounds, and nother that goes forty pounds?

A. Of course any one would much prefer the heavier oats.

Q. I mean ten pounds, or whatever weight you choose.

A. We always feed according to weight.

Q. If you have ten pounds of heavy oats and ten pounds of light oats, is there any difference ?

A. Yes, in our experiments to determine the percentage of hull to grain or meal, we have found that oats vary materially. While some have only about 20 per cent of hull, others have as high as 35 per cent of hull.

By Mr Wilson :

Q. That is in the light oats ?

A. Always the highest percentage of hull in the lighter oats when they are of the same sort.

By Mr. Cochrane :

Q. Have you experimented with wheat ground into flour and corn or barley ?

A. Yes, that is a fairly good feed.

By Mr. Christie :

Q. Will horses stand work as well on corn and oats as on oats alone ?

A. Yes, sir, on corn and oats, in equal parts, that summer they stood the work quite as well as those on oats alone.

Q. With barley.

A. Well that was in the winter, I would not say how they would stand hard work. They had not to work very hard in the winter, only about four days a week, and I have no data upon that question. Yet in corn and oats experiments they did quite as well all the summer.

Q. Our horses in hard work will not stand nearly as well on any other grain as on oats.

A. Of course that might be so, but I must say that we fed some all that summer on pure corn, and they did just as well as on oats, similar horses and on similar work. I might mention here that with many omnibus companies in Europe corn constitutes a very important part of the ration, and they find that horses like it quite as well as oats. They could not substitute it for oats entirely, but in many cases three-fourths of the ration was corn, although the most suitable ration seemed to be one-third corn, two-thirds oats.

Q. Was it as safe to feed?

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A. It was quite as safe. They would take the corn and grind the cob along with it; they made corn and cob meal as they call it, that is the ideal way to feed corn to the horses, corn and cob meal is just about as good as corn meal pound for pound.

By Mr. Barr:

Q. Is there any substance in the cob meal?

A. No, not a great deal, but it seems to open the cornmeal up and to render it more digestible in the stomach of the horse, which as you know is small, and the feed spends a short time there, and is then thrown out into the intestines, and I suppose the presence of a certain amount of cob ground up in the meal facilitates digestion. I do not know for certain, of course, but I account for its good effects in that way. It has been found that cattle fed on corn and cob meal do just as well as those fed on an equal weight of corn. The results are not the same with swine, however.

Q. Is that when you are fattening them?

A. Yes.

By Mr. Jackson (Elgin):

Q. Do I understand you to say that 100 pounds of corn and cob ground together and fed to a bullock will give the same results as 100 pounds of cornmeal?

A. Yes, sir; it is held to do so.

By Mr. Barr:

Q. Not the swine?

A. No, it is too coarse; they cannot stand it.

By Mr. Wilson:

Q. About what proportion of that would be cob?

A. I suppose about thirty per cent.

Q. That is quite a saving?

A. Yes, it is a big saving. It is a little more difficult to grind, but it can be done.

Q. It is quite a new idea?

A. No, it is not a new idea. It is well known in the States. We don't feed much corn here, and do not pay much attention to it.

Q. It is on the principal that a man might feed sawdust and make the cattle believe it was bran?

A. Not exactly.

WHEAT FOR HORSES.

As to the value of wheat, we have fed it to a limited extent. It was quite unsatisfactory. The horses did not like it, but where supplemented with bran or with shorts it is comparatively satisfactory. I have not got the exact data, because we could not feed it long enough. Where it was fed elsewhere, in Arkansas, for instance, the horses had a ration of equal parts of bran, shorts and wheat, and they did quite as well as on oats. We did not have enough wheat here.

By Mr. Cochrane:

Q. Bran and shorts?

A. Equal prts of bran, shorts and wheat did as well as oats.

By Mr. Christie:

Q. They don't stand the work as well?
A. Probably not.
Q. They will have a thicker skin?
A. Yes?

By Mr. Jackson (Selkirk):

Q. What about frozen wheat as they have it in the Territories?
A. That is the kind of wheat we fed, but we did not have enough of it to carry on the experiment long enough. However, horses do not like anything that is sticky or mucilaginous, and for that reason pure wheat is not usually a welcome ration.

VARIOUS OTHER FEEDS.

I have fed rye to a limited extent, but it proved quite unsatisfactory, and I do not think I need say any more about it. Peas were fed along with oats, and gave very good results, but the proportion was rather small. About one-fifth or one-sixth of the ration consisted of peas. In the old country they feed peas extensively, and horses seem to do well on them. Spirit grains is something we have tried recently, but could not get our horses to like. They went off their feed. Dried distillers' grains, or spirit grains, are the refuse grains that distillers dry and put on the market. Horses will not eat these grains; at least our horses will not. Probably they are a little more delicate than some others.

By Mr. Cochrane:

Q. Yours are temperance horses ?
A. Probably; I do not know their peculiarities in that line.
Brewers' grains have not given much better satisfaction, although the horses did take to them a little better than to the spirit grains. Another feed tried is molassine meal, a feed which they are trying to put on the market here. It consists of peat and molasses chiefly. The horses like it very well, but it does not seem to replace any meal as far as I can see, and it is an added expense. It may possibly help their digestive organs, and it may keep them in a little better health, but I am not ready to speak positively on it yet, as we have only had it for two months. It does not seem to save any meal.

CHEAPENING THE RATION.

I said that we were trying to find out the most economical way of feeding horses. Latterly oats have been very dear and bran very cheap. We got a couple of carloads of bran at $15 a ton, and when we take bran at that price and compare it with oats at 1¼ to 1½ cents a pound, $25 to $30 a ton, there is a saving of $10 to $15 a ton if the ration be of equal parts bran and oats. We decided to carry on some experiments. I have here the results of rather extensive experiments to determine if possible the exact proportion of bran that may be profitably fed with oats in a horse's ration. Each lot consisted of two horses. We fed one lot equal parts of bran and oats. This lot made a gain of seven pounds—all these experiments lasted for ninety days—seven pounds apiece during that time. We weighed them three days running at the beginning and at the end of the period, and took the average. They practically held their own or stayed where they were. The next lot were fed on a meal ration of one of bran and two of oats. They also held their own, since they lost only two pounds each in the ninety-day period. But here is the point. When we fed them equal parts of bran and oats for a period of time the saving was so considerable that if we had fed them on

such a ration the whole year we would have saved $8.75 on a horse's feed for the year. If we had fed the next lot—much heavier horses—for a whole year on the ration of one of bran and two of oats we would have saved $9.71 per horse during that time, and they would have remained practically the same. The next team, weighing 1,685 pounds apiece, were given two of bran and one of oats. This team lost thirty-six pounds apiece in the ninety days, but if we had fed them that way during the year we would have saved on each horse $19.53.

Q. The horses would have been dead?

A. No, I do not think so. There is a loss of thirty-six pounds only, and horses weighing 1,685 pounds can go up and down that much and not be injuriously affected at all.

Q. What work were they doing?

A. They were at that time—it was September, October and November—hauling in the corn and roots, and then there was a lot of carting being done in the fall.

Q. It would not be hard work?

A. It is very hard work. We put on very heavy loads and the horses suffer more then than at any other time in the season.

Q. They were not taking very heavy loads when I was there?

A. You must have struck a bad day. Of course it makes a difference where the corn is. If the corn is at the back of the farm, as it was last year, it makes quite a difference. Sometimes it is near the barn, and therefore easier work for the horses.

Q. Would you call that harder than ploughing and harrowing?

A. Yes, harder.

Q. You must have gone at it pretty hard?

A. Take the horses and put them into a corn field where the soil is not hard and is wet, and it is very hard hauling. We haul three to five tons to the load; we have a hill to climb, and it is very hard pulling going up that hill; in short, we find there is nothing takes so much out of the horses as the corn harvesting time.

By Mr. Derbyshire:

Q. If you can buy oats at 25 cents a bushel, isn't that the best feed on the earth?

A. I think it is; but you cannot always get them. You have to pay nearer 50 cents now. In our experiments the next lot was fed on pure oats. The horses lost during that time six pounds. Of course there would be no saving on this ration. A horse costs when so fed, $111.87 in the year.

OIL CAKE FOR HORSES.

Then we fed one part of oil meal to ten parts of oats. Oil meal frequently is fed in small amounts with oats, and gives very good results. The horses like it; it keeps them looking well, and they seem to thrive upon it. But that increased the cost. It cost $1.25 a year more than if we fed them on pure oats.

By Mr. Bland:

Q. Wouldn't the oil itself be just as good as or better than the meal?

A. No, I hardly think so. This is oil meal, not linseed meal—oil cake.

Q. Up in our country a great many feed raw oil; they give them a tablespoonful three times a day?

A. That is an excellent plan also. But you see oil cake is very rich in protein, as well as containing a considerable percentage of oil. Oats are not particularly rich in protein; thus a small amount of oil meal added to the oats makes a better balanced ration, and our horses always seem to like the grain better when getting oil cake. It is expensive, however, and we do not very often use it. Here is another mixture or

ration: Bran two parts, oil meal one part and oats ten parts. This is a ration which an old horse feeder gave me as being the ideal ration for horses. But we did not find it very economical, and the horses did not do as well as with the others; that team lost forty-nine pounds apiece during the ninety days, whereas those who got two parts of bran and one part of oats lost only thirty-six pounds, and we saved $19.53, while in this latter case we saved only $2.92 a year.

By Mr. Schell (Oxford):

Q. Taking all your experiments, half bran and half oats have given the best results?

A. Yes, it is the most satisfactory, and it is the one we now feed most regularly to our horses, and in that way at present prices we hope to save $10 or $12 a year on each horse fed, and they do just as well as on pure oats.

Q. That has been our experience?

A. I think it goes to show that wherever it is possible to secure bran at a reasonable figure a man may very safely let it take the place of half the oats. That is for working horses. I would not say for driving horses. If you get horses heated up or give them the bran wet you are going to have trouble.

By Mr. Blain:

Q. There is a very large quantity of stock feed on the market now. Have you had any experience with it?

A. Yes, I will take that up later.

SUCCULENT OR JUICY FEEDS FOR HORSES.

Then we have been experimenting with the succulent feeds, such as roots and fresh grass. Wherever we have fed fresh grass to any extent the horses became loosened up, and it did not prove very satisfactory for heavy working horses. New hay gives somewhat similar results, although if fed judiciously no very serious harm will follow. Then we took a lot of horses and fed them on Timothy hay and the ration of bran and oats that I mentioned, and to another lot we gave carrots, to another mangels, to another ensilage, and to another turnips, in addition to the ration I have mentioned, Timothy hay and oats and bran. The result was not very strongly in favour of feeding these materials to working horses. At least they were not satisfactory in this way, that we did not find that any one of them effected any economy in the ration. The lot fed on carrots did very well. They liked carrots better than any other succulent feed, but they did not replace any hay or meal: that is, it took just as much hay and grain to keep them up when they were being fed carrots as when they were getting no carrots. We fed of carrots ten pounds a day to each horse. The lot that got mangels had only six pounds of mangels a day. The horses did not like them, and would not eat as many mangels as they would turnips, carrots or ensilage. Those which got turnips had ten pounds a day, and those which had ensilage the same amount. All the horses receiving succulent food did well while receiving the same.

By Mr. Cochrane:

Q. Did you pulp your roots?

A. Yes, sir. Now, the addition of these feeds to the regular rations seems to keep the digestive organs of the horses in excellent shape. They were never in need of any bran mash or anything in addition to the regular meal. When giving these laxative foods, however, roots and ensilage, there was no saving; in fact it was an added expense when the horses were working hard. I suppose that if the horses were not working

these roots and ensilage might take the place of hay to a considerable extent, but when the horses were working they would not.

Now, then, one more word as to stock feeds. There are a great many of them advertised, and if the horse is out of health I will not say that some of them are not good. But one fault is the exorbitant prices. An analysis of these feeds goes to show that they are made up for the most part of very cheap material, bran and shorts and a little bit of oil meal for the most part, and yet they want ten to fifteen cents a pound. There is, of course, some somewhat more expensive material used. One feed among those examined was composed of ten per cent of charcoal, ten per cent of common salt, a small amount of oil meal, bran and shorts, and of course some aromatic drugs. I suppose about ninety-nine per cent of the weight of these feeds is made up of very cheap materials that cost about a cent a pound on the average, or less, and you know the figures that are charged. Where one has horses which are a little off their feed an excellent mixture to give them is prepared as follows : 5 pounds of cornmeal, 5 pounds of oats and 5 pounds of bran mixed together with 1 pound of oil meal, and to this add 4 or 5 ounces of salt, a dessertspoonful of powdered gentian and a small spoonful of dried powdered sulphate of iron. These all mixed together, and fed for a few days at the rate of 3 pounds a day servie the purpose of a tonic, and do just as much good as the most expensive stock foods that I have tried, and are very, very much cheaper.

By Mr. Blain:

Q. Then we are to understand that you do not recommend Stock Foods where a horse is in good condition?

A. No; only for a horse when it is not just right. Now, remember that I do not recommend feeding the preparation I have described for any great length of time. I do not believe in drugs at all for any length of time, but if your horse is a little out of order it is as good a tonic as I know.

Q. What about potatoes for horses?

A. We have fed them to a limited extent, but they do not take the place of any other feed.

By Mr. Walsh:

Q. It is a good thing for colic?

A. I didn't know that.

By Mr. Wright (Muskoka):

Q. I was asking about beans as a feed?

A. We have never fed beans; but if you will allow me to go outside of my own experience I may say that beans have been fed quite extensively in the old country, and with very fair results. They are of about equal value with peas, and do better if fed not ground. I do not know why, but that is the finding.

By Mr. Wilson (Lennox):

Q. How does it come with reference to cost in comparison with peas?

A. They are usually about the same cost?

By Mr. Wright (Renfrew):

Q. Can you not tell us something about cattle?

A. I was not intending to speak of cattle feeding just here.

Q. What subjects could you take up under that head?

A. We carried on some experiments with dairy cows to determine whether ensilage or mangels were the more profitable or more economical feed. That is one experiment. Another was the comparison in the feeding of cattle with dry feed and succulent feed: that is, dry hay and meal or ensilage, hay and meal. Then we carried on experiments to determine whether it was advisable to feed twice a day or three times a day, and another experiment to determine the comparative value of turnips, sugar mangels and sugar beets as feed for dairy cows. Then we also experimented with refuse apples as feed. If these appeal to you I will come again to-morrow.

By Mr. Christie:

Q. Are you going to give us any results on feeding hogs?
A. Not this year, unless you want them. I have taken it up so often.

By Mr. Barr:

Q. Have you tried any experimenting on sprouting grain?
A. On feeding sprouting grain?
Q. Yes.
A. No.

HOUSE OF COMMONS,
COMMITTEE ROOM No. 34,
FRIDAY, April 14, 1905.

The Select Committee on Agriculture and Colonization met here this day, the Chairman, Mr. Greenway, presiding.

Mr. J. H. Grisdale, Agriculturist at the Central Experimental Farm, was recalled.

Mr. Chairman and honourable members of the Committee on Agriculture, yesterday we took up the subject of feeding horses, and there is just one slight correction I want to make in my statements on that occasion. Some member asked me the proportion of cob meal in the corn and cob meal about which I spoke. I did not have the data with me at the time. and I made a rapid mental calculation, and in my reply I went a little over the mark. I stated that the cob constituted about thirty per cent of the corn. I find that it is about twenty-five per cent of the corn, or twenty per cent of the whole mass, and with that correction, if there is no further question to be asked about feeding of horses, I will pass on to take up my next subject.

By Mr. Jackson (Elgin):

Q. I might ask on what basis you arrived at that later conclusion?
A. Seventy pounds of corn on the cob is expected to make a bushel of shelled corn; that leaves fourteen pounds, which is just one quarter of fifty-six, or twenty-five per cent of cob.
Q. With regard to the corn, that is grown very extensively with us, and we find that it takes seventy-two pounds.
A. Seventy pounds is the generally accepted weight, sir.
Q. The accepted weight there is seventy-two pounds, and we handle thousands of bushels. The basis we take is seventy-two pounds of corn in the ear for one bushel of corn shelled?

A. That would make it about right?

Q. Seven-ninths of the total corn crop is grain, and the other two-ninths is between twenty-two and twenty-three per cent?

A. That is of the whole thing, the cob would be two-ninths of the whole mixture.

Q. Twenty-two and a half per cent; that is the basis we had with corn up there. If the corn is not dry, you will not get a bushel of shelled corn off seventy-two pounds; if the corn is dry you will get fifty-six pounds of shelled corn from the seventy-two pounds.

By the Chairman:

Q. What is the legal standard?

A. I think seventy pounds is the legal standard.

Q. It varies in different places?

A. No doubt it does.

In these experiments which I am going to report on to-day, in order that you may understand them fully I shall give you a few notes I have here, and to express myself as concisely as possible I want you to allow me to read one paragraph:—

'A careful examination of the daily milk record of many cows shows that for from two to three months the milk flow increases or remains nearly uniform; for the next three or four months the decrease is at the rate of about ten per cent, and then on till the end of the lactation period the rate of decrease seems to vary very much, some cows decreasing very rapidly and others very slowly indeed. It is therefore rather difficult to say what the normal rate of decrease in milk flow in a given group of cows really should be, even though the dates of calving were known. It would probably be safe, however, to say that ten per cent was the regular rate of decrease, and taking that rate as the basis some idea of the influence of the different feeds on the milk flow may be formed.'

In estimating the value of rations, clover hay is charged at $7 per ton; ensilage, turnips, mangels and sugar mangels at $2; sugar beets at $3 per ton and meal at $20 per ton. The meal mixture is of bran, shorts, mixed grains, oats, peas, barley and oil meal, with about from two-thirds to three-quarters of the meal consisting of bran, so that when figured up it was found that it came to about one cent per pound, or $20 per ton.

The cows in the different experiments upon which I wish to report were in different stages of the lactation period; some of them had been calved only a very short time, and others had been calved as much as eight or nine months, so that there was a mixture.

The first experiment I want to speak of this morning is a comparison of the value of ensilage and mangels as feed for dairy cows. Our regular ration consists of a mixture of about two-thirds corn ensilage and about one-third mangels or sugar mangels as the case may be. Last year in my evidence before this Committee I took up very fully the question of the value of ensilage for feeding stock, and some questions were raised as to the comparative value of ensilage and roots, and this is one of the experiments we have carried on to determine the comparative value of these two foods. In this experiment we had two lots of four cattle in each lot, eight cattle in all. We fed them two weeks upon the regular ration of ensilage and roots, with a little bit of straw mixed with it, in the proportion I have already mentioned, and for the next two weeks four of them were fed upon ensilage and the other four upon mangels, and of course a little bit of straw in each case, but the feed other than ensilage and mangels was the same, and fed in the same amounts as nearly as possible.

By Mr. Cochrane:

Q. Was the straw cut?

A. Yes, cut and mixed with the ensilage or mangels as the case may be.

Q. Or pulp?

A. Yes, the roots pulped and the straw mixed with it. At the end of two weeks they were changed over so as to give the two feeds a fair show. We fed each lot two weeks on mangels and two weeks on ensilage, and then we averaged them up in order to arrive at some conclusion as to the comparative value of these foods. Here are the results. I will give you only a small part of the data, as a good deal of it will not be of particular interest. I might say that all gained in weight during the period they were on ensilage.

Q. Were these fed for fattening, or what?

A. For dairying.

Q. They were milking at the time?

A. Yes; and they all gained in weight slightly.

Q. Did they gain in milk?

A. Not exactly; but I will give you that directly. One lot gained 23 or 24 pounds apiece in weight in the month. They started of giving 1,204 pounds of milk in the two weeks on the regular ration—that was lot 'C'—and lot 'D' gave 1,162 pounds. While lot 'C' was on ensilage it gave 1,015 pounds of milk in two weeks, or a decrease of twelve and one-half per cent, which, as you see, is a somewhat greater decrease than would have been expected had they continued on the regular ration. The other lot which were on the mangel ration, lot 'D,' decreased only six per cent, showing that mangels were better for milk flow than ensilage, that is so far as the power of maintaining the flow of milk was concerned. But there is a difference in the cost of feeding. While the cows were on the regular ration, lot 'C' cost 14 cents a day to feed, and lot 'D' cost 13 cents, but when they went on special feeds lot 'C' fed on ensilage cost 14·8 cents per day and the feed for lot 'D,' on roots, cost 15·3 cents, so that roots were considerably more expensive than ensilage. Or, for the total period lot 'C' on ensilage cost $8.28 for two weeks, and lot 'D' on mangels cost $9.06, but they gave more milk.

Q. What was the cost; I did not catch that?

A. For the two weeks the lot on ensilage cost $8.28, and the other lot on mangels cost $9.06.

Q. How did you arrive at the cost?

A. As I stated, I gave you the values: $7 per ton for clover hay, ensilage, mangels and sugar mangels at $2 per ton, and meal, mixed, $20 per ton.

Then we changed them over, and lot 'C,' which had been previously fed on ensilage at a cost of $8.28 for 2 weeks, now cost us $8.68 for 2 weeks when fed on mangels. Lot 'D,' which when fed on mangels cost us $9.06 for 2 weeks, when fed on ensilage cost us $7.53 for 2 weeks; or putting it in a new form, the daily ration when lot 'C' was getting mangels cost 15·5 cents a day to feed them, and while they were getting ensilage they cost us 14·8 cents a day. Lot 'D' while it was getting mangels cost us 15·3 cents a day, and 13·5 cents a day when getting ensilage. So you see in every case the cost was increased when the ration changed from ensilage to mangels. Now, when lot 'C' was on ensilage they decreased at the rate of 12½ per cent in the milk flow, but when they went on mangels they decreased only five and one-half per cent. Lot 'D' when on mangels decreased six per cent, but on ensilage it decreased just about the same, so that there is not a great deal of difference in the milk flow. Taking the average, you will find that when the cattle were on mangels they decreased 5½ per cent and on ensilage 8 per cent—that is an average for the whole lot for 2 weeks. The mangel ration cost $8.87 on an average for 2 weeks, while the ensilage ration cost $7.91, a difference of 96 cents in 2 weeks in favour of ensilage, and a difference of only 2½ per cent in flow of milk, so that we may safely conclude, as far as this experiment goes, that corn ensilage is quite as profitable to feed as mangels for dairy cows. We do not intend, of course, to let this matter drop here, for I hope to be able to submit to your Committee for their consideration next year some further data along this line. In esti-

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mating the cost we did not calculate the extra cost of feeding mangels. Corn ensilage is valued at $2 per ton, and costs us about $1.60 per ton in the silo ready to feed. Mangels cost us about $1.60 or $1.70 per ton in the root house, and after that they have to be pulped, which is, of course, considerable labour, so that the mangels really cost somewhat more than the ensilage; but we leave that out of the question at present.

A question which is attracting a great deal of attention, and which will attract more and more attention in the future, is the value of succulent food for dairy cows in comparison with dry forage. We took two lots of cows last year and fed them the same as I have already described, with mangels and ensilage for two weeks, and then changed one lot, putting them on dry fodder, clover hay and meal, the other lot continuing with the succulent food. At the end of two weeks we changed them over. The lot that had been getting dry forage was changed over to the succulent forage, and the lot that had been getting succulent food was changed over to dry forage, and the results from the two lots averaged up. I will not go into details, but will give you the average, or a summary. The average cost of feeding 4 cows 2 weeks on dry food was $8.25, and the average cost of feeding 4 cows 2 weeks on succulent food was $8.60. The average cost of the daily ration of the cows on dry food was 14·9 cents, and of those on succulent food it was 15·3 cents. In this experiment the cows that were on dry food lost eleven pounds apiece in weight in two weeks, and those that were on succulent food gained thirty-nine pounds apiece in weight. The cows that were on dry food started off with seventy-five pounds of milk a day—they were well advanced in the period of lactation—and they ended up with 62 pounds a day at the end of four weeks. That is, they lost seventeen per cent, or fell off seventeen per cent in four weeks. Those that were on succulent food started off with 69 pounds of milk a day and ended up with 64 pounds; thus they lost only 5 pounds, or 7 per cent in the milk flow. That is, 10 per cent in the milk flow in favour of succulent food, with a very slight increase in the cost of the ration, and a considerable improvement in the condition of the cattle, showing, I think quite distinctly, that it is profitable in every way to feed a succulent ration rather than a dry ration.

By Mr. Blain:

Q. Will that hold good in feeding cattle all the year around?

A. Yes, I think it will.

Another line that we have been taking up is a comparison between the different kinds of roots, comparing ensilage with turnips and sugar mangels, and roots and ensilage mixed with sugar mangels and sugar beets. We fed different lots of animals on these different succulent foods, and I shall give you a brief summary of the results. The lot that was on the regular ration, that is ensilage and roots, made a decrease of 7 per cent in four weeks in the milk flow, and it cost to feed them 13·3 cents per day. Then when we went on to sugar mangels—I suppose you know what sugar mangels are—

By Mr. Avery:

Q. You were speaking there of turnips?

A. No, that is the regular ration, mangels and ensilage.

Q. I was just wondering in regard to the difference between turnips and beets?

A. I have some data from these experiments. The sugar mangel is a root about half way between the mangel and the sugar beet in size, and it is a root that is somewhat richer in dry matter, in food material, than is the mangel, but not so rich as the sugar beet. In estimating the cost, we put it at the same as mangels, although it costs a little more, seeing that it does not give quite as heavy a tonnage to the acre as the mangel. Sugar beets come to a good deal more; we put them at $3 a ton. I think that is the price the factories used to give, probably a little more, but we put them at $3 a ton as we did not have to haul them away. Well, on sugar mangels it cost 16·5

cents a day to feed the cows, and while on a ration of sugar beets it cost 18·8 cents a day —quite a bit more you see to feed them. But while they were on roots and ensilage they fell off 7 per cent in the milk flow in the month, and while they were on sugar mangels they fell off only 1½ per cent in the month, practically maintaining the flow of milk; and when they went on to sugar beets they went up 3½ per cent a month in the flow of milk—that is, they started off giving 57½ pounds of milk and they ended by giving 60 pounds of milk. Now then, we had another lot on turnips, and they cost 15 cents a day to feed them. They started off giving 60½ pounds of milk and ended up by giving 55 pounds of milk per day, showing a loss of 10 per cent. That is, they just about held their own, seeing that that is about the regular rate of decrease in the production of milk in that period of time. Then we had another lot on sugar mangels; in this case they fell off somewhat more. They were cows further on in the lactation period, and they fell off 10 per cent on the original milk flow. The ones that held their own almost were cows that had been in calf four or five months, while there were some in the latter lot that were seven or eight months in milk, and others nine months, that is, just about drying up. We put them on sugar mangels to see if the sugar mangels would have any effect in helping to lengthen the period of lactation. We found that they did not dry up quite as quickly, but it did not really affect them very materially. In the feeding with sugar beets, which experiment was conducted with cows in the fifth and sixth months of lactation, there was an increased flow of milk, showing that sugar beets are exceedingly valuable as a food for cows; but at the same time it must be remembered that the increase in the cost of the ration was quite considerable, seeing that the cost of the regular ration was only 13½ cents and that the cost of the sugar beet ration was 18:6 cents, an increase of a little over 5 cents a day.

TWO FEEDS A DAY VS. THREE FEEDS A DAY FOR CATTLE.

Now, a question which has attracted a great deal of attention, and about which I am questioned very closely whenever I address public gatherings, is the feeding of our cows two as compared with three times a day. We have maintained for a number of years that it is advisable to feed twice a day. By feeding twice a day, we mean feeding about 5.30 in the morning a mixture of meal, ensilage, roots and cut straw, and then again at 3.30 in the afternoon with the same mixture. Immediately after they have eaten the morning portion at 6.30 or thereabouts they receive an allowance of hay, three or four pounds as the case may be. They are through eating everything by about 8 o'clock, and get nothing more until about half-past three. Now, we compared lots fed in that way with similar lots of cattle—in fact changed the lots around; fed three times a day. The morning portion was just as I have described, only not so large in quantity. At noon they received another portion, consisting of roots, ensilage and a little meal, but no hay, and in the afternoon or evening, later than 3.30 (about half-past four or five) they got another similar portion and hay, making three feeds a day. Here are the results.

By Mr. Herron:

Q. What are the amounts per day?

A. I shall give the exact amounts. I think I had better go right through with all the data. This particular item you will see as I come to it. There were four cattle in each group. The cattle that were given three feeds averaged, to start with, 1,337 pounds, and those that were given two feeds, 1,334 pounds. The three feeds cattle gained seven pounds during the month and the two feeds gained ten pounds. The three feeds a day lot received 26½ pounds of meal a day and the two feeds 26¼ pounds per day, which is practically the same thing, you see. The three feeds a day cattle received 20 pounds of hay a day for the lot and the others the same thing. The three

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feeds a day received 256 pounds of ensilage and roots a day, while the two feeds received 263 pounds. They ate a little bit more in that case. The three feeds cattle thus received 374 pounds of meal in two weeks and the two feeds 367 pounds—practically the same thing. They ate the same amount of hay, 280 pounds in each case, and nearly the same amount of ensilage and roots, 3,590 pounds for the three feeds and 3,689 pounds for the two feeds. The three feeds a day cattle cost us $8.32 to feed during that time and the two feeds a day cattle cost us $8.34—only two cents difference. It cost us to feed the cows one day 15 cents on the average for the three feeds and the same for the two feeds. They gave us during the first week they were on the ration (the three feeds a day cattle), 439 pounds of milk—they were shorthorns, and were not milking very heavily at that time—and in the case of the two feeds they gave 506 pounds. They gave us 36 pounds the first day in the case of the three feeds, and 37½ pounds in the case of the two feeds. The three feeds a day lost eight per cent—decreased eight per cent in a month in their milk flow—and the two feeds a day decreased six per cent, so that we might say there is practically no difference in the results from feeding twice a day or three times a day. There was no difference in the amount of feed required or the amount of feed consumed, and no difference in the amount of milk produced. This goes to show that, so far as results are concerned, two feeds a day are quite as good as three feeds. Of course, as you know, there is a considerable saving in labour. Every time a man is required to feed the cattle there is a certain amount of expense, and if you feed twice a day and give a little more each time it does not increase the cost at all, for a man can just as easily give an animal 45 pounds of roots and ensilage at a time as 30 pounds. It doesn't take a minute longer for a lot of cattle, and there is therefore a saving of about an hour's time a day on say, 20 cattle.

By Mr. Blain:

Q. What about the water?

A. We have water before them all the time.

Q. That applies to fattened cattle?

A. We have the water before the store cattle also.

Q. I mean those experiments?

A. They were with a beef breed of cattle, but in milk. They were shorthorn cattle in this case, and well advanced in the lactation period. There were some of them going to calve in a short time. We tried to keep them just about the same in condition: that is, we gave them a maintenance ration. As you see, they gained only seven or eight pounds apiece in the month. We tried to keep them at their usual weight.

Q. What I was referring to was whether that system of two feeds per day as compared with three feeds a day would apply to steers put in to fatten?

A. I think it would. We feed our steers twice a day only. These were beef cattle, and I tried to make one experiment do for the two lots. I did not like to break any experiments I had in beef cattle for this purpose.

REFUSE APPLES FOR DAIRY COWS.

Now, another line of experiments is the using of refuse apples for milk production, or for feeding dairy cows, to take the place of roots and ensilage in the fall. This is not a very important question to us, but it is a question which was apparently exciting considerable interest last year, as we received a great many inquiries concerning it, and I saw a good deal in the agricultural press on the subject. We carried on experiments to determine the value of refuse apples as feed for dairy cows. I do not think that I need give you the introductory part of that, but I will just state that we had eight cows, and fed them as the cows that I have already described were fed, on

roots and ensilage for two weeks. Then we took four and continued the ensilage and roots, and put four others on apples, with a certain amount of roots and ensilage. We considered that the apples should constitute about one-third of the succulent ration—that is, they got altogether 200 pounds of apples. The lots that were on apples did quite as well as those on roots and ensilage, and in fact they did somewhat better. The value of the feed other than the apples during the two weeks was $6.10, whereas when they were fed on roots and ensilage alone the value of the feed was $7.78. That leaves $1.68 for the apples, which during the two weeks amounted to 1,400 pounds, or the apples were worth nearly $2.50 per ton, or somewhat more than ensilage or roots for feeding.

Now, sir, unless I start another subject, for which I do not suppose you are anxious, I am through with the cattle feeding work, and with my evidence.

By Mr. Christie:

Q. There was a little misunderstanding here yesterday. Perhaps I did not understand you right, but in reference to the corn, did you say that a hundred weight of corn, cob and all, was as good as a hundred weight of pure corn ground?

A. Yes, for some purposes.

Q. Then I did not misunderstand you. Some of the members were arguing it through the House afterwards.

A. A hundred weight of corn and cob meal is supposed to be as good for some classes of stock, horse feeding or cow feeding, as a hundred weight of pure corn meal.

By Mr. Jackson (Elgin):

Q. Have you made a thorough test of that? Now, the reason I ask is this: I am from a corn growing district in the cattle fattening district. We grow corn and turn it into beef on our own farms. We have had during the last 20 years several chopping mills, which after putting in corn crushing machines they have all but one taken them out, and they have put in place of them corn shellers and shell the corn, and the cob we consider no use whatever, no use for feeding purposes, and I would ask—this report is given to the farmers of Canada and to our own district—that you make a further statement in connection with that, and give us your tests along that line. If you can say that that is correct all the practical farmers in these corn growing districts are wasting a lot of money. We do not consider that the cob is of any use at all, and they are thrown away or burned.

A. I am sorry to say that we have no data to report upon that line.

Q. Before that statement goes broadcast through the corn growing country we should have it made possible to contradict the fact that a bushel, or 100 pounds, of corn, cob and all, that is, about 75 pounds of pure corn meal with 25 pounds of cob, is just as good as 100 pounds of corn meal with the cob thrown away. If you come to our country there you could get thousands of bushels of cobs which are thrown away and burned. We as practical farmers consider they are no use to us whatever, only for firewood, and it is better to be placed right. It will be better for this Committee to place on record your positive tests of the value of the corn cob. If what you say is true, we are wasting from $30 to $40 a year by throwing away our corn cobs. I am speaking from the standpoint of a little farmer. Each of us has fifteen to twenty acres of corn. Each and every farmer with us up there that has 100 acres of land has 15 to 20 acres of it in corn, and you can go up there and find stacks of corn cob that are burnt right outside the mills. We consider them of no value whatever. We have tested them, or at least we think we have tested the corn cob question, and we found that the pure meal is better, except when it is mixed with other grains. Once in a while some of the farmers do take a load of corn to the mill, and grind it, and take a load of peas and grind it, and when they bring the meal home mix it together. But we do not value the corn cob at all.

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A. Well, I want to say this here, that probably I spoke somewhat too positively when speaking of corn and cob meal. We have not carried on any extensive experiments. The exact statement I gave you was drawn from 'Henry on Feeds and Feeding.' He is considered an authority on such subjects, and he has a good many experiments reported upon it. Seeing that we do not grow corn at the farm very much, and seeing that the small amount that we had fed gave us good results, I made that statement yesterday. If you think it better that that part should be expunged, and that we carry on some experiments to determine that question, for it is an important one, I have no objections to offer.

Q. It is important in the district where I come from.

A. Very well, sir.

By Mr. Schell (Oxford):

Q. I think when you examine that carefully, and feed your meal with a proper proportion of coarse mixed fodder and cut straw and cut hay, that is very essential, you will find that you will get a great deal better results than from corn and cob meal.

By Mr. Walsh:

Q. The object of the corn cob going in there is to bring about better assimilation, that is all; but you can replace that with something that will give you better value in food?

A. Yes.

By Mr. Mackenzie:

Q. Is there any feeding value in corn cob?

A. No, practically none.

By Mr. Schell (Oxford):

Q. One of the first considerations in feeding cattle on coarse food is to get the stomachs enlarged, so as to assimilate a large portion of coarse food?

A. That is right; and in reference to what the gentleman says of feeding operations in the west, in the great corn belt, they feed the roughage alone, and the corn is fed after or before it, and therefore the corn goes right into the stomachs of the animals without being mixed with roughage of any kind, whereas in Canada, farmers, as a rule I think, feed the meal and the roughage mixed together. I know we do so at all times, all of our roughage, most of our roughage being of course ensilage and roots. These are mixed together, and to them is added a certain amount of straw, and the mixture is fed to the cattle; meal is put right on top of the portion after it is fed, and then the whole mass stirred so that the cattle have to eat the meal along with the roughage. Where such a system of feeding is followed there is not of course the same necessity for an opener being mixed with the meal as there is when the meal is fed by itself.

By Mr. Schell (Oxford):

Q. What do you consider the proper ration—the proper proportion of constituents of various kinds in a food to make a properly balanced ration, that is with the proper proportion of fat, protein and carbo-hydrates ?

A. For what purpose?

Q. For cattle?

A. For fattening cattle?

Q. Yes?

A. In the case of our fattening cattle, we usually start them off with a ration the nutritive ratio of which will be about one to ten; then we gradually narrow it down until we are feeding them at the end of the feeding period——

Q. That is one to ten of what?

A. One of protein to 10 of carbo-hydrates—until we get them down to about 1 to 6, or 6½, or even 7. At present our cattle are getting a ration of about 1 to 6½. Of course I figure this out in every ration. In the case of horses it is about the same thing; to our hard working horses we give a ration of about 1 to 6½.

Q. Do you experiment in the feeding of horses? Yesterday, as you explained, you gave us a regular ration—no change for 90 days; did you ever make any experiments at changing frequently?

A. Yes; we usually change the ration quite frequently.

Q. You are not giving them the same ration constantly?

A. Yes, that is our regular plan. The most common change is to add bran or decrease the amount of bran in the ration.

Q. Every day or two?

A. Not every day or two, but every few days; and they do better when fed thus. I like them to have bran at least once a week; but in these experiments you could not do this without breaking the experiment.

By the Chairman:

Q. We use a great deal of cut straw.

A. For horses?

Q. And for all our cattle.

By Mr. Christie:

Q. Are you going on with the next subject? I was waiting to see whether you were going to give us anything upon the question of the difference between fattening steers loose or tied up. Is that to come yet in your department?

A. No, I did not intend giving you any information on that subject. I gave you so much about it last year and the year before. I might just say, however, that, on the average, our loose fed steers eat more feed, make better gains and make a somewhat better use of the food they eat than the tied steers. They, however, use a great deal more bedding, and of course make a great deal more manure. Where the straw is plentiful that is an advantage, but where it is scarce, as it is with us, that is a disadvantage. That is the general result of our experiments.

DEHORNING CATTLE.

Q. In dehorning, do they go back any when you do that?

A. We have not found that it has any appreciable effect. We kept an exact record of the effects of dehorning for two or three years, and those that were dehorned seemed to be behind those that were not dehorned for a week or ten days, but after that they caught up to them, and very frequently it did not affect them at all. Certain animals again seem to lose a little more blood than others, and they are affected slightly, but on the whole I am justified in saying that dehorning, if it is done well, does not put the steers back.

Q. Do you prefer a clipper or a saw?

A. If you have a good clipper, what we call a keystone clipper, where the clippers have V indentations on the knives, and the two indentations come together so that it cuts on all four sides, then I like the knife better than the saw; but if you have a clipper that just cuts straight, the jaws of which come straight together, I prefer the saw. There is this about clipping, the man is apt to get a little careless sometimes, and cut the horn off before his clipper is rightly placed, and if he does so there is likely to be trouble, because the horn gets crushed. What he wants to do is to place the clipper up a little bit higher than the horn, so that he takes off from a quarter to an eighth of

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an inch of skin and hair around the horn. When it is cut that way you can cut the horn off with about one-half the effort; the steer does not seem to know it is going off, and the wound heals up much more rapidly than when it is cut clear of the skin entirely.

By Mr. Schell (Oxford):

Q. Have you ever had any experience of feeding the pea meal from the mills where they make split peas as compared with the meal from the whole pea?

A. Not very extensive, but we have fed it, and the cows did not seem to like it; I do not know why.

Q. For fattening purposes?

A. No, for dairying purposes.

By Mr. Jackson (Elgin):

Q. Have you ever made a test by taking a bunch of cattle and feeding them on ensilage during the winter, and take another bunch and feeding them on dry food, hay, corn stalks, &c.—have you ever made a test as to the relative gain which the cattle will make after being fed on those two classes of food during the winter when they are turned out on the grass for a couple of months?

A. No; no experience on that line.

Q. That is a very important question with us. I would suggest that there should be experiments of that kind made. A great many cattle are fed that way in the west during the winter, and turned out to grass in the summer, and there is a great diversity of opinion as to which way of feeding in the winter gives the best results when they are turned out in the field in the summer time.

A. It is a very important line of work. I believe that system of feeding is increasing. I shall make a note of it.

Q. A great many claim that cattle fed on dry feed in the winter do better in the summer on the grass.

A. Others claim they don't do as well where dry fed in the winter.

Q. We will have to compare accounts to find if they give as good results in the one as in the other. We want them tested together. Some farmers feed them on the ensilage and others on the dry feed.

A. Our results, as given in the early part of my evidence, show that cattle fed on dry feed lost weight; those fed on the ensilage gained slightly.

By Mr. Mackenzie (Bruce):

Q. I find in this matter of feeding that a good many farmers are inclined to depend too much on ensilage. They don't give enough grain towards the spring. If ensilage is accompanied by grain in the latter part of winter we don't see much difference when they are put on the grass.

A. That is an important consideration. One of the members of the Committee asked me about nutritive ratios. The best ensilage has a nutritive ratio of about one to 6. An animal in its normal condition needs to have a ration with a nutritive ratio about 1 to 10. Thus you see ensilage is not suited for keeping an animal in average condition, and when you confine it exclusively, or almost exclusively, to ensilage, you cannot hope to succeed; therefore the best thing if you don't want to feed meal is to give a fair proportion of clover hay with the ensilage, which would bring it down to a normal first-class ration. I should say that about thirty-five pounds of ensilage and ten pounds of clover hay would make a very nice ration, a ration upon which cattle might be expected to gain from one-half to one and a half pounds a day. They certainly would not go back. This is the average sized cattle, say a thousand-pound steer; the amount would have to be increased for heavier cattle. But to try to

feed on ensilage exclusively without any hay would be a great mistake. That is what brought ensilage into sad disrepute in the eastern part of this country. Some fifteen years ago silos were erected in every part of Quebec, and after about four years every silo was abandoned because the farmers had to 'tail' or lift their cows in the spring.

By Mr. Maclaren:

Q. They are going ahead with their silos now?

A. Yes, they are coming up again.

Q. How are they succeeding with cement walls?

A. They are succeeding very well indeed. They are a little more expensive, but they make capital walls.

RATIONS FOR HOGS—DECREASE OF SOFT PORK.

Q. Have you any new information regarding the feeding of hogs—any new discoveries; and what about corn? Is American corn coming here having a bad effect?

A. No; in the last few years we have not been troubled with that question. The soft pork question has sunk into comparative oblivion.

Q. You don't attribute it altogether to the American corn?

A. No.

Q. Do you find many complaints of soft pork?

A. Not nearly so many as there used to be. I was talking to the manager of the chief packing house in Toronto the other day and he informed me that soft pork had fallen off about three-quarters, so that where they used to get forty per cent 'softs' they now get only about ten per cent of 'softs.'

Q. Have you decided what the cause of soft pork is?

A. We have determined two or three causes. One is corn, another is the condition of a pig when killed; if not in thrifty condition when killed it will be soft. Another is the way in which it is fed; if fed rapidly, rushed as it were from the beginning until slaughtered, there is a danger of soft pork. These are the three chief reasons that we have determined. And ont great reason we have found for having firm pork, or one important factor in making firm pork, is skim milk or whey. Wherever they are fed there is no trouble.

Q. Wherever you feed whey?

A. Yes, or skim milk.

Q. What reduction is there in the price of soft pork as compared with solid pork?

A. It knocks off considerable.

Q. A cent a pound?

A. Quite a cent a pound, yes—in the old country; it does not do so here.

Q. I mean in the old country?

A. Yes.

A. As compared with American pork, a cent of difference?

A. Quite that difference as compared with first-class Canadian pork. Hardly so much as compared with American pork.

By Mr. Chisholm:

Q. What is the substitute for pease, since pease have gone out?

A. We have tried to find a substitute, but have not succeeded. The grass pea has been tried, but it will not ripen if the weather is wet.

Q. What other feed is there?

A. Barley. Barley is capital feed.

Q. What about buckwheat? A great many are adopting that. I suppose that makes soft pork?

A. It made soft pork when we fed it. I hardly know whether——

Q. There are large districts now where they cannot rise pease?

A. Yes, but the bug was not nearly so bad last year. But ony one feeding barley as a substitute will have no trouble with soft pork, as a rule. Roots are a capital feed, more particularly for breeding pigs, and if fed at the rate of about two pounds of roots to one pound of meal to fatten pigs it gives very good results; it lowers the cost of production, and gives very good results so far as the quality of pork is concerned.

By Mr. Jackson (Elgin):

Q. You would not claim it would give as good quality of bacon as the grain fed without roots?

A. Yes, if you do not feed too much roots. The great trouble is many farmers try to feed too many, and they get an inferior quality of pork.

Now, there was one question in connection with this pork production that I did not intend to take up to-day unless you asked me, but seeing we have got on the subject I think I may as well proceed. We were talking yesterday about Stock Foods. We have gathered some results in feeding Stock Foods, not only swine, but a certain amount of experience in feeding horses and cattle. We fed the International Stock Food, Anglo-Saxon Stock Food, Herbageum, and Sugar and Flax, four preparations that were on the market advertised as being economical agents in the production of meat of various kinds. Now, we have not found them an advantage in comparison with pigs fed on other foods. We fed lots of pigs on the same kind of meal without any stock food or condiment of any kind. We fed pigs with meal and some green feed, and we fed other pigs with this same sort of meal and some skim milk. Now, let me give you the results in a concise form from my schedule. The pigs that got nothing but meal gained at the rate of 117 pounds in 100 days, or 1·17 pounds a day. Those which got meal and Anglo-Saxon Stock Food made one pound a day. Those which got meal and International Stock Food gained ·925 pounds a day, or about nine-tenths of a pound. The pigs that got meal and skim milk gained 1·20 pounds a day. The pigs that got meal and Herbageum gained 1·25 pounds a day. The pigs that got meal and sugar and flax made gains at the rate of 1·31 pounds a day. The pigs that were on meal alone and were outside gained 1·25 pounds a day and those which were on pasture, clover or rape, gained 1·15 pounds a day.

Now, here is the cost of 100 pounds of gain in each case. This shows up somewhat differently from the rate of gain showing. The pigs that were on meal alone cost $4.38 per 100 pounds. Those that had meal and Anglo-Saxon Stock Food cost $6.52 per 100 pounds. Those on meal and International Stock Food cost $6.17 to produce 100 pounds of pork. Those that were on skim milk along with meal cost $3.42 per 100 pounds gain in live weight, while those on meal alone cost $4.38. Those on meal and Herbageum cost $5.15 to produce 100 pounds of pork. Those on meal and sugar and flax cost $5.69. Those on meal alone outside cost $4,31 and those on meal and pasture $4.21. Now, we did not estimate the cost of the pasture in that figure. They had an eight of an acre for four pigs.

Q. Did you estimate the cost of the skim milk?

A. Yes.

By Mr. Maclaren:

Q. What did you estimate it at?

A. We bought the skim milk at 15 cents per 100 pounds

By Mr. Schell:

Q. You put the milk at a low valuation?

A. No, we bought it, and paid that for it.

By Mr. Maclaren:

Q. What do you value whey at?
A. About half as much.
Q. How does whey compare with skim milk?
A. Half the value. If you feed five pounds of skim milk you should feed about ten pounds of whey to get the same result.

By Mr. Walsh:

Q. Do you get the same result from the meal and whey as from the skim milk and meal by increasing the whey?
A. Pretty nearly the same. That is the finding at Guelph. We have no whey here.

By Mr. Schell:

Q. You don't make enough difference between the value of milk and whey.
A. It is the finding of an immense number of experiments.

By Mr. Bland :

Q. Was the milk sweet or sour?
A. Sour.

By Mr. Schell (Oxford):

Q. I have fed whey from hundreds of tons of cheese, and know its value.
A. Was the whey always in the same condition? The great difficulty in feeding whey is this, that same days it is sweet and some days it is sour. Some days it is exceedingly sour. It is more than sour, it is rotten.
Q. It is not good if fermented.
A. If uniformly fermented it is not bad.

By Mr. Maclaren:

Q. They are overcoming that difficulty by boiling the whey in the tanks.
A. That improves matters very much.
Q. And taking it from the vats earlier?
A. Yes. I have fed a good deal of whey myself, and had very good results on my own farm when I knew a good deal less about it than I do now. But in the hot weather one day we would get it nice and sweet; the next day—it would be probably a Monday morning—it would be sour and bad after being two days in the vat, and it got so that we hardly dared feed it to pigs at all save to the old ones; it was death to the young ones, just as it was to young calves.

By Mr. Maclaren:

Q. They are feeding whey in my part of the country with great success, and have been for several years.
A. If you get it in good condition it is all right.
Q. They feed pease and whey very largely?
A. Professor Dean fed a lot of hogs the sweet whey in comparison with sour whey and found better results from the sour whey. The whey used was of uniform quality.

By Mr. Bland:

Q. This whey is whey taken from the factories, and probably you don't get Saturdays until Monday noon, and if it becomes hot it is just like vinegar. Is that a good thing for hogs?

A. No; it will have a very bad effect on them. You see it is quite an unusual feed for them.

Q. I have fed a great many hogs, and the whey we get on Monday morning we do not feed at all.

A. Yes, that is the best course. If you get a uniform article, as long as it is not too sour it is a capital feed. The great danger is in feeding whey which is fairly sweet to-day when the weather is nice and cool, but to-morrow it is hot and the whey is as sour as vinegar. If you feed them on that material you will have trouble.

By Mr. Maclaren:

Q. The great difficulty is the whey tanks are not taken care of?

A. Yes.

Q. There has been a great improvement in western Ontario since the inspectors began going around.

A. They insist upon cleanliness, and that is a great advantage.

By Mr. Bland:

Q. What amount of grain would you feed where they get all the sweet whey they can stand?

A. You want to get them off as quickly as you can?

Q. To finish them up?

A. To hogs that weigh about 100 pounds I would feed two and a half to three pounds a day, and then gradually increase the amount.

By Mr. Maclaren:

Q. What weight of hogs are packers looking for now mostly?

A. About the same as in the past, 170 to 190 pounds. They like in between those weights best. They don't want them too fat, but they do want them with lengthy sides.

By the Chairman:

Q. What is the favorite breed?

A. Yorkshires, Tamworths, Berkshires and their grades and crosses.

By Mr. Maclaren:

A. Not quite so much in recent years. There was a while, some five or ten years ago, when the Tamworths were quite famous. They are not so popular recently. I do not know whether the farmers did not have their piggeries in a sanitary condition, or what was the cause, but they are found to be not as husky, not such robust animals as were some of the other breeds, and not quite as well suited to pasturing as are the Berkshires or Yorkshires. Of course the Berkshires are the pig par excellence for pasturing. They do much better than the other breeds on pasture. At the Farm we have experimented with all the breeds, and have bred crosses between the Berkshire and the Yorkshire, between the Yorkshire and the Tamworth and between the Tamworth and the Berkshire, and have fed these crosses in comparison, and there is really very little to say in favour of one or the other. The Tamworth and Yorkshire cross gives invariably first-class bacon. The Yorkshire, so far as my information goes, is probably a

little bit hard to fatten toward the finish. They don't put on the fat, the inch and a quarter of fat which is required, as rapidly as I would like.

Q. They are apt to give a long cut, long sides?

A. Oh yes, splendid.

By Mr. Schell (Oxford):

Q. Do you get better results from a cross between the Berkshire and the Yorkshire?

A. You get better results in the finishing up; they put on the finish more quickly and very easily.

Q. More weight from the same amount of food?

A. No, I would not say that; but you get the finishing up sooner. The great difficulty with the Yorkshire and Tamworth cross is that it is a little hard to finish them, but you get an excellent carcase at 190 to 200 pounds. You cannot beat them for a bacon pig.

By Mr. Bland:

Q. The Yorkshires are more apt to cripple than the Tamworths?

A. No, not in my experience.

Q. The Tamworth cross will stand it better than the others. A Yorkshire is apt to cripple.

A. Of course my experience is limited. We only keep a few swine of each kind, seven or eight sows of each breed. A few years ago our Tamworths did not seem to do very well, and the other pigs were doing all right. Probably it was the strain of family rather than the breed that was to blame. Now we have a better strain, and the pigs doing very well. The most robust pig in my finding is the Tamworth-Berkshire cross. When given good feed they always look well and do well, and are a nice class of pig to kill and give a good bason carcase.

Having read over the foregoing transcripts of my evidence, I find them correct.

J. H. GRISDALE,
Agriculturist, Central Experimental Farm.

FERTILIZERS, ENSILAGE, FEEDS

House of Commons,
Committee Room 34,
Friday, March 10, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Greenway, Chairman, presiding.

The Chairman.—We shall have the pleasure of hearing from Mr. Shutt, Chemist of the Experimental Farms, this morning.

CHARACTER AND SCOPE OF THE CHEMICAL WORK.

Professor Shutt.—Mr. Chairman and Gentlemen, it is not my purpose to occupy more than a very few minutes in saying something with regard to the first matter which you find upon the programme this morning, namely, the character and scope of the chemical work of the experimental farms, for on several occasions when I have had the privilege of addressing this Committee in past years, I have discussed that matter in more or less detail. However, as some of the gentlemen present this morning may be here for the first time, it may be well that I should say a few words respecting the various ways and means by which we are endeavouring to advance Canadian agriculture through the aid of chemistry.

Our work falls naturally into two chief branches or divisions. The first of these may be said to include original investigations or researches undertaken to solve problems in Canadian agriculture which more or less may affect the country in general. These, of course, will comprise the examination of virgin soils, methods for the improvement of exhausted soils, the composition and feeding values of our various fodders and feeding stuffs as grown in Canada, and a host of other matters which arise in connection with dairying, fruit growing, grain raising and cattle feeding. This may serve to briefly outline the most important branch of the chemical work. In addition to this we seek in various ways to assist the farmer individually. One means is by correspondence, the answering of questions which are continually reaching us through the mail; another is by the examination of samples sent in by farmers of fertilizers, soils, cattle foods, and various other matters relating to agriculture. We further give information by addresses on the agricultural platforms, by publications and through the press. With your permission, I should like to say one word with regard to this division of the work. It seems to me that no little of the success that the experimental farm system has met with during the past fifteen years has been due to this personal assistance, if I may term it, that the farmer has received in his practical, every-day work. We have sought to get into touch with the individual farmer, and not only to do research work, which might be of benefit to farming in general. We have tried to enlist his co-operation and sympathy in the work by the various means which I have mentioned; and I feel confident in my own mind after fifteen years' experience, that our popularity (if I may so call it) and success have been very very largely due to this personal assistance which we have given to the farmers. As the system becomes better known, of course, our work in this direction increases, and every

year we have a larger correspondence. You may know that all have the privilege of mailing letters to the experimental farm free of postage, and every year sees a larger number of samples sent in for examination. Consequently I can report that the prospects are encouraging in that direction; in fact I think I might go so far as to say that through the action of the Dominion government and the various provincial governments, and the various means that have been taken for the education of the farmers, I do not know of any people who are carrying on their work to-day more intelligently and more rationally than the Canadian farmer. That is a matter of congratulation I think for all who have been instrumental in this work of education. I should, therefore, like you to think of the work in connection with the chemical branch as one of education as well as one of research. We have endeavoured to become a bureau of information, giving as far as possible advice which might be of practical value in the every-day work. There is a keen and widespread desire for accurate, exact information on farming matters, and we are striving to furnish it.

CANADIAN SOILS.

With your permission, I shall now draw your attention to one or two of the more important lines of investigation which has been followed during the past year. One word or two with regard to the examination of virgin soils. This is a work that we commenced many years ago and every season we endeavour to add a little to our knowledge regarding the soils of Canada. Such soils are as far as possible representative of large and uncropped areas. The analytical work is done with a view to the results being of more or less general value to those who may settle in these districts, which may be at the time of examination but partially occupied. During the past season this work has been practically confined to soils from British Columbia. That province, as you may know, is at present very actively advertising and exploiting many of its agricultural lands, both by notices in the agricultural press of Canada and also by press references, &c., in England. No doubt at present a great deal of attention is being directed to the province of British Columbia. During June and July of the past year I made what I might term an agricultural survey in that province, visiting most of the larger agricultural areas, and endeavouring to become more or less conversant with the character of the soils and climatic conditions which prevail in these districts. By this I hoped I might be in a better position to give advice with regard to methods of farming and fruit growing, and with regard to the possibilities of the soils and the suitabilities of those soils for various crops. A short account of my tour, written from the agricultural standpoint, appears in the Annual Report which is now in the press. Some other soils have been examined, but principally the samples were received from British Columbia, and more particularly from the dry belt of that province.

By Mr. Henderson:

Q. What part of British Columbia would you designate the dry belt?

A. I had reference more particularly to the Okanagan and Nicola velleys, where it becomes necessary to irrigate. The Kootenays also would be included in the dry belt.

Q. Well, I thought the Okanagan was one of the most fertile parts of British Columbia?

A. Yes, because it is in the dry belt that does not say it is not fertile. The greatest crop production is very frequently to be seen in arid countries where irrigation is adopted. I saw most magnificent crops in the Nicola valley and in the Okanagan. In the former there were magnificent crops of hay, clover, alfalfa, which were raised, as far as water supply is concerned, by irrigation. I never saw finer crops anywhere, and there is no doubt that a large part of the fruit which will be grown towards the

southern end of the Okanagan valley will be raised entirely, or practically so, by an artificial water supply. The same is true at Spence's Bridge, on the Canadian Pacific Railway. The country there apparently is extremely sterile, and without irrigation it would not be able to raise anything but sage bush, but once put the water on it and there is immediately a complete transformation; the most magnificent crops of hay and grain and excellent fruits can be grown, as I can vouch for from personal observation.

By Mr. Schell (Oxford):

Q. Lord Aberdeen has a large area devoted to fruit?

A. He has.

Q. In what district?

A. It is at Vernon in the Okanagan district. It is a very fine estate. I stayed there some two or three days during my tour. Irrigation is very largely used on the ranch.

IMPROVEMENT OF EXHAUSTED SOILS.

I wish now to direct your attention to the continuation of the experiments that we have been conducting for the past ten years towards the economic improvement of exhausted lands. This is, of course, a fundamental and important question with us in the older provinces, where unfortunately we have not always adopted a rational system of farming, and as a result certain districts have become more or less impoverished, in fact to such an extent that in many instances the land has no longer rendered lucrative yields. Our experiments have been towards the economic natural improvement of the soil, that is to say, we have not thought it advisable to recommend to our farmers the extensive use of commercial fertilizers. We have sought from other means to supplement the farm manures, and we have in this matter been very largely successful.

THE LEGUMES AS FERTILIZERS.

Our exepriments, as you may know, because I have brought them before you on several occasions, have been chiefly with the leguminous crops, that is to say, the clovers and other members of the legume family, and we have been able to show that by a rotation in which clover (or some other legume) is grown, the fertility of th esoil may not only be maintained, but very largely increased. And this can be done cheaply, very much more cheaply, and in certain respects much more effectively, than by the application of commercial fertilizers, not but what there may be many occasions when the farm manures and this method of what we term 'green manuring,' this turning under of a crop of clover, may be advantageously supplemented by the application of commercial fertilizers. This method of manuring, through the aid of legumes, is one which is applicable practically the country over. It is a method which requires but very little outlay, simply that for the proper preparation of the soil and the price of the clover seed.

Some years ago we published a bulletin entitled as 'clover as a fertilizer,' and in that the results up to the date of publication, 1901, are to be found summarized. Our experiments in this matter had been extensive and comprehensive. That bulletin has been in the hands of the farmers throughout the Dominion. As a result we find that clover is very much more largely grown than in years past, and in many instances I have no doubt but that the fertility of the soil is being materially increased. However, there are other features of the matter which require elucidation, and we have not yet reached the end of this investigation. In this connection, I should like to draw your attention to an experiment which has been carried on by me during the past two years. and which was brought to a close last autumn.

There are three ways it seemed to me of ascertaining the value of legumes for the enrichment and the improvement of the soil. But first a word as to the method itself. It is perhaps unnecessary for me to do more than remind you that the legumes improve soils chiefly by the addition of humus and nitrogen. This latter is affected through the agency of certain germs of bacteria which reside upon the roots, and which enable the host plant (clover) to appropriate nitrogen from the atmosphere. This nitrogen is built up into the tissues of the clover, so that when this crop is turned under the humus and nitrogen enrich the soil for future crops of grain or roots as the case may be. That, in a word, is how the clovers maintain the fertility of our soils. We may look upon this manuring by clover as a rational method, because it has been found that the constant cultivation of our soils and the continuous growth of most crops, as, for instance, of grain and potatoes, will deplete the soil more particularly of these two constituents, the humus and the nitrogen; first, the humus goes, and after as the humus is dissipated, so the nitrogen disappears. Well, it seems to me there are three ways in which we can demonstrate to the practical farmer that this is a method that he should adopt. There is first of all the composition of the clover plant itself. If our analyses show that the clover plant is rich in nitrogen it is evident that the turning under of that crop will enrich the soil practically to the extent of the nitrogen which that clover plant contains, since we must regard the larger part of that nitrogen as obtained from the atmosphere. The second method would be the analysis of the soil at the beginning and at the close of the experiment. Any gain in nitrogen would be owing to the growth and subsequent decay of the clover, and would be shown by the analyses.

By Mr. Henderson:

Q. What percentage of nitrogen of the clover plant comes from the atmosphere?

A. That all depends upon the character of the soil, and the extent to which these germs or bacteria occur in the soil. If we grow clover in a soil which is destitute of the germ then the clover plant takes no nitrogen from the atmosphere, for it is enabled to do so entirely through the agency of these germs. Consequently in their absence the clover plant has to obtain its nitrogen from the soil just in the same way as any other farm crop. But if these germs are present, I should say that perhaps two-thirds to three-fourths—it is impossible to speak definitely on that point—of the nitrogen is obtained from the atmosphere, and is consequently a distinct addition to the soil.

By Mr. Cochrane:

Q. How can the ordinary farmer tell?

A. He could not measure it directly. He could only tell by the condition of the soil, or better still by the subsequent crop yields.

Q. How would he know what benefit he was deriving by turning under the clover unless he had some idea?

A. He could not arrive at exactly the amount of nitrogen he was getting from the atmosphere. That certainly would be impossible for him, in fact it would be impossible for us to say. However, if his clover upon being pulled up shows upon its roots these nodules in which the bacteria reside, he may be quite sure that that crop is gathering nitrogen from the atmosphere. He has, of course, this third method that I am about to bring before you, this practical test, namely, the increase of the crop yield after the turning under of clover. If he obtains a larger yield after clover than he did on the piece of adjoining land which had not grown clover, then I think he may safely conclude that the benefit is from the clover. These are the three methods by which we have demonstrated the value of clover as a fertilizer.

Q. What I wanted to know, of course, I leave you to explain it, is whether the clover itself derives the beneficial elements that are contained in the crop from the air, or from the land. If it could not be obtained to a large extent from the atmosphere, it must necessarily be exhausting the land?

APPENDIX No. 2

A. Not necessarily if the clover is put back again.

Q. If you take as much nitrogen from the soil as you give back to it, you must be taking from the land—but you tell us there is about 75 per cent of nitrogen taken from the atmosphere, so that there is a gain?

A. In the majority of instances, a very large gain. But the growth of clover, when the right germs are present there is always a large gain in nitrogen to the soil. I propose to prove that by these charts which I have before me.

First of all, I will discuss briefly the data in which I show you the amount of nitrogen which is contained in the clover crop itself. We have results from the growth of the common red and the mammoth red clover. Here we find (pointing to the chart 'Clovers as Green Manure') that the clover was sown in April, 1894, with a grain crop and the sample for analysis was collected in May, 1895, after the spring growth had got well started. We took these samples to the depth of four feet so that we could obtain the amount of nitrogen which was present in the roots as well as in the foliage.

By Mr. Cochrane:

Q. To what depth did you say you took the roots?

A. Four feet—we took these roots to a depth of four feet.

Q. That I think would be misleading—to take them to a depth of four feet.

A. If the roots of the clover go down four feet, it very probale that the roots of other crops go down the same depth. In fact it is known that some go deeper than that.

Q. Does it not depend upon the soil?

A. Very largely, and also upon the nature of the crops. Some crops are surface feeding crops, and their roots do not penetrate to a very great depth. Other crops have deep feeding roots.

Let me point out in the case of the mammoth red we found that the stems and leaves produced 10 tons, 70 pounds; that was the weight of crops above the ground. The roots to a depth of four feet weighed 5 tons, 1476 pounds, making a total of 15 tons, 1546 pounds weight. Now the nitrogen per acre, when we came to estimate it, amounted to 101 pounds in the foliage—i.e., the steams and leaves—and to 49 pounds in the roots, or a total of 150 pounds of nitrogen per acre, contained in the clover crop, 100 pounds of which was in the foliage. From this we concluded that two-thirds of the total nitrogen was in the foliage, and the balance, one-third, was in the roots, taken to a depth of four feet. We have similar figures in regard to a two-year old clover crop, one sown in 1893, the sample being taken in 1895. But there are certain differences. You will first notice that there was only about half the weight of foliage—a yield of about 5 tons—compared with that from the first year clover, but there is a much more extensive root system in the second year. We find only 50 lbs. of nitrogen per acre in the stems and leaves, and 61 lbs. in the roots in this second year clover, a total of 111 lbs. It would seem that in the second year clover there is about an equal quantity of nitrogen in the roots and the foliage.

You will further notice that I have the results from three months' growth of mammoth red and common red clover. They were sown in July and samples taken for analysis at the close of the season, in October—giving practically about three months' growth. In the case of the mammoth red, we have 6 tons 13 cwt. of stems and leaves, as against 4 tons 17 cwt. in the case of the common red. Discussing now the nitrogen in these, you will observe that in three months' growth the stems and leaves of the mammoth red had acquired 82 lbs. of nitrogen per acre. he roots of that crop contained 48 lbs., a total of 130 lbs. nitrogen per acre in three months. In the case of the common red, we find 70 lbs. nitrogen in the foliage, as against 47 in the roots, the total being 117 lbs. per acre. Of course these firgues are not absolute. They would vary with the climatic conditions, i.e,. the season, the character of the soil and so forth. But they are representative of what we might obtain.

By Mr. Cochrane:

Q. Before you leave that two-year old crop of clover, was there a crop of hay taken off that year?

A. In 1894, yes.

By Mr. Mackenzie (Bruce):

Q. Then the mammoth is the best clover to grow?

A. Not always. We have not always been quite so successful. We have other data that show better returns from the common red. For fertilizing purposes, pure and simple, I am inclined to think generally the mammoth red is the better variety. You will see, however, in Nos. 7 and 8 (chart No. 1) an instance in which the larger yield and large amount of nitrogen was obtained from the common red clover.

WINTER KILLED CLOVER.

Now it was held by some that clover in certain districts was winter killed, and consequently this method was of no value in such districts. The winter of 1896-7 in Ottawa was very severe. As a result the clover was practically killed out. The details of the experiment are as follows: The clover was sown in May, 1896, and the samples were taken for analysis in May, 1897, when apparently the whole crop was killed. There was absolutely no growth in the spring of 1897. We made a collection consequently of the dead stems and leaves and roots, and the weights obtained were 2 tons, 19 cwt., and 3 tons, 1 cwt. respectively from the mammoth and common red. These weights constitute the residue from the dead clover in the spring. In these residues, as the table shows, there were 81 pounds and 62 pounds respectively of nitrogen per acre. We may, therefore, conclude that even when the clover is winter killed there is a distinct advantage to the soil through the subsequent decay of the residue.

By Mr. Cochrane:

Q. Our trouble is to get clover to grow in our section. We have more trouble with that feature of it, because it is winter killed or suffers from drought and heat of the sun.

A. Yes, there are various reasons for failure in getting the crop to grow. Many people think it is due to the absence of the germs of nitrogen fixing bacteria. Our experience does not lead us always to that conclusion. Our observations have shown us that in the majority of cases where there is a failure to grow clover, that it is due to improper condition of the soil, or lack of moisture, or poor seed, rather than to the absence of those nitrogen fixing bacteria. The clover is a moisture loving plant, and it also requires a soil in which there is a certain amount of humus.

Q. Would land plaster and salt have any beneficial effect?

A. Land plaster might, but I would not advise salt. What would be still better than land plaster would be wood ashes, because they contain potash and phosphoric acid and lime—all elements required in considerable quantities by clover. Muriate of potash and superphosphate or basic slag could also be used to advantage. Land plaster on some soils has been found quite beneficial.

By Mr. Henderson:

Q. Where would you get the wood ashes?

A. Our wood ashes are sent across the line to the States, and they should be procurable here. There are several firms in Ontario advertising wood ashes.

APPENDIX No. 2

By Mr. Armstrong:

Q. After wood ashes have gone through the leaching process, are they of much value?

A. They are of value, but not nearly of the same value as they were before leaching, because potash, their chief and most valuable constituent, has been dissolved and leached away. We examined several samples here, some contained less than one per cent potash. There should 5 to 6 per cent in the unleached ashes. Nevertheless, I would use the leached ashes if I could get nothing else, and they could be obtained reasonably. In place of wood ashes, muriate of potash in conjunction with superphosphate or with basic slag may be used.

By Mr. Cochrane:

Q. Is it not a fact that salt has a tendency to draw moisture?

A. Yes, it has, that is quite true, and it might increase the absorptive capacity of the soil to a certain extent, and thus assist the clover. It is generally used, I think, for roots, I think 300 pounds to the acre, but I do not know of any experience in which it has proven of value in connection with clover crop.

By Mr. Armstrong:

Q. What value would you place on a ton of leached ashes as a fertilizer, as we have quantities of that up in our district?

A. Are they thoroughly leached?

Q. They are put through a process while the potash, which is sent away, is being extracted.

A. Then, they are pretty thoroughly leached. I do not suppose there would be more than one-half per cent of potash in them. It would be difficult to assign a money value to them. I do not know what price lime is in your district, but possibly it is about one-quarter of a cent a pound, and the value of these ashes would depend chiefly, though not entirely, on the percentages of lime and phosphoric acid they contain. You see the potash would be practically gone. Probably these ashes might be worth about one-fifth as much as the unleached ashes, whatever these unleached ashes would sell for. For instance, if the latter were selling for ten cents a bushel, I should not care to give more than two or three cents a bushel for leached ashes.

By Mr. Worthington:

Q. Are any of the commercial manures, such as phosphates or gypsum, worth anything?

A. Yes, the term 'phosphate' is rather loosely used, there may be fertilizers containing no phosphoric acid.

Q. I mean the phosphates derived from around the mine, where they are making sulphuric acid, a lot of phosphates are made there?

A. Yes, that is Canadian rock phosphate which as it is mined is of no use agriculturally, because the phosphoric acid is insoluble, and consequently not available for the use of the crop, but where it is treated with sulphuric acid it is converted into a superhosphate, and it then becomes an extremely useful fertilizer; it is exactly the same fertilizer as when bones are treated with sulphuric acid, except that it does not contain nitrogen. There are other forms of phosphoric acid as basic slag which is a bi-product in the manufacture of Bessemer steel, and which is very useful on some soils, those which are acid or peaty in character. I think phosphoric acid and potash to a certain extent might be used for the encouragement of the clover crop; there are many soils on which such an application would be useful.

Q. Is gypsum useful in this case?

A. Yes, but it does not contain phosphoric acid or potash. It contains lime and has also a direct value in liberating the potash in the soil, and therefore furnishes indirectly a portion of that food which the clover crop needs. The clover is a crop which requires a considerable amount of lime, potash and phosphoric acid for its luxuriant growth. With these supplied, it can with the agency of the bacteria obtain its nitrogen, which is a far more costly element, nitrogen being worth 10 or 15 cents a pound as a fertilizer, whereas potash and phosphoric acid is only worth 5 or 6 cents a pound.

By Mr. Telford:

Q. Has marl any value as a fertilizer?

A. Yes, it is of use in furnishing lime which is a constituent of plant growth, and many of our soils are more or less deficient in lime. It can be used to advantage on mucky soil, sandy soil, or clay soil, and indeed all soils which are deficient in lime are benefited by marl. With many of our soils the water table is too high, and thus they become more or less sour and thus kill or injure farm crops. Marl corrects this acidity, and makes the soil favourable for crop growth.

By Mr. Chisholm:

Q. What agricultural value is there in the scale which forms upon the pans used in the manufacture of salt. It contains, I think, sulphate of lime and phosphoric acid. There is a great deal of this thrown out up in our district, and it could be got very cheaply if it has any agricultural value?

A. I do not know—I should have to make an analysis of it in order to determine its composition before I would like to say. I do not suppose there is any potash or phosphoric acid in it.

Q. Would it have an injurious effect on those bacteria which appear on the roots of the clover?

A. I must not speak too definitely about it without a careful examination and analysis. It would probably be injurious if heavily applied.

Q. Can I send you some to analyse?

A. Yes, I shall be very glad indeed to analyse it and make a report upon it.

Q. I would like to know, because there are tons of it going to waste in our country, and I think it should have some value?

A. Yes, if it is largely sulphate of lime I should think it might be used, but if it is very largely salt I should advise its use with considerable caution.

By Mr. Jackson (Selkirk):

Q. What value has white clover? I might say that in Manitoba it grows luxuriantly and never winter kills, and the common red clover we can only grow occasionally?

A. Yes, undoubtedly, it in common with all other clovers is rich in nitrogen. I have not any data though to bring before you regarding its value compared with the clover I have spoken of to-day. It is not a crop that gives as large a yield as common red or mammoth red clover, and terefore, I should not think it would be so valuable.

Q. With us, it grows luxuriantly, quite high, about that high (illusrating).

A. Yes, that would be about eight inches, but we have the common red clover 2 feet high. I do not think it is possible to obtain a May crop of white clover of ten tons such as I have shown you we obtained from mammoth red clover. But notwithstanding that fact, it should ge encouraged in common with all the legumes, because of its value as an enricher of the soil. No doubt the richness of the soil in the Northwest Territories and in Manitoba is in a large part due to the continuous growth for ages of one or the other members of the family of legumes.

APPENDIX No. 2

Q. I might say that 200 miles north of Winnipeg I saw clover, I do not know the name of it, but it was not red clover, that was 2½ feet high and very thick, perhaps there was half an acre of it.

A. That is very interesting. Do you think it was something new?

Q. I do not know, I am not acquainted with your clovers down here.

A. It was not the pea vine, was it?

Q. No, it was a clover all right.

A. That would be very useful, it undoubtedly enriches the soil. I should very much like to have a sample for examination and analysis.

By Mr. Mackenzie (Bruce):

Q. How long were you producing that 10 ton crop of clover?

A. That was cut in the third week in May, consequently it was the growth which had occurred during the season of 1895; up to that date, of course, some of the roots were from the year previous, but their amount of weight is given separately.

By Mr. Elson:

Q. That ten tons of clover that you mentioned would be in the green state?

A. Yes.

By Mr. Cochrane:

Q. That would increase very rapidly afterwards—I suppose that clover was turned under and the crop put in the same year?

A. It was turned under for potatoes or corn.

Q. It would increase very rapidly if left until it was partially in bloom.

A. Yes.

Q. Then after you put in the first crop of course you would lose the use of it if you summer fallowed the field?

A. Yes, that is, if you mean there would be no further growth of clover. But the fertilizing value of the clover would be observable in the following crop.

Q. Suppose you summer fallowed it a year before and seeded it down, and then let it grow continuously until it began to bloom and then plough it?

A. The clover attains its maximum value as a fertilizer about the time it is in bloom. As far as Ontario and the east is concerned, I would not advise generally the practice of fallowing. I do not think it necessary, except to clean dirty land and it is wasteful as regards plant food. In the Northwest and Manitoba summer fallowing may be necessary to conserve soil moisture, but it is not an economical method of soil management here. The object of summer fallowing in Ontario and the east is to eradicate the weeds. Some hoed crop could be put in and the same object accomplished. Our method in regard to clover is as follows: The clover is sown with a grain crop, after the grain is harvested the clover makes a good growth. If grain follows the next year, plough under the clover at the end of the season; if we intend to grow potatoes or corn or roots, we allow the clover to remain all winter and a considerable growth to occur in the spring, and then it is turned under.

Q. That is, the overcrop of clover you turned under in the fall?

A. Yes, for the grain, but where we intend to have a late planted crop then it is turned under in the following spring. The fermentation of the clover of course warms up the soil for the corn, potatoes or roots as the case may be.

Q. And has it a tendency to produce moisture, too?

A. It carries moisture with it into the soil. It further increases the capacity of the soil to hold moisture.

By Mr. Armstrong:

Q. What is the difference in value as a fertilizer between mammoth red and common red and the alsike clover ?

A. We have no data with regard to alsike clover in this matter. Our experiments include, as regards the clovers, apart from alfalfa, the mammoth red and the common red and the crimson clover. However, if a crop of alsike clover can be obtained equal in weight to that of the mammoth or common red I think it would be equally valuable as a fertilizer.

By Mr. Wright (Renfrew):

Q. What do you mean by Crimson clover, I never heard of that before?

A. It is very largely used as a cover crop in orchards, as in the Niagara district, parts of Nova Scotia, &c. It is an annual. It is not used here in the Ottawa district, because it will not live over the winter. It gives a very large crop. It is a very rapid grower and is used, as I have said, in the Maritime provinces and also in the Niagara district as a means of enriching orchard soils. It might be used to advantage also in parts of British Columbia.

So much for the amount of nitrogen contained in the various clover crops. We may now consider the data on this chart (pointing to the second chart). I have attacked this problem from another standpoint by estimating or rather determining the amount of nitrogen in the soil before the growth of the clover and at the close of the experiment, which consisted in growing in the soil two successive crops of clover. After these two years' growth the amount of nitrogen was again determined. Now, one set of experiments, one series of experiments, was conducted in pots, 15 inches deep and 6 inches in diameter, filled with soil, the condition of which we had determined as regards its nitrogen content. The soil contained before the experiment, as we see there—(pointing to chart)—·0392 per cent of nitrogen, which means when calculated in pounds of nitrogen per acre to a depth of 9 inches, 1076 pounds. Clover was grown in these pots. There were 20 pots in all, and at the close of the first season the clover plants were taken up, cut finely and returned to the soil, the whole well mixed together was allowed to remain over winter in a slightly moist condition. The following season clover was again sown in the pots, and at the close of the season the plants were again taken up and cut finely and returned to the soil, each pot receiving its own crop as before. The whole was allowed to remain over the second winter, and then the soil was again examined. The analysis is given on that chart. The soil then contained ·0457 lbs. of nitrogen, a difference between the percentage of nitrogen before and after the experiment of ·0065. In the third column I have made a calculation to estimate the increase of nitrogen per acre. You will see that there is a difference of 179 lbs. This nitrogen had been obtained from the growth of the clover; it was now part of the soil. This increase was due to two years' growth of clover.

By Mr. Cochrane:

Q. There was no other crop?

A. No other crop at all. The clover was cut up and returned to the soil and allowed to decompose there, and it subsequently became through decay part and parcel of the soil.

On the same chart I give results from an experiment carried on in a plot with mammoth red clover. This plot was four feet wide and 16 feet long, and its soil was extremely uniform. Inded it was artificially mixed. It was very carefully and thoroughly sampled, and its percentage of nitrogen before sowing the clover ascertained, namely, ·0437. It was a very poor soil indeed, as you will notice. The clover was sown upon that plot, and as it grew from time to time during the season it was cut and allowed to remain upon the soil. It was, in fact, mulched. It was left for

the winter and it grew well the second season when it was cut, as soon as it obtained a height of 6 to 8 inches and allowed to remain for a mulch on the soil. This cutting then, as I have said, was continued for two years, and then the following spring, that is to say, in the third year, a sample of that soil was taken again and submitted to analysis. Before the experiment we estimated that there was in that soil to a depth of 4 inches, 533 lbs. of nitrogen. After the experiment, due to the two years' growth of clover, there were 708 lbs., an increase of 175 lbs. of nitrogen in the first 4 inches of that soil, due to the growth of the clover. In this second examination, of course, all roots and stems and leaves were first sifted out, so that that nitrogen which you see represented on the chart, was really part and parcel of the soil. You will notice that these figures agree very well with those which we have obtained from the analysis of the crop itself.

By Mr. Cochrane:

Q. The results would not be so beneficial if you seed it down with grain instead of sowing the clover seed by itself?

A. Perhaps not, but I think they would. I do not see any reason why they should not be, unless the season is a dry one. We have found that the growth of the grain is not at all impeded by the growth of clover. The grain is taken off comparatively early in the year and the clover then grows rapidly if the season is favourable, that is, if there is a sufficient rainfall.

Q. I had in my mind that the grain would reduce the present fertilty of the soil, and thus deprive the clover of those elements needed for its growth.

A. This, quite probably, is true to some extent. But in the Ottawa district there is no necessity to lose a season—there is always a good growth after the grain is harvested. I might say that the grain which grows along with the clover does not obtain any benefit from it. Until the clover decomposes and becomes part and parcel of the soil, its plant food is not rendered available. Then the benefit is seen in the succeeding crop.

Q. I was aware it would not get any benefit from the clover growing with it, but what I had in my mind was that the crop of grain would reduce these elements so that the soil would not be as rich with the grain crop as it would be without.

A. In harvesting the grain we certainly take a certain amount of plant food from the soil and the soil would be to a certain extent poorer. The soil would certainly be richer if the grain had not been sown and harvested, but in such a case a season would have been lost and this, as I have said, is not necessary in this district.

Q. What is the commercial value of a pound of nitrogen?

A. It depends upon the form in which the nitrogen is sold—it is worth about 15 cents a pound in the form of nitrate of soda.

Q. Then that nitrogen would be worth $26?

A. I would not say that the nitrogen in clover was as available as in nitrate of soda. It is not so readily and immediately available for crop use. It must first be converted into nitrates in the soil. The value of nitrogen as a plant food depends upon the form in which it is used. If it is immediately usable by the crops it is more valuable, or rather perhaps more costly than if it has to stay some length of time in the soil before it is available. But I should say that the nitrogen added to the soil by the clover should be worth in the neighbourhood of 10 cents a pound.

By Mr. Cochrane:

Q. I understood you to say that lime is a manure in itself?

A. Yes, a fertilizer, a manure is plant food. All plants contain lime and must have lime for their life and growth. If a soil is deficient in lime, then lime can be looked upon as a manure for that soil.

By Mr. Chisholm:

Q. Are these bacteria that are found on the roots of clover to be found on the roots of all the legumes?

A. Yes, all of the legumes are supposed to have their bacteria which assist the host plant in its appropriation of free nitrogen. Possibly the same bacteria may be serviceable for all classes of legumes.

Q. Then that is the reason that pease are not as heavy a strain upon the soil as other crops?

A. Yes, that is true as regards nirogen, but all the legumes make a draft upon the potash, lime and phosphoric acid of the soil. Of course, if they are turned under there is no impoverishment in these elements.

Q. What about those alkaline soils in the west, what is the nature of the alkali there?

A. It may be of two characters. It may be chiefly sulphates, largely of soda and magnesia, or it may be in the more deleterious form of carbonate of soda. The latter is exceedingly injurious to vegetation and must be got rid of in some way or other, as by the addition of gypsum to convert it into sulphate and subsequent drainage. Sulphate of soda is known as white alkali, and is not usually injurious to vegetation. Carbonate of sode is known as black alkali. These are the two chief forms of alkali in the Northwest and British Columbia, very often both forms of alkali contain a good deal of salt.

CLOVER AS A FERTILIZER.

Now we will for one moment look at this third chart, which gives you the practical results from what may be termed the farmers' standpoint, namely, the subsequent yields of farm crops from the growth and turning under of clover. Now I have here two series of plots. Each series consists of two adjoining plots. The soil throughout was as uniform as it was possible to obtain it. Let us refer to the chart. Upon one area or plot 'A,' clover was sown with grain, upon the other plot 'B,' adjoining, grain was sown alone. Thus we see that clover was sown with grain in 1900, and the adjoining plot was sown with wheat only. In 1901 these two plots were sown alike with corn, and the results are given in the column to the right of the chart.

They are as follows: 27 tons, 1760 lbs. of corn were produced upon the plot upon which clover had been grown, and turned under in the spring of 1901, as against 19 tons, 1208 lbs. on the adjoining plot which had not grown clover. The difference, you will notice, is about 8 tons in favour of the plot upon which the clover had been grown and turned under. That increase we must suppose was due to the influence of the clover—no doubt very largely to the amount of nitrogen, added to the amount of food which had been set free or rendered available in the soil from the decomposition of the clover, and also to some extent by the larger amount of moisture retained in the soil as a result of the presence of the organic matters from the clover.

Now let us follow the history of these plots: Plot 'A' is the same throughout the series. On plot 'A" as you will notice, clover was grown in 1900, corn in 1901, and in 1902 it was sown with oats; the adjoining plot 'B,' had the same history, with the exception of the clover. In the case of 'A' we have a crop of oats grown the second year after the clover, and we have in comparison a crop of oats grown on an adjoining plot 'B,' which had not previously borne a crop of clover, but in all other respects had the same history as 'A.' There is a difference of nearly 24 bushels of oats in favour of plot 'A,' an increase due to the turning under two years previously of a crop of clover.

We may follow the results on these two plots to the third year. The one on which clover had been grown in 1900, 'A,' in the year 1903 was sown with sugar beets, and the yield was 22 tons, 600 lbs., as against 8 tons, 1,200 lbs. upon the adjoining plot, 'B,' which had not grown clover, a difference of more than 13 tons in favour of the plot

which had grown a crop of clover. We must suppose as there was no fertilizer or manure applied to either plot, that this difference was due to the growth of clover; in every respect the plots were treated alike with the exception of the growth of clover. The soil was, I considered, of the same character on both plots.

By Mr. Christie:

Q. Was that difference just on account of the clover alone?

A. Yes.

Q. I mean the difference between 22 tons and 8 tons?

A. As far as we know it was due to the clover.

Q. Then there was no manure or fertilizer used on either plot?

A. None on either plot.

Q. That is a great result?

A. It may not be entirely due to the plant food furnished by the clover. I am quite sure that the physical condition of the soil was much better where the clover had been grown—it was more absorptive, it retained the moisture longer, which is an especially valuable feature in seasons of drouth. In many ways does the addition of the humus from the clover improve the land.

Q. And the preceding crop was a 'hoed' crop ?

A. No, oats preceded the sugar beets on both plots.

By Mr. Miller:

Q. With regard to that clover crop of 1900, was there a crop of clover hay taken off in 1900?

A. No, it had been sown with wheat and the wheat was taken off. In the adjoining plot the wheat was sown without clover.

Now in series 2 we have a similar set of results: In 1901 oats were sown with clover in plot 'A,' and in the adjoining plot 'B' oats were sown alone. Now, in 1902 these two plots were sown with corn and we found a difference in favour of the clover plot of more than 4 tons of corn fodder. In 1903 these two plots were planted with potatoes, and the plot which had borne the clover gave a yield of 202 bushels, as against a yield of 154 bushels upon the adjoining plot, which had not grown clover. In the following year, 1904, the season just passed, these two plots were sown with barley. The plot 'A' which in 1901 had grown clover produced 45 bushels, as against 38 bushels from the adjoining plot 'B' which had not grown clover. These are, I think, very satisfactory results; they show the immense value of the clover crop as an enricher of the soil. Increased crop yields invariably follow the growth of clover, and the beneficial influence may be observed for several seasons.

By Mr. Christie:

Q. You think that clover is of a great deal of value to all kinds of grain?

A. Yes, for all kinds of crops. I have shown there is an increase in corn, oats, potatoes, sugar beets and barley. In fact, I do not know of any crop which clover will not help. It stands to reason that it will do so, because it furnishes a large amount of plant food. It also adds much to the soil. These constituents are just those required to maintain and increase the productiveness of our soils.

By Mr. McKenzie (Cape Breton):

Q. I suppose you are familiar with the conditions in Nova Scotia?

A. To some extent.

Q. Supposing you sowed that clover with oats in Nova Scotia in 1900, and in due time you got a crop of oats. The next spring the clover would be allowed to grow by itself. Would you advise that course?

A. Not necessarily. It would depend very largely upon what you intended to do. The soil might be used for a crop of grain, or for a crop of corn or potatoes, or it might be used as hay or pasture.

Q. Supposing you allowed the clover to grow itself in that year. You speak of ploughing it under; what time would you plough it under?

A. If I intended——

Q. To sow oats after you had grown clover?

A. If I intended to sow oats afterwards, I would plough it under in the autumn, so that the land would be ready as early as possible for seeding in the spring.

Q. You do not cut off the clover at all; you allow it to remain?

A. Yes. I might cut it and take off the crop, but if the growth is not large I should allow it to grow after harvesting. At the end of the season there is usually a large mass of foliage. This, in October say, is ploughed under, the intention being to sow the soil with a grain crop the next year. But if I purposed to sow corn or plant potatoes next year in that soil I would not plough it in the autumn; the crop is allowed to go through the winter untouched. After two or three weeks' growth the following spring, according to the season, the clover is turned under. That is our practice here, and I believe it is one that would be beneficial for the greater part of the Maritime provinces and Quebec. Plough it under some two or three weeks after the clover has begun to grow in the spring, then there will be a large amount of vegetable matter that will very rapidly decompose the soil, and the soil is put in excellent condition for corn, or roots or potatoes.

By Mr. Kennedy:

Q. In these experiments with the pots, you say the clover was cut very finely. Would that produce a different result than if it was turned under with the plough?

A. No, I wished to give the clover as good an opportunity to decompose as possible. These pots were only six inches in diameter. By cutting up the clover, foliage and roots, and mixing it with the soil, keeping the whole moist, I expected to give the clover as good a chance to decay as if it were in the soil of the field.

TABLE No. 1.

Clover as Green Manure.

A.—Mammoth red clover.

B.—Common red clover.

No.	Kind.	Sown.	Collected.	Weight Material (fresh) per Acre.						Nitrogen per Acre.		
				Stems and Leaves.		Roots.		Total.		Stems and Leaves.	Roots.	Total.
				Tons.	Lbs.	Tons.	Lbs.	Tons.	Lbs.	Lbs.	Lbs.	Lbs.
1	A	April, '94	May, '95	10	70	5	1,476	15	1,546	101	49	150
2	A	" '93	" '95	5	1,235	9	535	14	1,770	50	61	111
3	A	July, '96	Oct., '96	6	1,310	3	1,260	10	570	82	48	130
4	B	" '96	" '96	4	1,779	2	1,445	7	1,224	70	47	117
5	A	May, '96	May, '97	.....		.....		2	1,995	.....	.....	81
6	B	" '96	" '97	.....		.....		3	125	.....	.....	62
7	A	" '97	Oct., '97	4	508	2	1,785	7	293	62	35	97
8	B	" '97	" '97	5	209	3	296	8	505	76	34	130

APPENDIX No. 2

Nos. 1 and 2.—Roots taken to depth of 4 feet; good spring growth when collected.
Nos. 3 and 4.—Sown as cover crop in orchard, roots taken to a depth of 2 feet.
Nos. 5 and 6.—Dead stems, leaves and roots; winter killed.
Nos. 7 and 8.—Nitrogen estimated.

TABLE No. 2.

Clover as a Fertilizer.

EXPERIMENTS WITH MAMMOTH RED CLOVER.	NITROGEN.	
	Percentage in Water-free Soil.	Pounds per Acre to depth of 9 inches.
Pot.	Per cent.	Lbs.
Before experiment	·0392	1,076
After experiment	·0457	1,255
Gain due to 2 years' growth of clover	·0065	179
Plot.		
Before experiment	·0437	*533
After experiment	·0580	*708
Gain due to 2 years' growth of clover	·0043	*175

* To a depth of 4 inches.

TABLE No. 3.

Clover as a Fertilizer.

Plot.	History.	Crop.
		Corn, 1901. Tons. Lbs.
Series No. 1—		
A	Clover with wheat, 1900	27 1,760
B	Wheat alone, 1900	19 1,280
		Oats, 1902. Bush. Lbs.
A	Clover, 1900; Corn, 1901	75 10
B	Wheat, 1900; Corn, 1901	51 26
		Sugar beets, 1903. Tons. Lbs.
A	Clover, corn or oats, 1902	22 600
B	Wheat, corn or oats, 1902	8 1,200
		Corn, 1902. Tons. Lbs.
Series No. 2—		
A	Oats with clover, 1901	20 800
B	Oats, 1901	15 ....
		Potatoes, 1903. Bush. Lbs.
A	Oats with clover, 1901; Corn, 1902	202 ....
B	Oats, 1901; corn, 1902	154 40
		Barley, 1904. Bush. Lbs.
A	Oats, clover, 1901; corn, 1902; potatoes, 1903	45 ....
B	Oats, 1901; corn, 1902; potatoes, 1903	38 16

HOUSE OF COMMONS,
COMMITTEE ROOM 32,
TUESDAY, March 14, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Greenway, Chairman, presiding.

Dr. Shutt appeared before the Committee, by re-call, and submitted evidence, as follows :—

THE MANAGEMENT OF ORCHARD SOILS.

Mr. Chairman and Gentlemen, I wish to speak to you first of all this morning on the management of orchard soils. For a number of years past we have been carrying on investigations in the orchards of the experimental farm at Ottawa with a view to obtaining data as to the relative efficiency or merits of different methods of soil management. We have had in view three essential features: the economic maintenance of the fertility of the soil, the control of the soil moisture at different seasons of the year, and the provision of a suitable cover crop to protect the roots of the trees during the winter season. These experiments have been continued during the past season, and we have also extended them to the experimental farm at Nappan in Nova Scotia. This latter course was determined upon consideration that the climatic conditions might possibly be different to those which prevail at Ottawa, and it was desirable to obtain local data that might be of use to the orchardists of the Maritime provinces. It will not be desirable or necessary that I should bring before you this morning all the data, they are extremely voluminous, but I shall give you one or two deductions from them.

One experiment was to ascertain the relative merits of cultivation, as against mulching for the control of the soil moisture. You will remember that we have in view the retention of the soil moisture during the early part of the season for the trees' growth, that is from the date of the opening of the season until, say, the 1st to the 15th of July, and then from that on we seek to reduce the soil's moisture in order that the tree may thoroughly ripen its wood before entering upon the winter, and thus be protected from killing by frost. The usual method, therefor, is to cultivate the orchard soil during the months of May and June, and then to sow a cover crop, preferably one of the legumes, about the 1st of July. The growth of this crop has the effect of reducing the soil's moisture; it further provides a mat of growth which will restore the humus and nitrogen of the soil, and at the same time it furnishes material which will serve to hold the snow during the winter, and thus protect the roots of the trees.

Last summer, here, was wet and cool, and consequently we did not obtain results which were very definite in either one direction or the other, as regards the relative merits of cultivation and mulching. This work will have to be continued.

One of the crops that was used in this connection was the hairy vetch. This is a legume which is now being largely used in orchards, but we found it was unsuitable for mulching from the fact that, although it may survive the winter when it is once cut in the spring, it does not throw up any aftermath, it dies. Consequently where a system of mulching is adopted, some other legume than the hairy vetch should be used.

We made trials with certain crops sown broadcast, as compared with the plan of sowing in drills. The idea of the experiment was this : When the crop is sown in drills, cultivating could be continued very much later in the season than when the crop is sown broadcast. We could cultivate between the rows, and in that way con-

serve the soil moisture by the production of an earth mulch. We found that in districts where drought prevails, or where there is likely to be a slight rainfall, that we could, by adopting this method, namely, of sowing cover crops in drills rather than broadcast, and then cultivating between the rows, retain the moisture for the growth of the trees much longer than by the broadcast method.

One or two other points I might direct your attention to in this connection. It was shown by one experiment that there is a very serious drying out of the soil when it is left ploughed and not harrowed. We all understand, I suppose, that the production of an earth mulch tends to the retention of the moisture of the soil by preventing capillarity and arresting subsequent evaporation. In one of the experiments I allude to we ploughed the crop under for investigation and left the soil in ridges for a period of four or five days. No rain fell during that period, it was hot and there were dry winds. The moisture of that plot was reduced very considerably, so much so that it did not regain its normal moisture content for a great many weeks. This shows that where the soil is ploughed, the plough should be at once followed by the harrow if our intention is to conserve the soil moisture.

Then we obtained further results last year confirmatory of those obtained in previous years with regard to the serious draft on the soil's moisture by sod. A great many orchards are, and a great many more have been, kept in sod, and we find that the soil under sod loses very much more moisture than it would do if it were kept cultivated and sown with a cover crop in the method I have outlined.

We have further obtained data with regard to disastrous effects of sowing a cereal crop in the orchard. I do not think that practice is common in this part of the country, but it is in certain parts of Canada, I know it is in parts of Nova Scotia particularly, and we have found that this practice very seriously reduces the soil's moisture content. The grains that we experimented with last year were buckwheat and rye, both favourite crops for orchard growth, and we found that there was from 100 to 120 tons more moisture lost per acre when buckwheat or rye was grown in the orchard than when the soil was kept cultivated. It is evident, therefore, that they make a very large draft upon the soil's moisture. I do not think that all this moisture is transpired by the grain crop; but naturally and necessarily when the soil is left untouched the capillarity is established and the moisture evaporates.

By Mr. Cochrane:

Q. On those crops, did you let the grain ripen?

A. Yes.

Q. In the orchard?

A. Yes.

Q. How would buckwheat do for a cover crop which was ploughed under and sown late?

A. It would not be of the same value that a legume would, because it does not appropriate the nitrogen from the atmosphere. Further, with regard to the legumes, they shade the ground more than a grain crop, and while there is a larger surface of foliage the shade which the plants afford seems to conserve the soil moisture.

Q. Have you ever tried what is called an annual, the purple clover?

A. That is the crimson clover, yes. It is not suitable for this district, because it does not stand the severity of the our winters.

Q. I heard a professor lecture on it one time, and he advised the sowing after a certain time in a season of the year. He advised to cultivate for a while and then sow.

A. That is correct. Of course the practice will differ somewhat in different parts of the country, owing to the varying climatic conditions. The crimson clover can, I believe, be used to great advantage in the Niagara district, but I think it is better to sow the mammoth red or the long red here. Our general plan is to sow from the 1st to the 15th of July, and leave the crop until the following spring, some time in

May. There is a chance of a good mat of growth about the third week of May, and then we turn it under and keep the ground cultivated until say the 1st or 15th of July, and then we sow again, and in that way we control the soil moisture, and we keep up the fertility of the soil and at the same time provide something that will hold the snow during the winter.

By Mr. Schell (Oxford):

Q. Take an orchard that is in sod, if the sod is pastured say to 1st July, would there not be less absorption of the moisture than there would be from any crop we could possibly sow?

A. Our results go to show that the sod makes very heavy drafts upon the soil's moisture. The results both this year and in 1903 point in that direction.

Q. But do you not think it is owing frequently to the orchard being pastured too late and the stock allowed to tramp over the orchard too long in the season ?

A. I do not think that would very materially affect the soil's moisture. I think this: that if we had an orchard in sod, and we had sufficient aftermath to make a good mulch, a complete mulch all over that orchard, then we might prevent evaporation, and the loss of soil moisture. That method is followed and followed with advantage in a good many districts.

Q. I have had the opportunity of making observations in this line, having visited hundreds of orchards during the last twenty years. I found in very many cases that the best orchards are those that are top dressed, keeping the surface tolerably loose and mellow?

A. Top dressed with manure?

Q. Yes.

A. Yes. A very good plan. We can prevent the loss of moisture by a dressing of manure, or by a mulch of the grass that is cut, but where there is a very thin mulch, according to our results, there is not sufficient protection from that loss. It does not prevent evaporation in the same way that harrowing and cultivation does.

By Mr. Cochrane:

Q. But in that orchard the moisture would have a bigger tendency to run off in the spring and not go into the soil at all?

A. That might be. It would depend upon the slope of the land to some extent, no doubt. I do not think the moisture gets as far into soil that is sodded, because the sod requires a great deal of moisture for its growth. It was only last year that we brought before the Committee some samples of soil that gave evidence on that point. We had had an exceptionally dry spring, and it was shown that the under sod soil was reduced to about four per cent of moisture, while the soil in the adjoining plot kept cultivated from the beginning of the season retained 11 per cent. I think those two samples, and which were presented to you here, showed the extent to which the sood had dried out the soil's moisture.

By Mr. Blain:

Q. Are we to understand then that you are opposed to keeping orchards in sod?

A. On general principles, yes. There are districts so well and equally watered that the sod method may be adopted without any disadvantage.

Q. What districts are there in Canada?

A. I think this Ottawa region is about as equably watered a district as we know of. We have been at work nine or ten years on these experiments, comparing our results here with those obtained at other places, and I do not know of any part of Ontario where we have, as a rule, such an equable rainfall as here, but in western Ontario, for instance, it is a different thing. They find it necessary there not to allow

a cover crop to grow at all in the spring, because of the draft it makes on the soil's moisture, but to turn it under just as soon as the season opens and keep the soil cultivated.

Q. I think most of the orchards in western Ontario are kept in sod?

A. Not, I fancy, by advanced orchardists but it might be by the ordinary farmers. The men who are making money out of their fruit, out of the apple trees, have adopted, or at all events a very large number of them, have adopted this method. It is the general consensus of opinion among orchardists that cultivation and cover crops is the best plan for the growth of the trees and a large quantity of good quality fruit.

By Mr. Schell:

Q. I think it depends very largely on the nature of the soil. A heavy clay soil needs cultivating, but a loamy soil does not require cultivating to the same extent?

A. To a certain extent that is certainly true. The height of the water table, that is, the usual level of the water in the soil, has also undoubtedly an effect. Generally speaking, cultivation or mulching—one or the other—should be followed.

By Mr. Cochrane:

Q. What kind of mulch would a crop of ordinary pease make?

A. You cannot obtain an aftermath from pease. Once cut, that is the end of it.

Q. I do not mean the cutting of it at all, I mean just to sow it, and sow it late enough to let them fall on the ground and be ploughed under next spring?

A. We have tried it, but we get better results with the clover. Of course that plan is not, properly, speaking, mulching. The idea of mulching is continued cutting of a green crop and leaving the material upon the ground to act as a mulch.

Q. Well, how could you have continued cutting when you recommend ploughing it in, in the spring. You would only have the spring and the fall. I understand you to say you commenced in July?

A. Yes.

Q. Well, in our section of the country you would not get a chance to cut in July at all.

A. No, and here it might or might not be. That was a separate experiment. I was explaining mulching as against cultivation, that is the effect on the soil's moisture by the bare cultivation of the ground by means of the harrow, as against having the soil with a permanent sod, the grass being cut from time to time and the material allowed to remain on its as a mulch. I might say that these results are detailed in the report of the farm which has gone to press.

Q. Very often it is so voluminous that when a man wants to get information he has to ferret it out.

A. I would be very pleased to give any further information in my power on this subject. I would say this that if the cover crop plan is not followed, it is well to cut the grass and allow it to remain as a mulch. Don't make hay of it.

Q. What do you recommend as the next best to clover? The trouble in our section of the country is to get the clover to grow.

A. I think a hairy vetch. This gave very good results with us. and the only objection to it is that it will not stand cutting. I do not know that that is a serious objection if we adopt the method that I have spoken of, namely, of sowing in the middle of July and allowing it to remain during the autumn and winter, and turning it under the following spring. We were somewhat surprised to find that it survived the winter at Ottawa, but it gave a good growth in the spring. This if ploughed under would greatly enrich the soil.

By Mr. Jackson (Elgin):

Q. What about sowing pease or oats in the spring, and instead of harvesting them when they come near the time of cutting let the hogs run through the orchards?

A. I think there are several objections to that plan. In the first place, I would not sow anything in the spring, because that is just the time when the tree needs all the moisture it can get to perfect its growth, and fill out its fruit, and if you sow anything you are putting in a rival to the moisture content of the soil. You want to keep that soil just at that period with all its water available for the trees.

By Mr. Schell:

Q. After all your experiments could you say what is the best for general districts. Do you not think where an orchard is in full bearing, where cultivation is adopted it is better to seed down with a little clover, provided you do not intend to take off any crop at all. Do you not think it is better to seed down with clover and either run the mower over that early in the summer, and leave it in the ground, or else take off the crop entirely. I think myself it is better to run the mower over?

A. I do certainly.

Q. And leave it early in the season. I do not think there is any crop equal to clover to put on as a mulch and conserve the moisture?

A. I fully agree with you.

Q. And not cultivate every year. Now, Mr. Cochrane asked you about cultivating every year, if you are going to cultivate, would it not be better to break up your orchard and seed it down with clover for a couple of years until that clover runs out, and then break it up the next spring and sow with a fresh crop of clover?

A. If the climatic conditions allow you to do that, I think that ought to be successful and good practice.

Q. In any section?

A. I do not know about that. It would make a very heavy draft on the soil's moisture in the early part of the spring.

Q. If you sow clover it will not develop enough growth to absorb moisture?

A. Not that year, but you say you are going to leave it until the following year.

Q. But cut it off before it matures.

A. But all the time it is growing it is using up soil moisture, and the point is this also: it is not only the using of moisture but the capillarity is established or set up by the soil remaining undisturbed.

Q. You know in an orchard that is in full bearing there is a good deal of labour to cultivate that every year?

A. Very true. And may not, as I have said, be necessary every year.

Q. And it is quite an important item. There is another thing which should be borne in mind in an orchard, and that is to have it as clean as possible. It is a perfect nuisance for a man to handle apples where there is rape and pease growing and there are hogs running all around and all kinds of weeds are allowed to grow.

A. We have never allowed hogs in our orchards. It is not good practice.

By Mr. Cochrane:

Q. Where you have a cover crop like that and plough it early in the spring, does not the decomposition of the vegetable matter increase the moisture?

A. To some extent it increases the moisture, to the amount of moisture it contains; it increases the moisture-holding capacity of the soil. The addition of humus to the soil always does that; it makes it capable of holding more moisture, and this is a very important quality.

APPENDIX No. 2

CORN FODDER AS SOWN IN HILLS AND DRILLS.

I wish to give you a few results in connection with an investigation we have carried on to ascertain whether more cattle food could be obtained by growing corn in hills, as against the method of planting in drills. In the year 1896, we undertook an investigation in regard to the chemistry of the corn plant, and it was shown from these results that a very large amount of what I might term real cattle food, that is of the nutrients contained in the corn, was obtained by simply allowing the corn to grow to the glazing condition. And it was further shown that the corn would not arrive at this glazing condition if it was sown broadcast. We consequently recommended that it was necessary to sow in hills or in drills rather than broadcast. The question has arisen since, is it better to plant in hills or in drills, by which method may we obtain the largest amount per acre of real cattle food. Now, we started in 1901 with four varieties of corn, two Dent varieties and two Flint varieties; the two Dents selected were Leaming and Mammoth Cuban, and the two Flints were Longfellow and Canada White. We sowed these in hills and in drills respectively. At the close of the season, that is to say, when the corn had reached the glazing condition, or the ear was as near to that state as the season would allow, we harvested the corn, weighing the products per acre and analysing the corn fodder, and we continued this for three years in succession. The results are somewhat voluminous, and I shall not trouble you with details. I just wish to bring before you one or two deductions made from the averages I have obtained of these three years' work.

First of all, as the amount of nutrients produced per acre by hills as against drills, and secondly, the value of the fodder from the Dent varieties as against the Flint varieties. To assist in making our results clear I have put the averages on the tables which you see upon the wall: 'Corn fodder; hills versus drills, average of three years, yield and weight of nutrients per acre.' Before explaining that table I wish to say this, that the analysis of the corn grown in hills showed that that fodder was slightly more valuable than the fodder grown in drills. That is to say, it contained slightly more protein or albuminoids, or what we commonly call the flesh-formers. I account for that in this way, that there was a larger number of ears of the hill grown corn fodder than on that grown in drills.

Q. Had you the same quantity of seed in the drills as in the hills—how far were the hills apart?

A. The hills were 35 inches apart each way, with four or five kernels to the hill. The drills were 35 inches apart and the corn was planted from 6 to 8 inches apart, so that there was about the same amount of seed sown by each method.

By Mr. Derbyshire:

Q. The hills would be the best?

A. Yes, in so far that the hill grown fodder contained a higher percentage of protein. The dry matter from the corn grown in hills was, therefore, somewhat the richer fodder. However, the average of three years showed that we got a slightly larger weight of crop per acre from the drills than the hills, 19 tons, 162 lbs., as against 18 tons, 146 lbs. The difference, of course, is a comparatively slight one, and I do not mean to say but that with other varieties the figures might not be different, in fact they might possibly be reversed. It shows really how close is the amount of fodder that is produced by these two methods of growing, and how similar are the results as regards yield. However, there is one other important thing that I would like to say. By further discussing these results we shall see there is something more than the weight of the crop to be taken account of. For instance, the dry matter, which is the corn fodder minus the water, the dry matter produced from the hills was 3 tons, 1123 lbs, while the dry matter produced from the drills was 4 tons, 60 lbs. It is evident, therefore, that the larger weight of fodder from the drills is accom-

panied by the larger weight of dry matter. Proceeding further you will see there are 19 lbs. more of crude protein produced from the drills than from the hill grown corn. *See* Chart No. 2, p. . ,

By Mr. Schell (Oxford):

Q. Did you sow the same quantity of seed in the drills as in the hills, or would it be more?

A. I have not with me the exact amount of seed per acre, but as I have said it would be practically the same amount of seed in both cases. The hills are 35 inches apart, and there were 4 or 5 kernels to the hill. The drills were 35 inches apart, and the corn is planted from 6 to 7 inches apart in them. This would give practically the same amount of seed in each case.

Q. I did not know whether you had measured out the exact weight. I believe you get a few more stocks in the drills than in the hills. I was wondering if you put the same weight of seed in the drills as in the hills?

A. No, we adopted the two methods I have spoken of in the collection of samples, and we covered the same area by each method.

Q. Unless you weighed it you might have put in a little more seed in the drills than in the hills ?

A. Yes, but these are the averages of three years, and I do not think the results would show any great difference in the weight of seed planted.

By Mr. Wright (Renfrew):

Q. I understood you to say that the reason that the fodder of one exceeded in feeding value of the other, was because there was more corn in the one case than in the other?

A. More ears in the hill corn, yes.

Q. I am glad to hear that, because I have always thought that, but Professor Stewart, in his 'Feed and Feeding' says that the proper way to get the most nutriment from corn is to sow it thickly in the drills that it will prevent any ears from being formed at all, and that you get more feeding value from an acre in that case. I never believed it, and could not until I went into it very extensively.

A. Well, no, you understand that weight for weight the hill-grown corn is better, but we obtained a larger amount of material from the drills, and the difference I think was more than sufficient to offset the greater richness of the hill grown corn.

Q. Yes, I think so.

By Mr. Cochrane:

Q. Some years ago there was an experiment on the farm in reference to feeding glazed corn, and this Committee was informed that an experiment had been made with sunflower, and that corn alone was not just right, and that it needed a certain amount of sunflower with it. Has that been tested further so as to establish that fact?

A. Yes, it was tested, but the test was discontinued last year, because it was held by the Agriculturist that the cost of the sunflower exceeded the return in connection with it. We made analyses, they are on record in our report, of the ensilage made with corn and sunflower mixed, and there is no doubt that sunflower contained a considerable amount of fat, and improved the ensilage, but it was held, as I said before by the Agriculturist, that the cost of raising the sunflower was greater than the result obtained justified.

By Mr. Derbyshire:

Q. That is right, we have tried that, and I believe you are right.

APPENDIX No. 2

RELATIVE VALUE OF FODDER FROM DENTS AND FLINTS.

A. Now I might draw your attention, if we have finished the discussion of that chart, to the data which I desire to bring before you with reference to the value of the 'Dents' and the 'Flints' corn respectively. Remember the Dents that were under trial were the 'Selected Leaming' and the 'Mammoth Cuban,' and the Flints were the 'Longfellow' and the 'Canada White.' These results are the averages for three years, taken from the hills and the drills together in each case. They will, therefore, furnish us with information regarding the relative merit of the fodder from the Dents and the Flints. Considering first the weights of the crops, we found that we got 3 tons, 376 lbs. more per acre from the Dent varieties, than we did from the Flints. The dry matter per acre in the case of the Dents was 4 tons, 129 lbs., as against 3 tons, 1053 lbs.; it is evident, therefore, there was not only a large increase in the weight of the crop from the Dent, but also a material increase in the weight of the dry matter. We further found that the weight of crude protein in the Dent fodder exceeded that in the Flint per acre, although the difference is not very great. That would seem to point out the superiority of the Dent varieties as compared with the Flint varieties under examination, when we consider the feeding value per acre.

By Mr. Schell:

Q. From that table there is very little difference in the value, if we consider the protein carbo-hydrates and the fat. There is very little difference in regard to the three constituents which are constituents essential to feeding value?

A. Yes. The great difference is in the carbo-hydrates.

Q. And the feeding value of that is less by far than of the protein and fat?

A. Quite true.

Q. So that there is not much difference between the two kinds of corn there?

A. The difference, as I have said, is not a very large one. You will notice that the fibre, which is the least valuable of all the constituents, is larger in the case of the Dents.

By Mr. Wright:

Q. What is the difference in weight as regards fat?

A. The fat contents were as 28 in the Dents is to 30 in the Flints, practically, they are the same. The dry matter in the Flints is richer, slightly, than that of the Dents in the actual percentage of protein, but the Dent giving a larger yield per acre than the Flints, we obtained more cattle food per acre from the Dents.

Q. Of the two Dents which do you consider the better?

A. The Longfellow has been the better with us.

Q. Have you tried the Flints ad the Dents together? Do they, mixed, make good ensilage?

A. No, I do not think we have tried that method. We generally sow them separately and keep them separately when harvesting, in order to obtain information as to the best variety.

By Mr. Schell:

Q. We have been growing Longfellow and some of the Dents, but not always together?

A. In hills or drills?

Q. In drills.

By Mr. Wright (Renfrew):

Q. What kind of Dents ?

By Mr. Schell:

A. Sometimes the Selected Leaming.

By Mr. Cochrane:

Q. Now in the case of this corn test between drills and hills, was it all cultivated alike in the hills, did you cultivate each way?

A. Yes, cultivated both ways.

Q. Did you use the hoe any in the drill?

A. Yes, you have to, it is necessary to some extent.

By Mr. Derbyshire:

Q. Is not the soil better on account of the improved cultivation that you get under the hill system?

A. Yes, the cultivation is more thorough.

Q. It is a more thorough cultivation of the soil?

A. Very true, more moisture is conserved for the corn, and there are probably less weeds.

By Mr. Schell:

Q. There is one objection to the hills when you are using a binder for cutting, it is very hard on the machine to take the whole hill at once.

A. On the contrary I have heard that it usually cost more to harvest it from the drills than from the hills, especially when wind storms damage it. It then comes down easier from the hills, but that would not happen every year.

By Mr. Wright (Renfrew):

Q. You will be astonished how often it will happen.

By Mr. Derbyshire:

Q. We have the best results in our section from hills on account of the more intense cultivation of the soil, which we think is very important?

A. Yes, on account of the greater amount of moisture available for the crop, which means that it can obtain more plant food. It costs a little more to plant it in the hills though, I believe.

By Mr. Cochrane:

Q. What is the best stage do you think for cutting it for ensilage purposes?

A. When it is commencing to glaze is the stage which we have found the best. It then contains the largest amount of nourishment, and is at the same time in the best condition as regards digestability. If it is left after that stage it becomes hard, and no doubt to some extent is impaired in its feeding value. But if it is cut before that time the corn is watery and is then not so valuable as food. That matter was very fully gone into some eight or nine years ago.

By Mr. Jackson (Selkirk):

Q. What time does it take to mature. It is an early corn, is it not?

A. These are all early corns. I could not give you the exact dates, because I have not the data here, but we have to cut the corn in September, say between the 23rd and 30th, before there is much danger of corns. There is no ecomony in planting late varieties here. We plant about the third week in May.

APPENDIX No. 2

Q. My reason for asking was to endeavour to find out what kind of corn to use in Manitoba?

A. You would require to use the very early maturing varieties in Manitoba in order to escape the frost.

By the Chairman:

Q. Such as what we call the North Dakota Flint?

A. Yes.

By Mr. Clements:

Q. Have the early varieties of Dents the same feeding contents as the later varieties?

Q. If they give the same yield, I do not know that there would be much difference.

Q. The yields, I mean?

A. The weight per acre does not always represent the feeding value. We showed that some years ago. Take, for instance, the 'Red Cob Ensilage.' We can get a larger tonnage per acre, but it will contain 5 per cent more water than earlier varieties, so that it is better to get a less yield of the mature corn than a larger yield of the immature.

Q. Because of the extra value for feeding, I suppose?

A. Yes.

By Mr. McKenzie (Bruce):

Q. Is there much feeding value lost in corn being smashed up in going through the blowers? We found the corn bruised up very much, in fact reduced almost to liquid. Is there much loss?

A. No, I do not think so. In fact, I think the finer it is the closer it will pack; the less air there is between the pieces of fodder, the less fermentation and loss there will be in the silo. Possibly the corn you refer to was immature and watery.

RAPE ENSILAGE.

There is something new I can bring before you in connection with the rape crop, namely, rape ensilage. The growth of rape has very largely increased in Canada in the last few years, and a good deal of attention is now being paid to it as a soiling crop. It is being used, as I say, as a soiling crop for feeding steers or young stock, or for the pasturing of hogs or sheep. As far as I know it has never been tried in the silo before. It is usually considered that rape is too succulent, i.e., it contains too large a percentage of water to make good ensilage. It cannot be dried and cured because the leaves crumble as they lose their moisture. Mr. Grisdale made some experiments last year with rape in the silo, and his results have shown that it may be successfully used in that way. An ensilage was made of rape alone, cutting the rape on October 15, and an ensilage was also made of half rape and half corn. I propose to bring before you for the purposes of comparison the composition of the ensilages made from corn alone, from rape alone, and from this mixture consisting of half rape and half corn. In the results before you (pointing to chart), you will notice that as regards the percentage of water, there is very little difference in the average composition of the three. In othr words, the amount of dry matter is nearly the same in all three classes of these ensilages. But when we consider the quality of that dry matter it will be noticed that there is a considerable difference in favour of the rape. This is seen more particularly in the protein content of the ensilages. For instance, 1·7 is the average percentage of crude protein in corn ensilage, whereas we find 2·67 per cent

in rape ensilage and 2·18 per cent in corn and rape ensilage. These figures might be somewhat different in another trial, but nevertheless they represent fairly well the relative value of these three ensilages. We safely infer from them that the ensilage of rape, or of rape and corn is superior to that from corn alone. Rape is a highly nitrogenous plant. It is like clovers and the legumes in that respect. Several years ago in discussing the feeding value of rape sown in drills, as against that from broadcasting, we went very carefully into the whole question of the chemistry of rape, and amongst other matters showed that although the crop contained a very large amount of water in its green condition, it was very rich in nitrogen compounds.

By Mr. Wright (Renfrew):

Q. That is not the common Essex rape?

A. Yes, dwarf Essex. At that time we were feeding it by pasturing hogs upon it or cutting it and feeding steers. These ensilages, the composition of which is here placed on the chart, were taken from the silo six months after they were put therein, that is, both in the case of the pure rape and in the case of the corn and rape, the ensilage was six months' old. There was a great loss of dry matter of the rape and rape and corn in the silo; there is always deterioration in a silo; even with our best silage crops there is a loss which is not preventable. Further, the more nitrogen there is in the crop the larger will be that loss, and the the greater difficulty there will be in obtaining first-class ensilage. That is the reason why we find so many fail in obtaining good ensilage from clover.

By Mr. McLennan:

Q. Do you attach any feed value to corn except it be in a silo, that is when it is allowed to dry in the field?

A. Yes.

Q. What percentage?

A. The loss is usually greater by drying in the field,—i.e., drying in stooks—than by preserving in the silo. Of course conditions will effect very much the percentage of loss in each case. You can have corn ensiled so well that there will not be a loss of 15 per cent of dry matter due to the fermentation processes in the silo, and you may have by the method of stooking it outside, owing to bad weather, and the immaturity of the corn, a loss of 20, 25 or 30 per cent of the dry matter. Then on the other hand, you might have a poorly constructed silo which did not exclude the air, and the fermentation might cause a loss of 25 per cent of dry matter, and the climatic conditions outside might at the same time be so favourable, and the corn so mature that when you stooked it up there would be only a loss of 15 to 18 per cent. There is no doubt that the conditions would greatly affect the loss. Corn ensilage is always succculent and palatable if good, and there is less loss in feeding it than in feeding the stook dried corn. Ensilage also is better for dairy cows; it has a favourable effect upon the milk flow, due, I suppose, to the succulency of the corn. Taking it all in all, it is much better to put the corn in the silo than to dry it in the field.

By Mr. Clements:

Q. Do you consider it an advantage to shred the corn and fodder? Some people do that in our section of the country.

A. Yes, I think so, but I cannot present any data to show that it gives better results than cutting the corn, say in half inch lengths. The whole secret of proper ensiling consists in the exclusion of air—the less air between the pieces of corn, the better ensilage as a rule. I should expect shredded corn to make good ensilage.

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By Mr. Schell:

Q. In this rape and corn that you speak of, were they grown separately ?

A. Yes, and then mixed after being put through the cutter.

Q. Of course you would not consider the ensilage from corn and rape suitable for milk production?

A. No, I would not advise it for that purpose, the rape might taint the milk.

By Mr. Cochrane:

Q. What effect would it have on the soil—which is the hardest crop on the soil?

A. I have not made a comparative study, but I think that a crop of corn would remove more from the soil than a crop of rape. They would both make pretty heavy drafts on the soil.

By Mr. Derbyshire:

Q. What is the difference per ton or per acre?

A. I cannot give you that at the moment. I should first have to make some calculations. I have not the data with me.

By Mr. Cochrane:

Q. The rape would be more cheaply produced, it would not have to be cultivated after it was sown?

A. That would depend upon the method of sowing. If sown broadcast there would certainly not be any further cultivation, but if in drills cultivation would be necessary.

You must not infer from what I have said that I am advising the growth of rape to replace corn as a silo crop. I am only saying that it may be used under certain circumstances and good ensilage obtained from it.

Q. What is the use of raising it then?

A. It is an excellent crop for soiling purposes. Then at the end of the season if you have a large quantity which cannot be fed, and there is doubt that frost might come at any time, it can be put in the silo. We have shown that rape may be cut and put in the silo either by itself or with corn and an excellent fodder produced, one which is exceedingly palatable, animals eat it with avidity, they relish it, not only so but it has more value than the pure corn ensilage. I think it would prove an excellent feed for steers or young cattle. I do not advise it for milch cows.

By Mr. Blain:

Q. Was this experiment in equal proportions of corn and rape?

A. Yes, put into the silo in equal quantities of corn and rape.

By Mr. Schell (Oxford):

Q. That table is instructive in showing the amount of protein and albuminoids contained in the rape as compared with the corn?

A. Yes, that is valuable information.

Q. I think rape would not be advisable to raise as a crop for ensilage purposes as long as we have corn?

A. Yes, however, we must always be looking to advancing our work, and I think it is extremely valuable to know that rape can be used in this way and used to advantage.

By Mr. Christie:

Q. You would not recommend any one to go in for rape instead of corn, would you?

A. For the silo?

Q. Yes.

A. No, but I should recommend everybody to grow rape to some extent, that is to say, if he had stock.

Q. To feed it on the ground?

A. Yes, for pasturing or soiling, but nevertheless it can be used advantageously in the silo, either alone or perhaps still better with corn. As you see, this was cut on October 14 at a time when the season was so far advanced that there would not be any opportunity of feeding it on the ground.

By Mr. Clements:

Q. Were those varieties of corn that you used in the tests for corn fodder early or late varieties?

A. The 'Selected Leaming' and the 'Longfellow' are both known as early varieties, in fact they are all early varieties. We do not grow any except the early varieties, because the others do not come to the glazing condition in this part of the country.

Q. We are to understand from that, Professor, if I understand aright, that in order to get the best results you are required to use the early varieties?

A. Yes, those which will come to the glazing condition before the danger of frost. It is all summed up in that sentence.

By Mr. Jackson (Selkirk):

Q. And is there any difference in those early varieties of corn as to their standing the spring frosts?

A. I cannot say that there is.

Q. Because with us if we plant the corn anywhere before May 24 and the frost comes the first week in June, then it is all cut down.

A. As far as I know there is very little difference between the varieties of corn in regard to resisting spring frosts.

By Mr. Jackson (Elgin):

Q. Have you any information with regard to the value of corn for ensilage that has been frozen? Is there any difference in value between that which has been frozen and that which has not been, for ensilage purposes. In our part of the country last year the corn was nearly all cut after a frost had come.

A. Yes, I should not hesitate to cut it after the frost, but I should get it into the silo as quickly as possible afterwards. If it has wilted very much on account of the keen frost, put some water on it in the silo so that it will pack tightly. In fact I would rather run a little risk and leave the corn standing than to cut it in an immature condition, but the point is to get it into the silo as quickly as possible afterwards, because once it thaws out deterioration sets in. I have seen very good ensilage from frozen corn.

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Table No. 4.

Corn Fodder: Dents vs. Flints (average), 3 years. Yield and weight of Nutrients per acre.

——	Dents.		Flints.	
	Tons.	Lbs.	Tons.	Lbs.
Weight of crop	20	961	17	585
Dry matter	4	129	3	1,053
Crude protein	..	580	..	569
Fat	..	28	..	30
Carbo-hydrates	2	707	2	107
Fibre	1	346	..	1,938

Table No. 5.

Corn Fodder: Hills vs. Drills (average), 3 years. Yield and weight of Nutrients per acre.

——	Hills.		Drills.	
	Tons.	Lbs.	Tons.	Lbs.
Weight of crop	18	146	19	162
Dry matter	3	1,123	4	70
Crude protein	..	564	..	583
Fat	..	28	..	30
Carbo-hydrates	2	74	2	732
Fibre	1	30	1	254

Table No. 6.

* Corn and Rape Ensilage.

——	Rape Ensilage.	Rape and Corn Ensilage.	Corn Ensilage.	Rape as put in the Silo.
Water	78·19	79·66	79·1	86·05
Crude protein	2·67	2·18	1·7	1·91
" fat	0·34	0·37	0·38	0·16
Carbo-hydrates	12·93	10·40	11·0	8·11
Fibre	2·00	5·29	6·0	2·33
Ash	3·37	2·10	1·4	1·44
" albuminoids	1·36	1·04	....	1·30
Non "	1·31	1·14	....	0·61

* The rape was cut and put in the silo Oct. 6, 1903.

To recapitulate, compared weight for weight the ensilage from rape only or from the half and half mixture of rape and corn, is superior in feeding qualities to the ensilage from corn. This is due to the larger proportion of protein in the rape. The difference that we have referred to is naturally greater between the rape ensilage and corn ensilage than between that of the mixed crops and the ensiled corn. Though there had been considerable destruction of the organic matter in the silo, for there

was not as much taken out of the silo as was put in, the resulting rape ensilage was a more valuable fodder than the fresh rape.

It is not at all likely that rape will ever become a prominent crop for the silo, but these results show that it can be satisfactorily ensiled either alone or with corn, and that the resulting ensilage is of excellent quality and richer in protein than pure corn ensilage. Those having rape at the time when the corn is ready for the silo, and which cannot be fed on the field can be assured that it may be preserved to advantage in the silo. Mr. Grisdale reports that the animals eat it with avidity. Rape, by reason of its highly nitrogenous character, makes, as we know, excellent pasture, the results I have presented show that by the aid of the silo its use may be extended throughout the winter season.

THE COMPOSITION OF ROOTS.

It may be remembered that on a former occasion I brought before the members of the Committee data that we had obtained in the farm's laboratory to show that considerable differences in feeding value might exist between varieties of the same class of roots. Our trials during the past season add further corroborative data upon this important subject. It is very evident that in addition to the influence exerted by the season and the soil, apart from the fact that the size of the root affects the composition, there are differences of a well marked and constant character which can only be attributed to the presence of inherited qualities.

You may the better understand what is meant by inherited qualities by an illustration which I can make from our study of certain mangels. Five years ago, in 1900, I selected for this investigation two varieties: the Gate Post and the Giant Yellow Globe. Year by year we have determined in these roots the percentage of dry matter and the sugar content. The results are as follows:—

Table No. 7.

COMPOSITION OF MANGELS,—TWO VARIETIES.

—	1900.		1901.		1902.		1903.		1904.		Average p.c. 5 years.	
	Dry Matter.	Sugar.	Dry Matter.	Sugar.	Dry Matter.	Sugar.	Dry Matter.	Sugar.	Dry Matter.	Sugar.	Dry Matter.	Sugar.
Gate Post	11·14	6·15	9·41	4·15	13·90	9·39	12·93	7·38	12·64	7·62	12·00	6·94
Giant Yellow Globe	8·19	2·64	9·10	4·08	10·24	5·24	10·89	6·17	9·24	5·26	9·53	4·68

The difference in feeding value between these two varieties is well marked. From these figures one would naturally expect the Gate Post, weight for weight, to be much the more valuable in feeding, than the Giant Yellow Globe. Such I believe is the case. We shall continue this investigation, applying it to other varieties of field roots, and I think it will lead to important information for the guidance of farmers.

The data in the following table may interest you. They represent the averages obtained from the analysis of various farm roots grown on the Experimental Farm, Ottawa, last season:—

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Table No. 8.

ANALYSIS OF ROOTS—1904.

—	Dry Matter.	Sugar.
Mangels, 10 varieties	11·7	6·62
Carrots 3 "	10·7	3·36
Turnips 4 "	11·3	2·11

Of the mangels, the so-called 'Sugar Mangels' were the richest, one variety containing practically 14 per cent dry matter and 9 per cent sugar. The detailed analyses are to be found in our report, and are well worthy of study by those growing roots, as every one should do. Calculated on the dry matter, the difference between the best and poorest varieties amounted to 33 per cent of the dry matter, and in sugar this difference was equivalent to 50 per cent of the total sugar.

Though the difference between mangels and turnips and carrots as regards dry matter is not large, you will notice that both the last named roots are considerably inferior to mangels from the standpoint of sugar content. In considering roots I have always been of the opinion that sugar is their most valuable constituent.

SUGAR BEETS.

In speaking of the sugar beets grown at Ottawa last season, I may say that the results, both as regards sugar content and purity were very satisfactory. Undoubtedly we had a favourable season for sugar production. Thus we obtained here the following figures:—

Table No. 9.

CONTENTS OF SUGAR BEETS,—TWO VARIETIES.

—	Sugar in price.	Corf. of purity.
Vilmorins Improved	16 6	90·2
Klein Wanzleben	16·9	87·5
Tres Riche	17·2	85·7

These data, I think, indicate a very satisfactory beet for factory purposes. We also analysed these varieties as grown on the four other experimental farms, and the results appear in detail in my report.

CHEMISTRY OF THE SUGAR BEET.

I should like to draw your attention to some work we have done on the chemistry of the sugar beet, estimating the amount of the various constituents, nitrogen, potash and prosphoric acid, taken from the soil by the beet during its growth. Time will not allow me to-day to discuss fully these results; I must content myself with referring you to my forthcoming report. I will, however, leaving out details, place before you the data representing the fertilizing constituents per acre in the beet crop at the time of harvesting. Our results go to show that at this time, the dressed roots per acre weighing 10 tons, the collars and leaves together will weigh 9 tons, 1,342 lbs. In these we find the following amounts:—

TABLE No. 10.

FERTILIZING CONSTITUENTS IN THE SUGAR BEET PER ACRE.

—	Leaves and crowns.	Dressed roots.	Total.
	Lbs.	Lbs.	Lbs.
Potash	135·9	67·6	203·5
Phosphoric acid	22·2	21·2	43·4
Nitrogen	53·6	37·4	91·0

The largest draft is upon the soil's store of potash. However, if the leaves and crowns are left upon the field, as is usually the practice, about 70 per cent of the total amount of this element in the crop, is returned to the soil. The amount of potash per acre contained in the crop of dressed roots would be furnished by an application of 120 to 150 lbs. of muriate of potash. If the leaves and crowns were carted away and used as cattle food elsewhere, the restitution of potash would have to be very much greater than that I have just mentioned—about 400 lbs. muriate would be required.

From 90 to 100 lbs. of nitrogen are contained in the crop per acre, of this about two-thirds are in the leaves and crowns.

In common with all root crops, sugar beets make a considerable demand on the soil's fertility. The results of this research will enable the farmer to realize the necessity of a generous supply of available plant food, and especially of potash and nitrogen, in order that the crop may make a rapid growth during the early part of the season. Phosphoric acid is also required to assist in the ripening of the beet. Further, to maintain the soil's productiveness at the least expense for plant food (manures and fertilizers), it will be necessary to adopt a system of rotation, in which the sugar beet finds a place at intervals of four or five years at least. Otherwise, with more frequent growing of beets on the same soil, there must be a considerable outlay for plant food to maintain the soil's fertility.

FEEDING STUFFS—MILLING BY-PRODUCTS.

During the past year we have analyzed about 100 samples of feeding stuffs. These include products from the starch and glucose factories, from the oatmeal mills, from the manufacture of split pease, pearl barley and of various so-called breakfast foods, &c., &c. This of late years has grown to be an important branch of our work. Inquiries respecting these feeding stuffs accompanied by samples are being constantly received by us from farmers in all the provinces of the Dominion. As far as time has permitted, these materials have been analysed and information respecting their value furnished to our correspondents. Our report, now in press, contains many such analyses.

The experimental farm system was instituted not only to carry on research work, to solve the agricultural problems of the day, to educate the farmers, but also to protect the farmers' interests. This has laid upon me the obligation of examining these feed stuffs, for there can be no doubt that many of these products have been sold at prices far exceeding their feeding value. At the same time I have recognized, as I have frequently told this Committee, that the control of these products should be put upon the same basis as commercial fertilizers that the government should compel the vendors or manufacturers to place the composition as regards protein and fat (the two most important constituents of cattle feeds) upon a tag attached to the bag containing the feed. I spoke at some length upon this subject when appearing before you last year and my evidence is published. Probably all by-products sold for $10 and over per ton should be so sold. My opinion is that this matter should be taken in hand by

the Inland Revenue Department, the division of the government service which annually analyzes the fertilizers, and that they should put these products upon exactly the same basis as the fertilizers. The latter are plant food, the milling by-products are cattle foods, and I see no reason why the farmer should not be protected in one as in the other.

It is, therefore, with much pleasure that I can announce to-day that steps have been taken by the Inland Revenue Department which will lead to the collection and analysis of these feeding stuffs. The matter is under their serious consideration, and I have every reason to believe will receive their earnest attention in the near future. The farmers of this country will, I am sure, regard this movement with much favour. It will be one of great service to them. It will also receive, I know, the support of all honest manufacturers and vendors.

RUSTED GRAIN.

In conclusion, I may bring before you briefly certain conclusions we have reached regarding the feeding value of the straw and grain from rusted wheat.

The effect of rust, we have ascertained, is to arrest the development of the wheat plant; it prevents the proper maturation of the seed. Consequently, much of the nutriment that would under other conditions reach the seed remains in the straw. This makes the straw more valuable as a fodder than the straw from rust-free wheat. In the rusted straw we found 7·69 per cent protein, whereas in rust-free straw there is but 2·44 per cent protein.

The grain from rusted wheat is small and shrivelled. One hundred kernels weigh but one-half the weight of a similar number of kernels from rust-free wheat. However, the percentage of protein is considerably higher in the kernels of the rusted wheat, and therefore, weight for weight, this rusted wheat is superior from the standpoint as a feed. The percentages of protein are 13·69 and 10·5 respectively. We have in this research, therefore, the satisfaction of knowing that though rust reduces the yield and furnishes a grain that is not so valuable to the miller, it leaves a straw and a grain of considerable feeding value.

INOCULATION FOR THE GROWTH OF LEGUMES.

The numerous inquiries recently received from all parts of Canada upon this subject, point to the desirability of making some announcement respecting the work that has been done, and is now being carried on, at the experimental farm, Ottawa, to obtain data as to the practical value of inoculation with cultures for increasing the growth of clover, alfalfa and other legumes. Further, since many of our consepondents are making requests for samples of inoculating material, it seems advisable to state our present position as to any supposed necessity for a general distribution of cultures of the nitrogen-fixing bacteria.

For several years we carried on experiments, both in pots and in the field, with cultures prepared in Germany and known as Nitragin, the results appearing in the reports of the experimental farms for 1897, 1898 and 1899. It was shown that in certain instances the cultures had distinctly favoured the growth of the legume, but their action was more or less uncertain, and we concluded that there was not sufficient evidence to justify us in recommending this preparation for general use. These cultures (there being at that time 17 in all upon the market) were found particularly susceptible to light and heat, and under the best conditions of preservation their vitality could only be guaranteed for six weeks from the date of preparation. It was felt, therefore, that the matter was still in the experimental stage—that further investigation and more satisfactory results would be necessary before it could be considered one of practical utility.

INOCULATION BY THE NEW CULTURES.

The re-awakened interest in inoculation is undoubtedly due to the wide publicity given to the new cultures of Dr. George T. Moore, of the Bureau of Plant Industry, Department of Agriculture, Washington, D.C., U.S.A., illustrated articles setting forth the claims of this culture and the results obtained from its use having appeared in several of the popular American magazines and a large number of newspapers. It is claimed for these cultures that by reason of special modifications in the method employed in their preparation that they are more potent and much less susceptible to unfavourable conditions than the German Nitragin.

Last spring we were kindly supplied by the authorities at Washington with samples of these new cultures for red clover and alfalfa. Experiments with these preparations were carried on in pots, using sterilized soil of a light sandy character, the instructions issued with the cultures being carefully followed. While it is true that nodules were found on many of the plants growing in the inoculated pots, these nodules were few and of small size, and no general increase in the weight of the crop was to be observed as a result of the use of the cultures. Further, as a few nodules developed on plants in two of the control (uninoculated) pots we were unable to decide if the cultures had been effective or not. It is certainly to be regretted that the results this past year have not been more satisfactory, but at present, from our own experience, we cannot report very favourably. It is possible that the sterilization to some extent injuriously affected the soil, for the gorwth was not luxuriant on either the inoculated or untreated pots.. Further trials will be made during the coming season on a larger scale, and the results made known in due course.

INOCULATION WITH SOIL.

The attention of farmers may be drawn to the fact that effective inoculation for clover and alfalfa may be obtained by the use of a certain amount of the soil from fields growing good crops of these plants, and which we may feel sure contain an abundance of the bacteria. This method has proved most successful. Such soil is not difficult to obtain in any of the provinces save, perhaps, Manitoba and the North-west Territories. Directions for using these bacteria-containing soils may be briefly given as follows:The soil containing the bacteria is mixed with a larger quantity of soil and this broadcasted over the area to be sown with the clover or alfalfa, as the case may be. The field is at once thoroughly harrowed. This may be known as soil inoculation.

Another method is to place the bacteria-holding soil in a vessel, such as a pail, and pour on water. Stir and allow to settle. After standing a little time, decant the supernatant soil extract and thoroughly moisten therewith the seed of the legume. The seed should be sown as soon as it has sufficiently dried. In connection with inoculation for alfalfa it is of importance to note that Professor Cyril G. Hopkins, of the Illinois experiment station, has conclusively shown that soil growing sweet clover (*Melilotus Alba*) may be effectively used for the inoculation of alfalfa.

THE PREVALENCE OF NITROGEN-FIXING BACTERIA IN THE SOIL.

For many years past, as is well known, particular attention has been paid by us to the system of soil enrichment by the growth of legumes and to the various means that could be taken to obtain a vigorous growth of the crop. In this connection we may say that our experience and observations have shown that the necessity of inoculation is not so great as was at one time thought. We are led to believe that the existence of the bacteria that serve to fix the nitrogen in the legume is by no means restricted to small or isolated areas. We have found—at all events, in Ontario and the Eastern

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provinces—that failures in the past to obtain a good catch of clover have been due rather to deficiency of moisture, an unsuitable mechanical condition of the soil, poverty in humus, or insufficient drainage, than to the absence of nitrogen-assimilating germs. The killing out of clover may, we think, in the majority of cases be attributed to the severity of the winter or water lying upon the soil in spring. The general —though probably not universal—presence of root nodules on the clover in Ontario and the east leads us to believe that special means for inoculation have not been necessary, save, perhaps, in exceptional instances in the aforementioned provinces. It is due to these facts, we consider, that there has been no general demand for inoculating material.

In a rectn tour through the larger agricultural districts of British Columbia, the writer found these organisms present upon every roct of clover examined, and especial care was taken to obtain information upon this matter in all the agricultural districts visited. The same stands true alike for the irrigated soils of the dry belt (Nicola and Okanagan valleys), as well as for the lower Fraser and the coast soils and those of Vancouver Island. The luxuriant crop of clover observable in British Columbia almost everywhere this year convinced me that inoculation was not generally necessary in that province.

THE BENEFIT IS ONLY TO BE OBTAINED THROUGH THE LEGUMES.

It would seem from certain of the inquiries lately received that there is an impression abroad that the benefit to be derived from the nitrogen-fixing bacteria can be obtained directly from inoculation of the soil, *i.e.*, without the agency of a clover or other legume crop. This is, of course, erroneous, for these beneficial bacteria are only of assistance to the legumes. It is only through the growth of the clover (or other legume) and the subsequent decay in the soil of its roots (or whole plant) that the soil is enriched in humus and nitrogen. It is obvious that where clover, bearing nodules on its roots, grows luxuriantly, inoculation is unnecessary.

Having read over the preceding transcript of my evidence, I find them correct.

FRANK T. SHUTT,
Chemist of the Dominion Experimental Farms.

MILLING TESTS OF WHEAT,—NEW VARIETIES

House of Commons,
Committee Room 34,
Tuesday, March 21, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock am., Mr. Greenway, Chairman, presiding.

The Chairman.—We shall hear this morning from Dr. Charles E. Saunders, Experimentalist at the Central Experimental Farm.

EXPERIMENTAL FLOUR MILL.

Dr. Saunders.—Mr. Chairman and Gentlemen, last year when I appeared before this Committee, I made some reference to the fact that an experimental flour mill was being purchased for the study of the different varieties of wheat, and also for the study of wheat in different conditions of plumpness, hardness, &c. This morning I purpose to bring before you, first of all, some of the results of the work which has been done with the aid of the new mill. The apparatus really includes two small mills, one having a pair of corrugated rollers and the other a smooth pair. Large commercial mills are generally equipped with several kinds of rollers, but two pairs are sufficient for most experimental purposes. The machine is provided also with a sifting apparatus and a set of 12 sieves, running from No. 16 wire gauze (with meshes of about one-sixteenth of an inch) up to No. 14 silk (which has approximately 140 meshes to the running inch). The mill, of course, is adapted to the use of very small quantities of wheat, because, as you will readily understand, it is frequently necessary to reach a decision as to the quality of a wheat before we have any large quantity of it on hand, and in many cases we are saved much time and trouble by the use of a mill of this kind, as we are able to eliminate varieties of poor quality without waiting for the accumulation of a large amount of grain before making a test.

The quantities that we use are about the same as those employed in other laboratories where experimental milling is carried on five pounds or less of grain being sufficient. Indeed, our mill enables us to make quite satisfactory tests with as little as one or two pounds of wheat. We usually make what is called 'straight' flour, a term which includes all the flour of reasonably good quality that can be obtained from the wheat. It is possible also to make 'patent' flour with this small mill, but that is more difficult, and is not necessary, as a rule. I might explain, however, to those who are not familiar with milling, that it is quite impossible in an experimental flour mill, whether it be small or large, to make flour of the very finest colour. Everyone will easily understand that when accurate quantitative results are required it is necessary to run all the materials through to the end in each operation, to stop the machinery repeatedly, and to thoroughly brush out the inside of the mills and of the sifting apparatus. Under such circumstances no miller would expect the flour produced to be of the best colour. This, however, does not interfere at all with the accuracy of the results, because all our samples are treated alike and are judged by their relative rather than their absolute colour. The flour produced in the mill is carefully studied by mechanical and chemical methods. The chemical work, such as the determination of

nitrogen, fat, &c., is done in the chemical laboratory. In my division the quantity of gluten is determined, and the quality also as far as it can be decided by empirical methods. The colour and the water-absorbing power of the flours are also studied.

The most important test, however, is in the making of bread where both the quality and quantity of the gluten combine to give the results. The quantity of flour required for a baking test is not large, but the work must of course be done with considerable care if trustworthy conclusions are to be reached.

I have a small fermenting cupboard which is kept at a temperature of about thirty-four degrees centigrade, and a small gas oven which is easily regulated to the desired temperature for baking (about two hundred and ten degrees centigrade). By keeping the conditions as nearly uniform as possible, one batch of bread can be compared with another fairly well; but when very accurate comparisons are wanted, the flours which are being compared are always put through in the same batch. Six different kinds of flour can be fermented and baked together.

Two rather distinct investigations are being carried on at the present time. The object of the first is to determine the relative value for milling purposes of all the varieties of wheat grown in Canada; good samples being, of course, used in all cases. It may not be generally known that some very poor kinds of wheat are grown in eastern Canada and also, occasionally, on the western prairies; though in the latter districts there is a decided preponderance of Red Fife which keeps up the average quality of the whole crop. In eastern Canada poorer varieties have the ascendency; and I am convinced that the relatively low price of eastern wheat is not due primarily to any defect of climate or of soil, but rather to lack of care in the choice of the varieties used for seed. When first-class varieties, such as Red Fife or White Fife are grown in eastern Canada, the crop obtained in an average season is of very high value for milling purposes. Ordinary commercial samples of eastern spring wheat are, however, usually of inferior quality. Much the same condition exists in regard to winter wheat, that is to say, the varieties of winter wheat have not been selected for their suitability for bread-making purposes and the average quality of the winter wheat grown in Ontario is by no means as good as it should be.

RED FIFE COMPARED WITH WHITE FIFE.

I wish to present to you two cases which serve to demonstrate the practical value of experimental milling and baking tests. One of the questions which we are sometimes asked is as to the relative value of Red and White Fife for milling purposes. In order to make a comparative test, it was necessary to obtain both varieties in pure condition, and grown in the same field in the same season. For this purpose we took samples from our own uniform test plots. In this way we were able to be sure of the uniformity of the conditions under which the varieties were grown and also of their purity. Commercial Red Fife is often somewhat impure and commercial White Fife is usually strikingly so. The samples of the two varieties taken from our own plots were carefully ground, the process of milling being the same in both cases, and the two samples of flour were then carefully analyzed and baked. The two flours were of the same colour, yielded about identical amounts of gluten, absorbed the same quantity of water in making dough, and gave loaves of the same volume, colour and texture. (Samples of flour and bread were shown).

It is clear that the flour from White Fife is equal in value that made from Red Fife. In fact, the two are practically indistinguishable.

So far as yield and earliness are concerned, Red Fife and White Fife are also almost identical.

By the Chairman:

Q. Are those Ontario samples of wheat ?

A. They were both grown on the Experimental Farm at Ottawa in 1902. That

was an exceptionally good year, and we have saved several samples from that crop for study.

Q. You have made no tests of western wheat?

A. I have tested western grown Red Fife, but not White Fife.

I may say that this investigation was only commenced last autumn, and has, therefore, not yet progressed very far. The milling and baking test is the most accurate test we have found for the comparison of varieties. In some cases one finds a difference in this way between varieties wihch in other respects appear identical. There is practically no difference between Red and White Fife, except that White Fife has a yellow skin and Red Fife has a red skin. However, the red skin is fashionable just now. There is undoubtedly a prejudice, sometimes a strong one, against yellow skin.

By Mr. Burrows:

Q. You say that White Fife is equally productive?

A. Yes.

By the Chairman:

Q. Not more productive?

A. I think not, as a rule. It varies in different localities, but taking the average on the experimental farms there has not been any great difference in productiveness.

Q. We think it more productive in the west, at least I do?

A. On some soils it may be more productive.

THE MILLING VALUE OF CLUB WHEAT.

We have had inquiries from northern Manitoba in regard to the milling value of a variety of wheat which goes by the name of Club, which has a small, thickened head with red chaff. The wheat itself is very fine looking and attractive when well matured. Compared with Red Fife, as grown at Indian Head last season, the Club wheat from northern Manitoba can scarcely be said to be inferior in appearance. Both samples are excellent. (Samples shown).

By Mr. Burrows:

Q. From what part of northern Manitoba?

A. The district of Gilbert Plains.

Q. They call it Kidd wheat out there, from the man who brought it into that district?

A. The sample of Club wheat sent to us was ground this winter and the flour was analyzed. It was found to be somewhat deficient in quantity of gluten. The gluten is also lacking in strength. The colour of the flour is a dark, unattractive yellow.

Q. They claim out there that Club wheat is an early variety and matures four or five days earlier than Red Fife?

A. That is no doubt quite correct. I wish to call particular attention to the two samples of wheat, because of the fine appearance of the Club wheat, even when compared with the best Red Fife. The flour from Club wheat shows its inferiority to a certain extent on analysis, as I have just pointed out. But the baking test shows that it is of very poor quality; and I should, therefore, strongly advise the farmers of northern Manitoba to discontinue the cultivation of this wheat.

By Mr. Bland:

Q. Does the Red Fife grown in Ontario or Quebec give as good results as the No. 1 Hard in Manitoba and the west?

A. That is a question to which I am scarcely prepared to give a decided answer

at present; but so far as the investigations have gone they do not show any inferiority in the quality of patent flour made from the Red Fife grown in eastern Canada. It is unlikely, however, that comparatively soft Red Fife will yield as large a percentage of patent flour as would be obtained from No. 1 Hard.

The bread made from Club wheat is singularly unattractive, being heavy and very dark in colour, and when compared with Red Fife it is strikingly inferior. These loaves (specimens shown) were baked yesterday under exactly the same conditions, the same amounts of yeast having been used and the dough having received exactly the same treatment in both cases. While it might be possible by varying the conditions to produce better bread than this from Club wheat, its quality would in any case be very poor. This bread was made from that attractive sample of Club wheat which I showed to you this morning, and I wish in this connection to emphasize the fact that it is quite impossible for anyone to tell good wheat by merely looking at it.

Q. That gives a flour somewhat like Goose wheat?

A. The flour from Goose wheat is not so dark as this.

By an Hon. Member:

Q. Could not the dark colour be accounted for by the method of milling?

A. No, sir. All the varieties of flour which I have here (ten in number) were produced in the same mill and by essentially the same method. Yet the others are not dark like the Club. The Club was ground twice with the same result.

By Mr. Burrows:

Q. Do you remember who sent that wheat to you?

A. Mr. George Dow, of Gilbert Plains, Manitoba.

Mr. BURROWS.—I know the district it was grown in, and the people out there think it is a wheat of very good quality.

The CHAIRMAN.—It certainly looks good. I do not know whether you can see any difference when you compare it with this sample of Red Fife.

By Mr. Jackson (Selkirk):

Q. By stone-grinding you might get a pure flour?

A. I do not think that stone-grinding would improve its appearance.

Q. It makes very sweet bread, although not very light?

A. Of course the stone-grinding is out of fashion and one has to consider the fashions very much in these matters.

THE BLEACHING OF FLOUR.

The question of colour of course cannot be dismissed without the consideration of bleaching. As you are probably aware, one, at least, of the very large milling companies in Canada, now bleaches its first grade flour. It is true that a rival company announces that by the use of first-class wheat the necessity for bleaching is avoided. It remains to be seen whether the public will prefer the bleached flour with its pale cream tint or the unbleached with its rather deep cream colour. The flour in both cases is made from Manitoba and other prairie wheat. I have samples of flour and bread to show how the colour of the flour from Club wheat is changed by bleaching. The process I use in the laboratory for bleaching flour is not identical with that which is used in the large mills, but it gives results which are similar so far as colour is concerned.

By Mr. Finlay:

Q. How is it bleached?

A. In the laboratory it is most convenient to use oxides of nitrogen generated by the decomposition of nitric acid; but in large mills the most popular method is to

use the mixture of gasses produced by passing electric sparks through air. You will see from these samples that the bleached flour is somewhat more attractive in appearance and makes rather more attractive looking bread; but the bleaching does not remedy the defects of the gluten, and the bread from the bleached flour is heavy, like the other.

By Mr. Jackson:

Q. How about the value of this flour for food?

A. It is fairly nutritive flour, but its commercial value depends of course on its attractiveness to the public, and it certainly appears from these samples that bread made from pure Club wheat would be almost unsaleable. If the flour were mixed with a sufficient quantity of Red Fife, it could of course be easily marketed, but in pure condition it would command only an extremely low price, I think.

By Mr. Miller:

Q. Does bleaching render the flour less wholesome?

A. Bleached flour is believed to be quite as wholesome, provided the treatment has not been very severe. The subject, however, needs further investigation.

By Mr. Burrows:

Q. What effect would altitude have upon the growth of that Club wheat?

A. It might have a favourable effect. The sample of Red Fife with which I have been comparing it was not grown in the same district, but is similar in appearance and quite comparable with it. Even the earliness of the Club wheat is not a sufficient reason for retaining it, because we have other varieties, such as Stanley and Preston, for instance, which are very distinctly superior to Club wheat for milling purposes, and which I believe are quite as early, and will probably give a larger crop. The Club wheat does very poorly here at Ottawa.

By Mr. Cochrane:

Q. It is particularly liable to rust, is it not?

A. It is extremely subject to rust here. Possibly in a drier climate it might not rust badly.

COLOUR OF FLOUR.

While on the subject of the colour of flour, I should like to call your attention to the fact that Red Fife does not give white flour. It is sometimes maintained that one of the strong points about Red Fife wheat is that it gives white flour. As a matter of fact, some inferior varieties give a colour nearer to white, flour from Red Fife wheat being always cream-coloured. I should rather say of Red Fife that it gives the palest flour of any strong wheat. The flour obtained from White Russian is much nearer to white, but is distinctly inferior in strength. Very soft winter wheats, such, for instance, as this sample of the variety called Arcadia, yield flour almost pure white in colour, but poor for bread making. These instances serve to show that the paler flours are not necessarily the best. Indeed one cannot judge flour by its appearance any more than one can wheat. This white flour from soft winter wheat would probably prove admirable for biscuits and pastry, but is not a success for bread-making, as this loaf of heavy bread proves. (Sample shown). The bread has what may be described as a dead white colour which is, to most people, less attractive than the cream colour when Red Fife flour is used.

By Mr. Herron:

Q. Where was that winter wheat grown?

A. At Burlington, Ontario. If you compare that loaf of bread with the bread made from White Russian spring wheat grown here at Ottawa, you will see that the

White Russian gives a larger, less heavy loaf, though the colour is similar. The other strong, or moderately strong, wheats that we have nearly all give flour of a deeper cream colour than Red Fife, the colour in some cases being quite a decided yellow. I have samples here of flour made from Stanley and from Preston wheat which, as some of you are no doubt aware, are crosses between Red Fife and Ladoga. These are fairly strong flours, both a little darker in colour than the Red Fife. I have also a sample of flour made from Ladoga. Ladoga was one of the first early wheats brought into the country after the establishment of the experimental farms; it was grown for some time until it was found that the flour made from it was rather too dark in colour to suit the public taste. Now, I believe, it is not grown largely in any district, except on the Peace river, in the neighbourhood of Fort Vermilion, where it is said to be the sole source of supply for the Fort Vermilion mill. The Ladoga makes a very fair loaf of bread, though the yellow tint is rather pronounced. Of course, compared with the Red Fife, there is quite a difference. At the same time, the yellowness is not altogether unattractive to many people. It is not a deep yellow like that which Club wheat gives. I have also here, for comparison, small loaves made from some of the cross-bread wheats, which are now being introduced by the experimental farm, Preston, Stanley and Early Riga. They give very good bread, but not quite equal in colour to Red Fife.

By Mr. Thompson:

Q. What is the name of the variety that they grow in the Peace River country?

A. The Ladoga.

Q. They get the best results from that?

A. I think it is the only early variety which they have tested thoroughly. We have sent other early varieties to them from which we think perhaps they will get better results. Varieties as late as Red Fife cannot be depended on to ripen there. This is perhaps all I need say on the subject of milling tests of the different varieties of wheat.

THE MILLING VALUE OF THE DIFFERENT GRADES OF WHEAT.

By the Chairman:

Q. Do you know anything of the tests that were made by the Agricultural Department in the North-west?

A. Those were tests of the different grades of wheat, not of different varieties. We are now making a somewhat similar series of tests at the experimental farm. Some months ago a request was received from the Manitoba Grain Growers' Association that we should undertake an investigation into the relative value of the different grades of wheat for milling purposes. Of course our investigation into the relative value of the different varieties of wheat is carried on with good samples only; but in studying the different grades we are concerned with mixtures varying in their plumpness, hardness, &c. So that the two investigations are quite distinct in character.

By Mr. Jackson (Selkirk):

Q. Can you tell us the amount of water absorbed by these different kinds of flour, when made into bread?

A. They absorb about 60 per cent of water when made into dough; and when baked thoroughly the bread retains about two-thirds of this added water. That is to say, 100 lbs. of flour will make about 160 lbs. of dough and about 140 lbs. of bread.

Q. Are they all alike in this respect?

A. Not identical, though among good varieties the differences are slight.

Q. Which variety of wheat takes up the higher percentage of water?

A. I think the Red Fife absorbs more water than any other variety we have yet tested, but the tests are quite incomplete at present. The amount of water absorbed

in making dough, and the amount retained in the bread vary very much according to the methods of different bakers. In some cases the quantity of water retained is very large, but the bread is then usually too moist and insufficiently baked.

This request from the Grain Growers' Association was approved by the Minister and the investigation was commenced some weeks ago. It has not yet been carried very far, but some of the results obtained may be of interest to you. We obtained from Mr. Horn, the chief inspector at Winnipeg, mixed samples of each grade of wheat (except extra No. 1 Hard). The grades represented were:—No. 1 Manitoba Hard, Nos. 1, 2 and 3 Manitoba Northern, No. 4 Extra, No. 4, No. 5, Feed, and No. 2 Feed. In addition to these we obtained also a sample of No. 5 Frosted, making 10 samples in all. Each of these was thoroughly mixed, representing a large number of different shipments of grain. We thought it better to study such mixed samples, as they would be thoroughly representative, rather than to trust to special samples from individual farmers. The grain was cleaned for us, in Mr. Horn's office, to bring it up to the standard of the grain as it leaves Fort William. Further cleaning seemed desirable before milling. The loss from this cleaning increased gradually from one-fifth of one per cent in the case of No. 1 Hard to two per cent in the case of No. 2 Feed. The percentages of flour obtained from the different samples show a fairly regular decrease from 71 in No. 1 Hard to 49 in No. 2 Feed. But the total amount of flour obtained does not give an accurate idea of the relative value of the different grades. The quality of the flour must also be considered. No. 1 Hard gave 65 per cent of flour of fair quality and 6 per cent of low grade flour; while No. 2 Feed gave 22 per cent of flour of fair quality and 27 per cent of low grade flour. The other grades form a fairly regular series between these two extremes. It is unlikely that the lowest grades of wheat will give any flour at all that will be quite equal to the best product from the highest grades.

At the same time the lowest grades do contain a certain amount of serviceable flour. It does not follow, however, that it would pay any miller to buy such wheats at any reasonable price, because the expense of milling would be much greater for each barrel of flour than when good wheat was used. The percentages of bran and shorts increase as we go down the grades. There is only one other point which should perhaps be mentioned in this connection, namely, that No. 5 Frosted, seems to be of about the same value as the regular No. 5. This is perhaps all that I should say on this subject, as the investigation is not yet completed.

By Mr. C. Shaffner:

Q. Will you be able to tell us what each grade is worth for flour?

A. When the investigation is finished I hope to be able to reach conclusions as to the relative values of the different grades for milling purposes.

Q. You say that the samples you are analysing are mixed?

A. Yes, the samples were obtained from many different shipments of wheat, a small quantity from each. But, of course, each sample contains wheat of only one grade.

By Mr. Jackson (Selkirk):

Q. Did I understand you to say you could make good flour from frosted wheat?

A. Good flour can certainly be made from some samples of frosted wheat.

Q. No. 1 frosted, for instance?

A. Yes, I do not think there would be any difficulty if the wheat was almost ripe when frozen.

Q. Our experience with flour made in the country mills is that we cannot make proper bread with flour made from frozen wheat?

A. No doubt many samples of frozen wheat would yield flour of inferior quality.

By Senator Young:

Q. You say you obtained the samples from Inspector Horn?
A. Yes.
Q. You got average samples from each grade?
A. Yes.
Q. That would be the average of the bins in Fort William?
A. Yes, after the Fort William cleaning.
Q. He screened the grain before sending it to you?
A. Yes.
Q. You understand that the average in the bins is above the minimum of the grades?
A. Yes, sir.

NEW VARIETIES OF EARLY-RIPENING WHEATS.

Ever since the experimental farms were established efforts have been made to obtain, from other countries, desirable varieties of early-maturing wheat. The Ladoga wheat was one of the first of the sorts introduced with a view to extend the wheat area northward on the western prairies. This experiment was to a certain extent successful, and Ladoga wheat is now an important variety in some northern localities. We are still continuing this kind of work, however, and I wish to call your attention to one or two rather interesting varieties which we have obtained lately. We had last season a new variety from Hungary under the name of Hungarian White, which is quite promising.

By Mr. Schaffner:

Q. A bearded wheat?
A. Yes.
Q. A spring wheat?
A. It is a spring wheat. It is somewhat earlier than Red Fife, perhaps six days in an average season, and has rather a long, red kernel, gives flour of good quality, and altogether is promising for cultivation in some of our northern districts. We have made arrangements to test this wheat at all the experimental farms during the coming season, and we shall be able after that, and after the milling tests are completed, to speak more definitely in regard to it. Of course, all the new varieties we obtain are now subjected to a milling and baking test before they are sent out to farmers. We have also obtained from central Ontario a bearded wheat which is very promising for quality, and which is said to be extremely early. It was sent to us by a farmer who selected it out of a field of mixed wheat. It is probably of Russian origin. It is very much like some of the Russian varieties we have (especially the Ladoga), but is, perhaps, superior to any of them. It is called Burkinshaw's Early. We have also obtained from Australia some new varieties, of which the most interesting is one known as Bobs, which is said to be almost perfectly resistant to rust. The claim that a variety resists rust is so commonly made that we always receive it with a certain amount of scepticism. At the same time the growth of this new wheat will be watched with great interest.

THE ORIGIN OF RED FIFE WHEAT.

Among the varieties obtained from Europe last season it was very interesting to find Red Fife, under another name of course. Indeed, we received two or three samples of wheat, under different names, which very closely resemble Red Fife, but absolute identity has been established in only one case thus far. The account of the origin of Red Fife wheat as given in the Canadian Agriculturist for 1861, is well known, but

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should perhaps be quoted again in this connection: 'About the year 1842, Mr. David Fife, of the Township of Otonabee, Canada West, now Ontario, procured through a friend in Glasgow, Scotland, a quantity of wheat which had been obtained from a cargo direct from Dantzic. As it came to hand just before spring seed time, and not knowing whether it was a fall or spring variety, Mr. Fife concluded to sow part of it that spring, and wait for the result. It proved to be a fall wheat, as it never ripened, except three ears, which grew apparently from a single grain. These were preserved, and although sown the next year under very unfavourable circumstances, being quite late, and in a shady place, it proved at harvest to be entirely free from rust, when all the wheat in the neighbourhood was badly rusted. The produce of this was carefully preserved, and from it sprang the variety of wheat known over Canada and the Northern States by the different names of Fife, Scotch and Glasgow.'

This account has given rise to the idea that Red Fife is a Canadian wheat, that it originated with Mr. Fife, in some wholly unaccountable manner or as a sport from some European variety. It always seemed to me probable that the kernel which Mr. Fife obtained was merely a seed of some common European variety which had found its way into this wheat from Dantzic. Last season, among our newly-imported European varieties, was one under the name of 'Galician,' obtained from a seedsman in Germany. Now, Galicia lies about 300 miles inland from Dantzic. This imported Galician wheat struck me at once as being very much like Red Fife, and I therefore sowed it last spring alongside Red Fife, and watched them both very carefully throughout the season. They proved to be identical at all stages of their growth as well as when the grain was harvested. A larger plot of Galician wheat furnished grain for milling purposes. This was ground, analyzed and baked. Red Fife from a plot in the same field was similarly treated. The two samples of flour were found to be alike in all respects and thus the absolute identity of the two wheats was established. The firm from which the seed of the Galician wheat was obtained informed me that the variety was procured by them many years ago from a farmer in Galicia. It seems, therefore, quite clear that the kernel of wheat which came into the hands of Mr. Fife, was a kernel of this Galician spring wheat, accidentally present in the cargo of winter wheat from Dantzig, of which he obtained a portion. It is interesting to be able to throw this light on the subject of the origin of Red Fife, which has hitherto seemed very dark. There is no doubt that this variety is still grown in Europe, and so far as our tests have gone, it seems to be of the same quality there as it is here.

IMPROVING WHEAT BY CROSSING AND SELECTION.

Besides improving wheat, we have of course endeavoured to improve our varieties, by crossing and selection, and this work has given rise to a number of new sorts. I have referred already to the introduction of Ladoga wheat, and to the crosses which were made between that variety and Red and White Fife, the object being to combine, as far as possible, the quality of the Fife wheats with the earliness of the Ladoga. Among these cross-bred sorts Preston, Stanley, Huron, and Percy are attracting most attention, and I have here samples of the flour of two or three of these varieties. (Samples produced).

By Mr. Cochrane:

Q. Taking them all round, is there any better variety than Red Fife?

A. I think not, for those districts where Red Fife can be harvested every season in good condition. The object of introducing these other wheats is not to displace Red Fife, but to fill the gaps where Red Fife cannot be successfully grown. I hope, some day to produce a variety superior to Red Fife for milling purposes; but at present its only equal appears to be White Fife.

By Mr. Blain:

Q. How would the wheat that is being grown up in the Peace river district succeed in the province of Ontario?

A. The variety they are growing there is Ladoga. The samples of Ladoga flour and bread which I have here were made from Ladoga wheat grown in Ontario. It is a good wheat, gives good flour, and bread, but the flour is yellowish in colour and not equal to Red Fife for strength. But Ladoga is superior to some of the varieties that are regularly grown in Ontario and Quebec.

By Mr. Cochrane:

Q. Are any of your crosses more prolific than Red Fife?

A. Yes, some of them give larger yields than Red Fife in some localities; but a great deal depends on the soil and climate in which they are grown.

Q. Before you leave this subject, will you tell us what your conclusions are from the experiments in baking bread from the different varieties of wheat?

A. The conclusions can scarcely be expressed in general terms, except that varieties differ very much in the baking value of the flour made from them, and that it is not possible always to distinguish good wheat from poor wheat by the appearance alone. The work of testing the varieties is not yet very far advanced, but I hope, in the course of time, to publish a bulletin on the subject, in which full information will be given as to the value of all the common varieties of wheat for milling and baking purposes. I wish to call your attention to two new varieties of considerable interest on account of their earliness. The first has been named 'Bishop.' It is a cross between Ladoga and a very early wheat obtained from India. It is beardless, has rather a short head, and the kernels are yellow, looking somewhat like White Fife. It is very early in ripening, and we hope that it may prove of value in some of the higher altitudes in the Northwest. The earliest wheat we have has been named 'Aurora.' (Specimen shown). It was obtained by selection from a mixture of wheats from India. It ripened this year at Ottawa on July 26, having been sown on April 23. Of course it would not ripen on July 26 in northern districts, but I mention the date to show how extraordinarily early the variety is. It matures in about the same number of days as six-row barley. It is of very fair quality and I hope by using it as a parent (particularly by crossing it with Red Fife), to obtain a variety of really excellent quality that will ripen extremely early. Red Fife this past season ripened on August 9, having been sown on the same day as the Aurora. The latter variety was, therefore, two weeks earlier. We have obtained other interesting sorts from India from mixed commercial samples. The Indian wheats are marvellous mixtures. The millers of England are complaining that a large amount of dirt is deliberately added to the wheat for the purpose of giving it weight, and if this is true, it is not surprising that we should find mixtures of eight or ten varieties under one name. No care seems to be taken to keep the wheat true to name, or to any fixed type.

In our work of selection we not only separate out pure varieties from mixtures but we also sometimes select individual plants from fixed varieties when they give indications of special productiveness or other good qualities. For instance, we take such a variety as Red Fife and sow a large number of grains four inches apart each way, so that the individual plants will be clearly seen when growing, and from this plant we select certain plants which by their earliness, or their productiveness, or some other quality, give promise of becoming particularly valuable. This plant then becomes the mother-plant of a new strain of wheat. We are not able to say yet what results will be obtained from this sort of work, but we hope that there may be considerable gain in earliness, and possibly in yield also, by this method of selection. We have now eight new strains of Red Fife which have some superiority in regard to earliness, and have in some cases other characteristics which distinguish them from ordinary Red Fife, although we could not fairly say they are new varieties. Possibly we may obtain in this way an early Red Fife. Such a wheat would be of considerable value.

By Mr. Bland:

Q. What was the name of the wheat which you said was considered to be rust proof?

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A. The 'Bobs.' It was supposed to be a cross between wheat and rye.

Q. Do you think it would be a success in Ontario?

A. I have not yet enough information in regard to it to enable me to form an opinion. The wheat was received this winter from the originator of it, in Australia. It was the result of an attempt to cross wheat with rye; but there is considerable doubt as to it being a true cross.

Q. It is not likely to be a very good wheat for flour, I suppose?

A. We have not been able to test it, as the quantity we received was only about a tablespoonful.

By the Hon. Mr. Fisher:

Q. In these samples of wheat of the different grades sent to you by Mr. Horn, did you find a very great admixture of other varieties than Red Fife?

A. There were not very many kernels present which clearly belonged to other varieties.

Q. Were they practically all Red Fife?

A. They nearly all looked like Red Fife, but that type of kernel is common to several varieties, so that an accurate separation by the eye alone, is not possible. It is only in cases where there are marked differences in the shape of the kernels or in the colour of the skin that one can separate out other varieties from those of the Red Fife type. I have no doubt that these samples received from Mr. Horn consist chiefly of Red Fife. We intend, however, to sow, next spring, samples from these different lots (as far down in the list as there is any probability of them germinating) and in that way we expect to determine with fair accuracy the percentage of Red Fife that each contains. This will be done by inspecting and counting the heads produced; as the heads give a better chance of making separations than the kernels alone.

Q. Do you think there has been any serious cross-fertilization of the Red Fife with other wheats in the fields and that mixtures of other varieties with Red Fife may have been produced in this way?

A. I believe that such cross-fertilization undoubtedly occurs when mixed wheats are sown; but I do not think it happens often enough to be a matter of very great importance as affecting the purity of seed grain. At the same time the occasional production of accidental crosses needs to be considered when efforts are being made to secure seed of any variety in a condition of absolute purity.

By Mr. Cash:

Q. Were these samples of the different grades of wheat to which you have referred taken from shipments from the Northwest Territories, or from Manitoba?

A. From both.

Q. The reason I ask is that if the grain was grown on land that had timber on it, such as our poplar, it would be soft; but the same wheat grown on ordinary prairie land would produce grain of a darker colour?

A. As I have already explained, the samples we received were made up from many different shipments of wheat, so that no doubt all the common kinds of soil are represented. I hope to obtain next season some samples of soft wheat grown on the kind of land you referred to, in order to test their value, as compared with hard wheat, for milling purposes.

By Mr. Jackson (Selkirk):

Q. I understood you to say you cannot pick Red Fife from Club wheat. How can a farmer pick it out?

A. I expect him to pick it out in the field. The heads of Club wheat are very different from those of Red Fife, though the kernels of both varieties look much alike.

Q. How about the man who is buying grain?

A. As a rule he can tell very little about its purity. An absolutely pure sample of Club wheat could be identified, but mixtures of kernels are extremely difficult to

deal with. It is usually possible, however, to determine varieties by the kernels alone if one is quite certain that the sample is one variety only.

Q. You can easily tell Ladoga from Red Fife?

A. If they are pure it is not a difficult matter to distinguish them, but it would be impossible to pick out, for instance, ten per cent of Ladoga kernels associated with 90 per cent of Red Fife.

By Mr. Schaffner:

Q. Where was that red Club wheat grown, on the open prairie or on land that was burnt off?

A. I do not know the character of the land on which it was grown.

Q. On the Turtle Mountain the timber has been burnt off, and the farms growing wheat a mile or so away grow hard wheat, but where the timber has been burnt off the wheat is soft.

THE CHAIRMAN.—That is true of scrub land as well.

By Mr. Lewis:

Q. Is there any difference in commercial value between this Club wheat and Red Fife?

A. Probably not, if the buyer does not know what variety he is buying. I do not think that buyers distinguish varieties as a rule; most of the wheat in commerce is very much mixed, and buyers therefore seldom see any variety in pure condition. If one wished to sell a shipment of Club wheat to a company having an experimental flour mill, such as some of the large milling companies have, it would be a different matter. The inferior character of the wheat would be detected at once in the laboratory, and it might not then be saleable at any price for flour-making.

By Mr. Jackson (Selkirk):

Q. Have you made any test as to the value of wheat that has been kept dry, as compared with wheat that has been left in the field and become reduced in grade to No. 1 Northern or No. 2 Northern?

A. No, sir.

Q. That would be interesting, to know the difference in value between wheat that has been stooked and wheat that has got wet. If we keep our wheat so as not to let the rain on it, what would be the gain as compared with wheat that had been wet ?

A. It is not probable that there would be any great loss in actual value.

Q. The buyers put it down ?

A. Of course they judge the value of the grain by its appearance, not by a milling test.

By Senator Young:

Q. You do not take the position that exposing the wheat to wet is not injurious ?

A. No, sir; but I am inclined to think that when only the surface of the berry has been injured the value of the grain for milling purposes has not been seriously lowered. It appears also, from the rather soft Red Fife grown in Ontario and hard Red Fife grown on the western prairies, that the milling value of the softer wheat is higher than is generally believed. It does not appear that the harder wheat necessarily makes better flour. In some cases it does not make as good flour as the softer wheat. But I presume that hard wheat will always give less break flour and a higher percentage of patent flour than soft wheat. This fact, however, does not prove any inferiority in the quality of the patent flour made from the soft wheat. The best flour I have yet analyzed and baked was made from Red Fife wheat, grown at Ottawa in the year 1902.

APPENDIX No. 2

By Mr. Lewis:

Q. How would that sample of wheat grade ?

A. The sample I am alluding to would grade rather low, according to the western standards, on account of containing a large number of soft kernels. It would perhaps grade as No. 2 Northern or No. 3 Northern, but it makes better flour than No. 1 hard grown at Indian Head this past season. This superiority is, however, perhaps due partly to age.

By Mr. Jackson (Selkirk):

Q. What does our hard red wheat lack that we cannot make common soda biscuits from it ?

A. The gluten in it is too tough, thus rendering it unsuited not only for soda biscuits, but also for pies, for tea biscuits, and for many kinds of cake as well. For such purposes a weaker flour is required. This can be made from most varieties of winter wheat, and from some sorts of spring wheat, such as White Russian, for instance. The very quality that makes a wheat good for the production of light, elastic dough makes it unsuitable for the preparation of biscuits, cakes and pastry, which ought to be flaky or friable when properly made.

Q. A gentleman in Winnipeg recently imported a large quantity of flour from St. Louis for pastry purposes.

A. I have heard of other similar instances. The so-called pastry flour sold in Canada is very often practically identical with the flour sold for bread-making, which accounts for the fact that Canadian pies are not always as easy to digest as they should be. The flour is too strong.

By Mr. McKenzie (Bruce):

Q. Is it invariably the case that our wheat from scrub land is softer ?

The CHAIRMAN.—Yes, it grades Northern instead of Hard.

REPORTS FROM THE PEACE RIVER DISTRICT.

The last time I appeared before this Committee I mentioned that we had sent up to the Peace river district some samples of early maturing cereals, to some farmers there whose addresses had been obtained by Mr. James Macoun, when he was in that country. I have a few replies from them, which I think perhaps may be interesting to lay before the Committee in order to give you some hints as to the possibilities of grain growing in that district. The reports received are from Peace River Landing, in latitude 56¼°, and from Spirit river, in latitude 55¾°. I shall also refer to another which is not in the Peace river district, but from Keewatin district in latitude 53½° The samples that I have here are from Mr. Allan Brick of Peace River Landing. There are three samples of wheat and one of oats. They are all very good. From Spirit river Mr. Charles Bremner writes, 'The barley produced good samples,' (it was the Odessa barley which we sent to him), 'also the oats' (Tartar King, one of our earliest varieties, but not good for milling), 'but the wheat was badly frozen in July and August.' He also mentions that the season was very dry. The Spirit river district, as you may remember, lies rather far to the southwest, in the Peace river country.

By Senator Young:

Q. Towards the foothills?

A. Yes.

By Mr. Jackson (Selkirk):

Q. How far from where the last samples were grown?

A. About fifty miles south-west, but the elevation is higher there. The elevation increases as one goes south-west, that being up the river.

Q. What proof have you that those samples were grown there?

A. We have no guarantee as a rule in such cases, except the word of the sender of them. But that is accepted as sufficient. We know that good wheat is grown at certain points considerably north of Peace River Landing. But, of course, these are early varieties. Red Fife would not succeed up there as a rule.

The Rev. Father Josse, of Spirit river, writes, 'The samples you sent us have succeeded very well. Both the wheats ripened all right. However, Gehun wheat (a very early variety from India) 'was ripe earlier than Stanley wheat, and therefore has more chance to succeed in this country. Odessa barley and Flying Scotchman oats have succeeded perfectly well. This year was a pretty dry one. The straw of Gehun wheat was short.'

The Rev. Robert Simpson, also of Spirit river, writes: 'The season was against us. We sowed on April 27 and all were ripe by August 25. The Preston wheat and Tartar King oats yielded heavily. Of course the straw was shorter than it would have been had we had rain.'

By Mr. Mackenzie (Bruce):

Q. Was that grain grown on the prairie or in the river valley?

A. In the valley, I presume.

The Rev. J. H. Lowes, of Island Lake, Keewatin, in latitude 53½°, which is about the same as that at Edmonton, but in an unsettled and little known district, writes that he obtained a good yield from Early Riga wheat sown on May 2 and cut August 29, and from Welcome oats sown on May 16 and cut on September 5.

By Mr. Jackson:

Q. I know that gentleman, and I know that he is reliable. I met him about two years ago. He is about 150 miles north-east of Lake Winnipeg, between Lake Winnipeg and Hudson Bay, perhaps 350 to 400 miles north of Winnipeg, almost directly north, because Lake Winnipeg bends to the west. But that section of country is too rocky for the growing of wheat on a large scale.

By an Hon. Member:

Q. With regard to this Peace river wheat, do you know the date it was sown and the date it was harvested?

A. I do not know.

Q. Would it not be a good thing to have all that information?

A. It would certainly be desirable, but the difficulty of carrying on correspondence with that part of the country is very great. One of the farmers to whom we sent samples on the 15th of November, 1903, we did not hear from until about January, 1905, and then his letter informed us that the grain had not reached him in time to be sown in the spring of 1904, but that he hoped to sow it in 1905. We hope to receive a report on this grain next winter.

NEW VARIETIES OF OATS AND BARLEY.

That is all I wish to bring before the committee to-day in regard to wheat. I have some matter in connection with new varieties of oats and barley. While the problems in connection with wheat growing seem to be the most important just now and deserving of particular attention, we are also making efforts to cope with some of the questions which arise in regard to oats and barley as well. We have obtained within the last year some new varieties of considerable interest among which one of the most promising is the 'Swedish Ligowo' oat which, judging from one season, seems to be superior to the ordinary Improved Ligowo which we have been growing in the past.

By Senator Young :

Q. Is it a white oat ?

A. Yes, it is practically identical with Ligowo, but we obtained last season a

heavier yield and it ripened quite as early. Whether this was due to the superiority of the seed, we could not determine in one season. As a rule when we obtain seed oats or barley from Europe, we receive remarkably plump grain, and this may account, in some cases, for the fact that these new varieties often stand very high in our list for the first season. We obtained also from Sweden a very early yellow oat under the name of Gold Rain,which we hope may be of use in the far north. Another white oat was obtained under the name of Abundance, from Garton Bros., well-known seedsmen in northern England. This seems likely to be productive. In barley we obtained five very interesting samples of extremely plump grain from Sweden under the names of Princess, Primus, Swedish Chevalier, Hannchen and Swan's Neck. These all succeeded well at the Central Experimental Farm last season. We have also, for the coming season, a sample of Chevalier barley of the Archer strain. The Archer Chevalier is regarded by the brewers in Ireland as being one of the best varieties for their purposes.

By Hon. Mr. Fisher :

Q. That is a two-row barley?

A. Yes. For malting purposes two-row barley is used in Ireland almost exclusively, plump, starcy kernels being most in demand.

By Mr. Jackson (Selkirk):

Q. Do they consider colour?

A. No doubt they do, for the production of light-coloured ales; but in breweries where only dark-coloured products are made the colour of the barley is not regarded as of much importance. This variety (Archer Chevalier) we shall sow on the Central Farm this season, and we look forward with some interest to seeing whether it will prove superior to the other strains of Chevalier.

By Mr. Christie:

Q. In Ontario we want the variety that will yield the most, as we use the barley for feed?

A. In Ontario the six-row varieties are usually grown, probably because of their earliness in ripening.

Q. Which do you consider the best two-row barley?

A. The French Chevalier and the Canadian Thorpe are perhaps the best.

By Senator Young:

Q. It depends somewhat on the soil?

A. Undoubtedly. Among six-row barleys we have found the Odessa and the Mensury to be about the best. I think that is all the matter, Gentlemen, which I wish to bring before you this morning, unless you have any further questions to ask.

GOLDEN DROP WHEAT.

By Mr. Jackson (Selkirk):

Q. We had Golden Drop wheat in Winnipeg 25 years ago. Have you tested that variety?

A. It was tested on the experimental farms for several years, but was discontinued in 1899 on account of its small yield.

EMMER AND SPELT.

By Mr. Miller:

Q. I have seen in a recent issue of the Farmer's 'Advocate' letters from people who say they have grown a western grain called Emmer with very great profit. Do you know anything of that?

A. Yes, we have been growing several varieties of Emmer for some years,, and we published a bulletin on 'Emmer and Spelt' last June. Emmer is a grain that may be considered as a variety of wheat. It is commonly known in America under the name of 'Speltz,' but true Spelt is different from Emmer, although they are very much alike. In both the husk holds the kernel so closely that in threshing it does not come out. These cereals are useful for fodder purposes when the whole material (grain and husk) is ground up. They resist rust perhaps better than any variety of true wheat. The straw, therefore, is sometimes used for feeding purposes, but unless the crop is cut very early the strong awns of the Emmer are apt to give trouble.

Q. A few years ago a firm of Toronto seedsmen were advertising 'Speltz' as a very profitable grain. It was maintained by some people that a great difference existed between Emmer and Speltz, in favour of Emmer. Was the grain advertised as 'Speltz' by the seedsmen identical with what you call Emmer?

A. Yes, there is only one variety grown in Canada, outside of experiment station work, and that is the common form of Emmer, incorrectly called 'Speltz.' 'Speltz' is a corruption of a German word, and should not be used. The English word is Spelt; but as I have already stated, the common variety of Emmer is quite distinct from true Spelt.

Q. Have you found it to be a profitable all round crop?

A. It seems to be a desirable grain for certain districts, but our experiments, as far as they have gone, indicate that in most districts in Canada the Emmer is not equal to the best varieties of oats or barley. On the experimental farm at Brandon, however, Emmer has done particularly well, and it is probable that in other districts it would be found of considerable value. It is said to resist drought very well.

By Mr. Cash:

Q. We have a number of Russian Germans in my district who grow it, and consider it quite valuable.

DUCK-BILL BARLEY.

By Mr. Christie:

Q. Do you consider Duck-Bill two-rowed barley equal to those that you named?

A. We have not considered it quite equal in yield, and are not paying so much attention to it on that account. The Canadian Thorpe resembles the Duck-Bill and gives, with us, a larger yield. The French Chevalier, which I mentioned before, is also very productive.

Q. Are they all of stiff straw?

A. Fairly stiff. Of course the Chevalier has such a long head that it always bends over somewhat.

Q. The Duck-Bill has a stiff straw, and on heavy land it hardly ever goes down.

PEACE-RIVER WHEAT.

By Mr. Lewis:

Q. Would the country around Peace River Landing be good for wheat growing?

A. I believe that portions of the country in the river valley are good.

Q. How would those samples of wheat from Mr. Brick grade?

A. I should think they would be——

Q. Is the grain that is being grown around Edmonton similar to these samples?

A. I have not seen enough of Edmonton wheat to be able to answer that question.

Q. How far north of Edmonton does Mr. Brick live?

A. About 250 miles north-west.

Having read the preceding transcript of my evidence, I find it correct.

CHAS. E. SAUNDERS,
Experimentalist, Central Experimental Farm.

POULTRY BREEDING A SOURCE OF PROFIT

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
TUESDAY, May 9, 1905.

The Select Standing Committee on Agriculture and Colonization met here this morning at 10 o'clock a.m., Mr. McKenzie (Bruce) presiding.

The CHAIRMAN.—We shall hear this morning from Mr. A. G. Gilbert, Poultry Manager at the Central experimental farm.

Mr. GILBERT.—Mr. Chairman and Gentlemen of the Commitee, I have the pleasure of meeting you once again, several members of the Committee, for the first time. I come before your Committee with pleasure and confidence, because the department of farm work I have the honour of representing offers to our farmers one of the best paying margins of profit in connection with that work, namely, one to 200 per cent profit. That such large profits follow competent management has been shown by our experimental work as well as by farmers by letters to the agricultural press and to myself. And it is to be remembered that in the making of these margins of profit a good deal of waste of the farm may be utilized. How this may be done I will show later on. I ask your attention for a short time this morning to the following subjects in connection with my work :—

1. A brief review of the past and present poultry situation.
2. A phase of poultry development in the high price of eggs during the past two summers. Some of the causes therefor, and a consequence which may follow.
3. Great increase in the number of inquiries from farmers as to up-to-date poultry keeping. Some of the questions asked and answers given.
4. Important location of tuberculosis among fowls in British Columbia, and blackhead in turkeys in Ontario.

Taking the past and present poultry situation into consideration we find that as compared with 25 years ago—about the beginning of my experience—there is a remarkable difference between then and the present time. Then new laid eggs in winter were a rarity and they were scarce, because for one reason there was comparatively little demand for them. And there was also an impression—not perhaps general—but entertained by a great many that it was almost impossible to have hens lay during the winter season. Again, there was no concerted attempt to produce them. Prices at that time for a very doubtful article in this locality were from 40 t 45 cents per dozen—very much the same as they are to-day, perhaps—singular to say, not quite so high as they have been in the larger city markets, during the recent and preceding winters. And this increase of value, be it remembered, was in the face of a greatly increased production. Here we have the first notable phase of the situation, as between then and now, in the fact of increased value notwithstanding an increased production. The demand evidently became more urgent from year to year, and although the eggs were produced in response to the demand, the latter had evidently become greater than the supply. May I presume to make this deduction : 20 years ago eggs were not in abundant supply, because the demand was not great

and comparatively little effort was made to produce them. Now they are produced in far greater numbers, but yet fall short of the demand, for the reason that so many people are eating them, and they do not consume them because they are cheaper in price, but because they are a more economical form of food. Many years ago when I first went to talk poultry culture at farmers' institutes and other meetings, I would strongly urge the farmers to so manage their fowls as to have them lay eggs in winter when prices were high, and in early summer to hatch chickens of the best market types, so making money at both seasons of the year. At these meetings I would be sometimes met with the statement, 'But when the majority of the farmers follow your advice the price of eggs and poultry will become so low as to offer no inducement to produce them.' So far from this pessimistic foreboding coming to pass, as the gentlemen of the Committee know very well, the opposite has occurred. I could give you many instances of the high winter prices being secured by farmers and farmers' wives. Let me give you two or three. At an address given before the Ottawa Poultry Association of this city at the beginning of last winter, Mrs. Joseph Yuill, a farmer's wife of the township of Ramsay, near Carleton Place, said she had been offered by Mr. H. Gatehouse, poultry and game dealer of Dorchester, Montreal, 45 cents per dozen for all the new laid eggs she could supply from the end of November until prices began to go down in the springtime. An Ottawa grocer with whom she had been dealing, offered her 40 cents per dozen for eggs during the winter season, but she told him of the Montreal offer and he at once consented to pay her the same price, realizing the importance of obtaining a reliable article from a reliable source.

By Mr. Derbyshire:

Q. Is not that the farmer's wife who watches the chickens when they first come out of the shell? She puts to one side those that begin first to scratch for a living for future layers and fattens the less active ones for market.

A. Very likely, because she knows that the active pullet will likely make a good layer. Another farmer's wife, Mrs. R. A. Craig, of North Gower, says 'that Mr. H. Gatehouse, of Montreal, offered her 40 cents per dozen for new laid eggs, during November last, the price to increase, if circumstances warranted it, at the Christmas season.' Mr. James Foley, a farmer living near here, during the month of January, informed me that he was then selling new laid eggs at 45 cents per dozen, and he added, 'I saw the same eggs retailed at 60 cents per dozen while I was in the store.' I made the remark to him, 'why do you not try to get the high price?' He replied, 'I did not attempt to get them.' I said, 'if you had found out some good customers in the city you might have sold your eggs for 60 cents a dozen and so made the margin of 15 cents.' He remarked that he had not the time to look up customers and that certainly is a good reason. A point that is frequently mentioned to me in letters from farmers is that the city grocers or their clerks do not return the crates after they receive the eggs, but I should fancy that is a matter that can be easily remedied by the city man.

Now, I beg to call your attention to my second subject, viz., the high price of eggs during the past two summers. A phase—a notable phase—of the rapidity with which poultry development is taking place, it was the high prices paid for strictly new laid eggs during the midsummer months of the past two years. In midsummer of 1903 the prevailing price of new laid eggs was 20 cents, but last year as high as 25 cents per dozen was paid for the strictly new laid guaranteed article.

By Mr. Wilson:

Q. I suppose you are talking now of the retail prices?

A. No, I am speaking of the prices that were actually paid to the seller.

Q. Well, surely that is the retail price when bought from the grocery man, but not when sold in large quantities to the dealer?

APPENDIX No. 2

A. No, the eggs were not in very large quantities, but the prices were paid by a dealer. The strictly new laid article, per force of circumstances, which I will try to show, will always be in comparatively limited supply and consequently bring the highest price.

By Mr. Cochrane:

Q. You are quoting prices paid in the city of Ottawa?

A. These are prices that came under my immediate notice here.

Q. Yes, in the city of Ottawa?

A. They were also paid in Toronto and Montreal, if I mistake not.

Q. Yes, three cities in the Dominion of Canada, and perhaps one or two more?

A. Yes, very likely one or two more.

Q. But we ought to have something that would inform us what the farmers got out in the country. There are only a few that are benefited by the market in the large cities ?

A. Well, the high price city market should be the objective point for all farmers.

Q. No, only a few can reach that market.

A. I have said, if you remember, that strictly new laid eggs will always be in comparatively limited supply. One reason for this you have just mentioned.

Q. What are eggs worth in Ottawa now?

A. I fancy strictly new laid eggs are worth from 18 to 20 cents per dozen.

Mr. INGRAM.—The price is 14 cents wth us.

Mr. COCHRANE.—And 12 cents with us.

Mr. DERBYSHIRE.—They are paying 15 cents at Brockville, I mean the wholesale men.

Mr. GILBERT.—Yes.

Mr. DERBYSHIRE.—They are taking them from the farmers in large quantities.

Mr. GILBERT.—In large quantities at wholesale prices, and the wholesale article is not strictly the new laid one which I refer to.

By Mr. Blain:

Q. What do you call a fresh laid egg?

A. A strictly new laid egg is not in ordinary supply. As a rule you do not get new laid eggs when you buy them in wholesale quantities, and very often in such cases you do not even get a fresh laid egg. Let me explain that I never go among the farmers to mislead them, but certainly impress upon them the necessity of producing the best in poultry and eggs at such times of the year as will bring them the highest prices.

By Mr. Derbyshire:

Q. And to market them when they are fresh?

A. Exactly. Now, I will try and make my position plain if you will kindly give me a little time. A reason for the unusually high midsummer prices of the past two years has been repeatedly asked for, almost always accompanied by the other query, "Are such prices likely to continue?' In past years midsummer eggs were in the greatest supply and prices were usually from 10 to 12 cents per dozen. There is no reason to suppose that they are now in less supply, rather the opposite. What are the causes, for there must be reasons for such a state of affairs? While I do not pretend to say that all, or any, of the following are decisive causes, doubtless they are contributory to a certain extent.

SUMMER MOULTING.

1. The practice fast becoming more general among the farmers of bringing on a summer moult—that is, to have their fowls moult (cast their feathers) during the

latter part of July, August and a part of September. The moulting season is one of non-production, for while moulting the hens do not lay. In order to have hens lay during the winter months, the period of highest values, it is requisite that they should moult during the summer. It has been urged upon the farmers to have that season of non-production at a period when eggs in previous years have been at their lowest values. Our teaching to farmers has been to have their hens lay in winter, when prices are best, and to have their hens moult during the summer when prices are at their lowest. There can be no doubt that this advice is being more generally acted upon. It unfortunately, has been the practice on the part of farmers in the past—and it is yet too common among them—to have their hens lay well in spring time, summer and early fall and moult during late fall and winter, the season, as already remarked, of best prices. With the more general practice of summer moulting will doubtless come a reduced production of eggs and possibly an increased output in winter. In my report for 1903, while referring to the subject, it was remarked 'that an increased supply of eggs in winter and a lessened production in summer might result in the evening up of prices.' The effect on the winter markets has so far not been noticeable. Prices were rather higher last winter than in previous years.

NEW LAID *versus* STALE EGGS.

2. Another contributory cause to increased summer prices may be that the better class of consumers have found, or are fast finding out, the great difference there is between a clean looking new laid egg with its delicious flavour and the comparatively stale article. The consumer, as well as the vendor, is fast realizing that flavour and inviting appearance can only come from carefully fed and cleanly kept fowls. Our teaching to the farmers—by both voice and pen—has been for years past to put on the market, or into the hands of their customers the eggs as soon after they are laid as possible. Certainly new laid, clean looking eggs, are preferable to those laid by hens which are allowed to eat decayed or decaying animal and vegetable matter, drink filthy water and deposit their eggs in unclean and ill-smelling nests.

By Mr. Cochrane:

Q. Well, how do you get your hens to moult when you want them?

A. By proper treatment and manipulation.

Q. How do you bring on the moult in summer?

A. The summer moult is brought on in this way; it is explained later, but I may as well give it now. In July, the first two weeks, we reduce the rations to one-half the usual quantity, what we call a semi-starvation ration. The effect of this is to stop the egg production, which is what we want. At the end of two weeks we renew the full ration. Meanwhile, the egg production has been stopped, and the old feathers have been loosened. The effect, when the full ration is resumed, is that instead of it going into eggs, as it would do under other conditions, it results in the shedding of the old feathers and the appearance of the new ones. The moulting period usually lasts two to two and a half months. By the middle of October the hens should be in new feather and ready to lay again in November when eggs have been and are generally 40 cents a dozen. It is in his best interests to tell the farmer how to get his product when it is worth most, and to bring on the moulting season, the season of non-production, during midsummer, a period when eggs have heretofore been at their lowest value.

By Mr. Wilson:

Q. Have you ever tried to bring out your chickens at different periods in order to have a regular rotation of layers?

A. Yes, as far as hatching early chickens are concerned.

Q. Does the method work satisfactorily?

APPENDIX No. 2

A. Yes, in certain cases, the hatching of early chickens will require facilities, more care and attention, that is all. Perhaps greater facilities that a farmer has, and greater care and manipulation than he has time to give them. I have always considered the first week in May the most suitable time for a farmer to have his chickens come out. Because the weather conditions are favourable. In the fall, heretofore, there has always been a shortage of eggs, because the hens were then beginning to moult instead of getting over it. We tried to meet that by hatching out early pullets, so as to have them laying at the time the old hens were moulting. But the hatching of early pullets was not always possible with the farmer, that is, pullets hatched in late March or early April.

By Mr. Cochrane:

Q. How do you manage the hens that you want to moult early, you will have to keep them shut up if you want to reduce them?

A. No, not necessarily. I should have stated that after the breeding season is over we remove the male birds to a different building, and we let the hens run out in a large field in rear of the poultry house. We have 15 breeds, and in order to do that we have to go to a great deal of more trouble than the farmer would have who has only one breed.

Q. It does not reduce the flesh of the hens by being isolated in the field from the cockerels, does it?

A. Not likely, but it may to a certain extent.

Q. The reason why you reduce the ration is to stop them laying and loosen the feathers. They then commence to moult. Is it not also the fact that after reducing the flesh and you put them on the full ration, they commence to regain flesh and the feathers are so loosened?

A. Very likely, but that is not our primary object?

Q. What is your primary object in putting the fowls on half rations?

A. As quickly as possible to stop them laying. The hen will not moult as long as she is laying. It has been a bad practice on the part of many farmers that of having their hens laying in midsummer when eggs were worth least, and at a time when they should be moulting.

By Mr. Cochrane:

Q. When a subject strikes me that I am interested in I am only anxious to know the reason why a thing is done?

A. And I am only too happy to give all the information desired.

RATIONS RECOMMENDED—MIXTURES, QUANTITIES.

By Mr. Ingram:

Q. You were speaking about reducing the feed of the fowl, does that mean the egg-producing class of feed as well as the regular feed?

A. Yes, we reduce the rations that have heretofore been fed to produce eggs.

By Mr. Armstrong:

Q. What do you consider a half ration?

A. I cannot exactly give you the quantities at this moment, but it is half the quantity we have been feeding during the winter, and in some cases a little less. As already stated it has been reduced in order to stop the fowls as quickly as possible from laying.

Q. What do you call a full ration?

By Mr. Derbyshire:

Q. It will depend upon the breed of the fowl I would say?
A. Yes.

By Mr. Cochrane:

Q. Suppose you have 25 fowls, what would be the usual ration?

By Mr. Armstrong:

Q. The farmers would like to know what you feed for a ration ?
A. I intended to have dealt with rations later in the questions asked by farmers. Here is a question which is asked very often by farmers, and in answering it I may reply to the one just asked. 'What is a good winter egg producing ration ?'
A. To 16 or 17 hens—
Morning—One pound whole grain, wheat preferable.
Noon—A light ration of grain, buckwheat and oats mixed on four days of the week, and for the other three days, cut bone in proportion of one pound to every 15 hens.
Afternoon—A mash in liberal quantity composed of two parts of shorts, one part of ground oats or barley and one part of corn meal mixed with hot water or hot skimmed milk to a crumbly condition and fed when cool with a pinch of salt and a modicum of black pepper or ground ginger. Occasionally mix turnips with mash. Lawn clippings steamed may be thrown in the trough four or five times a week and at 11 a.m., and roots in the shape of mangels, turnips, &c., should always be in the pen, and there should be plenty of grit, oyster shells, pure clear water.
In cold weather a little mash may be given at morning ration, followed by a little grain thrown in the litter on the floor. The object is to avoid 'gorging' the fowls at first ration, and to keep them busy.
Q. They would not want lawn clippings if they were running out in the field?
A. No, or roots either, for when they get new grass they do not require them.

By Mr. Cochrane:

Q. According to that ration, where does the refuse from the farmer's house come in ?
A. It can be put in the mash.
Q. I did not hear you read anything about the refuse from the house in that ration you quoted ?
A. The refuse of the farm can come in the shape of unmarketable vegetables or roots such as cannot be disposed of on the market. In the mash all the table and kitchen waste may be utilized. Wherever I go amongst farmers I have advocated the use of all suitable forms of waste in the feeding of poultry.

By Mr. Wright (Muskoka):

Q. With regard to this cutting down of the ration to 50 or 40 per cent of the average that will be a rather violent interference with the laws of nature, and will it not have a bad effect upon the general health of the fowls?
A. We try to obviate that, by giving the fowls as large a run as possible in the field. I am very glad that you asked that question, because it brings up a very important point.

By Mr. Wilson:

Q. Do you cut that one-half off right at once, or cut it down gradually ?
A. We cut it off at once. It may seem heroic treatment.

Q. That seems to me to be heroic treatment, certainly.

A. The object is to stop egg production as soon as possible.

Q. Do you not find that the largest egg and poultry producers in the country have large fields for the poultry to run on?

A. A run in a field is certainly desirable, and many establishments have fields or extensive yards for their fowls to run in.

By Mr. Armstrong:

Q. How can they take advantage of a field if closed in yards ?

A. In such a case grass and clover would have to be supplied artificially.

Recently I attended a meeting at Brockville at which the mayor took the chair. He said that it was the first meeting of the Brockville Poultry Association, and that he was delighted to see such interest taken by the people in it. I certainly was surprised and gratified to see such a large attendance.

By Mr. Derbyshire:

Q. That is the way we handle everything there. Brockville is a place of business.

A. Judging by what I saw you are correct. At that meeting I brought this feature of the egg trade to the notice of the numerous farmers and their wives present, viz., the necessity of putting eggs into the hands of the consumer, new laid and of clean appearance, and also the necessity of having the hens which lay them fed on clean, wholesome food. At the close of the meeting, one of the audience who handed his card to me, said, 'I am very glad you brought out the point as to the clean and wholesome feeding of the fowls in order to have well flavoured eggs. My son-in-law has a farm and his man throws out dead calves in the manure pit and leaves them there to decompose. The hens get at these decaying carcases. I told him I could not buy any eggs from him as long as he permitted such to be done. Both he and his wife were at the meeting and I hope they took in what you said.' The point was that this man who was accustomed to get well flavoured new laid eggs wanted assurance as to how the hens were fed. There is importance in the stand he took, for we know as a result of experimental work, conducted for many years, that the food on which the fowls are fed, largely determines the flavour and quality of the eggs. The practice is too common in the majority of barnyards to allow the fowls in springtime access to decaying vegetables and animal substances. As a consequence the eggs are not of as good quality or flavour as they should be. The people who are always on the lookout for cheap eggs generally get more than they paid for, in inferior quality and flavour.

By Mr. Blain :

Q. You have pointed out that the hen fed on the purest and cleanest food produced the purest egg and best flavoured, which is doubtless correct. I want to ask you this point. Is there any way of testing eggs when you come to the market to show if the hens have been fed on pure food, or allowed to run in the way that you have mentioned?

A. No, except you can judge from their appearance as to their age. They should be clean looking anyway. After the eggs are opened it is possible to partly tell from appearance of the yolk. Let me explain in this way. A leading physician told me three or four winters ago that he had what was intended for a complaint about the eggs sold from the experimental farm, but that he had taken up the cudgels on my behalf. I expressed my surprise at any complaint. It was from a lady, he said, who had got eggs from the farm and remarked that the yolks were very pale as compared with the yolks of eggs she had purchased in summer. The doctor said you are paying

the highest compliment to the experimental farm eggs. The pale yolk is evidence that the eggs are from hens cleanly fed on wholesome food. When you find an egg in summer with a firey red yoke, the probability is that it is surcharged with bilious matter.

By Mr. Cochrane:

Q. According to that doctor's theory a hen that goes out and scratches and gets worms and what is to be found in the barnyard, lays eggs with an undesirable flavour?

A. The worms and insect life are acceptable, but it is the drinking of the leakage from manure heaps, stagnant water and the eating of filthy substances that affect the quality of the egg.

By Mr. Brabazon:

Q. Does not the eating of worms and insect life affect the eggs ?

A. Such are comparatively clean articles of diet. Specialists fully realize that in order to get the best article in any department of farm work an effort to obtain such a result is absolutely necessary.

By Mr. Wright (Renfrew):

Q. I would like to draw your attention to one thing which happened in our poultry yard last winter?

A. Yes.

Q. We were scarce of gravel and went to a neighbouring old house and took some plaster off the wall. It had been kalsomined with blue kalsomine—quite a heavy coating of it. After we had fed the hens on that kalsomine plaster for some time, the eggs were all dotted over with blue.

A. Doubtless. When I was in Prince Edward Island—a place I very often had the pleasure of going—I was once in the neighbourhood of a lobster factory, and the people in the neighbourhood had been in the habit of feeding their hens on the refuse from the cannery, and I was told that the eggs in consequence were so unpalatable as not to be fit for use. We know that if we feed our hens on onions for any length of time that the eggs will become positively unpalatable. These are important points that only such a discussion as this brings out. It shows the difference between feeding hens on wholesome and clean diet and that which is the opposite. I can assure your Committee that the taste for the strictly new laid egg with its peculiar flavour is becoming more exacting, and it is owing to that exacting demand, for one reason, that the price has advanced. You will allow me——

By Mr. Wright (Renfrew):

Q. I wish you would emphasize that, because that is a fact that everybody does not realize.

A. I do so with pleasure. My long experience gained by many years of experiment and observation permits me to speak with certainty of certain results. We have seen time and again the effect of certain rations on egg production as well as flavour and colour of the egg. Permit me to say that when poultry keeping is better understood than it is and when the people generally become as exacting in the demand for poultry products as they are for cheese and butter, we will have the superior article in greater quantity that at present.

By Mr. Armstrong:

Q. Would you advise the farmers to keep the hens out of the barnyard?

A. Certainly, I would if they had access to that filthy water.

APPENDIX No. 2

By Mr. Derbyshire:

Q. And eating other decayed substances ?

A. Yes. A case in point was that of the man who told me after the Brockville meeting of the dead calves being thrown on the dung heap by his son-in-law. It is a case I am afraid that is repeated very often. I had occasion recently to be in a poultry yard where there were a large number of hens. I saw six or seven dead rats thrown on the straw where the hens were scratching. I remarked that when the rats began to decompose, which would be in a short time, that the hens might eat them and the flavour of the eggs would be affected. That was evidently considered a trivial matter. It is the attention to these details which affects the quality of the product, as Mr. Derbyshire, with his experience of dairy products, I am sure, fully realizes.

By Mr. Armstrong:

Q. We must also realize the difficulty in the way of the average farmer in doing these things, unless he has a suitable house and runs for the purpose of keeping his hens in?

A. That has already been done in many instances, and I am happy to find there is an inclination to-day to do so in many more places, because the farmers realize that they cannot obtain best results without systematic effort. The great question now is how to feed at the least possible cost so as to obtain the best article, and so get the best possible value.

By Mr. Cash:

Q. In speaking of the colour of the yolk of the egg, do you wish us to understand that the light-coloured yolk comes from the hen which is fed on purer food than the darker one?

A. Not under all conditions. In winter the hens are fed artificially and connot get substances that are decayed. The argument of my medical friend was, I presume, that the greater quantity of decayed food which the fowls took, the more bile was produced, and this showed its effect in the colour of the yolk, making it very red in appearance.

Q. Isn't it a fact that different breeds of hens give different coloured eggs to a certain extent? Take the Brahma?

A. There is a difference in the colour of the shell.

Q. No, I mean the yolk?

A. Allow me to put it this way, I think the yolk is coloured to a great extent by the food.

Q. I wanted to be positive, as a person has to be when quoting this information?

A. I think I am perfectly justified in coming to the conclusion that the lighter yolk of the winter egg is caused by the artificial furnishing of the fowls of what they can obtain in greater abundance while running outside in summer.

By Mr. Cochrane:

Q. Are we to understand by your experiments and your opinion, and the opinion of the medical gentlemen, that you have found out a system whereby you can produce a more perfect egg—that you know more about feeding a hen than the hen knows herself?

A. I am speaking of artificial conditions more particularly.

Q. The hen that runs out and gets what she wants about the farm, or the grain when I see fit to give it to her, do you mean to say that you know better how to feed her and what to give her than she knows herself ?

A. Yes, sir, I say decidedly and distinctly that we do when she is handled artificially.

By Mr. Wright (Renfrew):

Q. She gets what you give her to eat?
A. Yes, most certainly.

By Mr. Cochrane:

Q. I am speaking of the feed more particularly?
A. Allow me to say that we feed the hen at stated times, and on such food as we think is best for her and egg production.
Q. Are we to understand then that you know more about feeding a hen than a hen knows herself?
A. Yes, most decidedly so, when her life and treatment in winter is purely artificial.

By Mr. Cash:

Q. The doctor of whom you spoke, and who made that expression in reference to the colour of the yolk of the egg. I do not think it is based upon honest sound judgment. Because the egg is highly coloured, it is not necessarily bilious?
A. I have opened many eggs at different seasons and have seen the difference. What, I think, he meant to convey was that the light colour of the yolk was in favour of the egg rather than being against it.

By Mr. Cochrane:

Q. How does he know without analyzing it whether a light coloured yolk or a dark yolk is any different as far as the condition of the egg is concerned?
A. Permit me to say that this has been found out as a matter of fact on many different occasions.

By Mr. Cash

Q. Do you mean that the egg contains carbonaceous matter?
A. Yes, in winter. I think it would contain nitrogenous rather than carbonaceous matter, when highly coloured as in summer
Q. Nitrogen is good food?
A. Yes.

By Mr. Jackson (Selkirk):

Q. I have been in the egg business for 20 years, and I thoroughly know the difference between the colour of eggs produced in the winter with their yolks of clean, light colour and well flavoured. When I took meats, particularly old meats, and fed hens with it, the colour of the eggs became a real, dark yellow. We had the same results in the colour of the yolk and flavour of eggs in the early days when we had grasshoppers in Manitoba, and the hens eat largely of them. It was impossible to eat the eggs?
A. Yes, I am glad of your practical corroboration.
Q. I certainly know that the highly coloured yolk comes with feeding old meats?
A. What I said, I think you will remember, is practically along that line.
Q. Yes, it is along that line, and the right line. For years after the above experience we looked upon the light coloured yolks as the best?
A. I am certainly gratified and obliged to you for such timely endorsation of my contention, which is most important as affecting the flavour of the egg at all seasons of the year.

APPENDIX No. 2

By Mr. Armstrong:

Q. Do all the eggs produced on the farm have light yolks?

A. Rather light coloured yolks in winter, but darker when the hens run at large in summer.

Q. Have you heard that the bakers prefer the dark eggs?

A. Possibly and doubtless they do so, but I cannot speak from knowledge.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
WEDNESDAY, May 10, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. McKenzie (Bruce), acting chairman, in the chair.

Mr. A. G. Gilbert, Manager of the Poultry Division, Central Experimental Farm, was present and resumed his evidence.

Mr. GILBERT.—Mr. Chairman and Gentlemen of the Committee, I again appear before you with a great deal of pleasure. Yesterday there were some important points brought out in the evidence that I had the honour of giving before you. The first was the advance in prices in the face of an increased production, the next was a phase of poultry development in the shape of the high prices which prevailed during the summer of the past two years; the next was the effect of food on the quality of the eggs and the necessity of the fowls being carefully and cleanly fed in order to have the egg produced of the very finest quality. In making my remarks yesterday I was fully seized of the importance of correct information in regard to this very important point going out to the country, because we find that the tendency of the demand, as you gentlemen doubtless know very well, is a better article in response presumably to a more cultivated taste and greater demand. People have been educated by the dairy department to get a better article in cheese; a better article in butter, and that teaching has extended to other departments of farm work; and to-day we happily find that the first quality product of any department of farm work commands the best prices. I have always advised the farmers at institutes and other meetings to produce the very best, in reality an article of maximum quality and the minimum of cost; to get his product when it is worth most at the lowest cost to him, and in so doing to utilize as much of the waste of the farm as possible.

The last point I dealt with yesterday was the feeding of hens carefully and cleanly in order to have an egg produced of the best flavour and quality, and which, in this city, last summer, had obtained—extraordinary to say but nevertheless true—20 cents and even as high as 25 cents a dozen. Do not mistake me. I have no intention either to mislead you or the farmers of the country. I do not mean to say that the farmer who is not near a city market is likely to get 20 or 25 cents a dozen for his midsummer eggs, but there are farmers in the neighbourhood of this and other cities, and who are near shipping ports, who find it quite possible for them to obtain these prices. I sold eggs myself last summer at the prices named, so that I might be able to assure the farmers that they could go and do likewise.

I now come to a third reason why strictly new laid eggs are hard to get in midsummer:—

3. Another cause may be that as a result of the more exacting demand for the strictly new laid and clean looking egg, that city dealers buy from only parties that they can rely on to bring just what is required. Perforce of circumstances the people

who send the choice article must be near the city market, or, railway shipping points. A new laid egg stales quickly. New laid eggs must necessarily be brought by the farmers, or shipped by them in small quantities in order to permit of their being placed as quickly as possible in the hands of the consumer.

And there is yet another phase. The wide-awake city grocer or householder, particularly the former, for he buys in larger quantities, finds out the number of fowls the farmer has, for he knows that the farmer with but a few hens cannot save up a large number of eggs, without having many of them kept for a long period, and so become stale.

By Mr. Henderson:

Q. How long would it take an egg to stale in ordinary summer weather?

A. Perhaps a week. That is, it should be in the hands of the consumer by that time. A non-fertilized egg should keep comparatively fresh for three weeks, if kept under favourable conditions. But I would not have this egg mistaken for a new laid one.

Q. That would be very favourable, I think?

A. Yes. At this point there is a fact in connection with fertilized eggs worth considering. If the egg is fertilized and immediately after being laid is put into a warm place, as it often is, the germ will begin to develop. The mission of that germ is to hatch out a chicken. It may be only slightly developed when the process of incubation is arrested, but yet sufficient decomposition of the germ takes place to spoil the finer flauvour of the egg. Consequently, no egg intended to be one with the best flavour should be put on the market fertilized. All eggs put on the market for eating purposes should be unfertilized. I bring that point out afterwards.

Q. I think that statement as to an egg retaining its freshness for a month is not a very safe one to send out to the farmers.

A. It certainly would not be, but I do not mean strictly new laid eggs. I refer to unfertilized eggs, if kept under favourable conditions. We take what are called clear eggs out of the incubator after being tested at the end of seven days, sometimes six days. The clear or unfertilized eggs are those which contain no germ and we put them to one side and boil them hard for food for the young chicks.

Q. Can you tell the difference ?

A. Yes, distinctly.

Q. Will you describe how you do it?

A. We have a box with a bright lamp inside it. There is a hole in the front of the box; the room in which the testing is done is dark. The bright light behind permits you to see the contents of the egg when held before the small hole in the box quite clearly. The egg which contains no germ is perfectly clear. The egg which contains the germ shows a dark spot with small veins radiating from it.

Q. I understand the system quite well; I have used it myself.

A. You will know then the appearance presented by the partially developed germ. You have doubtless seen that there is no difficulty in detecting what we call a clear egg.

Q. You would not say that egg was fit for use?

A. No, I would not.

Q. Except for making custards ?

A. Doubtless; I am sorry to say it, but I am afraid that a great many eggs of that kind are put on the market and sold for any price they will fetch. Have I made that point quite clear?

Q. Oh, yes; I understand you.

A. I now ask your attention to the following points, which through your Committee, I would like to reach the farmers of the country in order to guide them in placing eggs on the market.

APPENDIX No. 2

1. As soon as possible after they are laid the eggs should be placed in the hands of the consumer. That will meet the point, I think, raised by the honourable member for Halton.

2. On being taken from the nest the eggs should be kept in a cool sweet smelling cellar or cupboard and the flavour so preserved.

3. The nests in which the eggs are laid should be clean and free from offensive smell.

4. The food of the fowls should be pure and wholesome, such as recommended in our annual reports.

5. Have no male bird with the hens which lay the eggs for eating purposes. Experiments made time and again have shown that an unfertilized egg will retain its flavour longer than a fertilized one, for the reasons which I have just explained.

6. It may be asked: how then can we obtain eggs for breeding purposes, a rather important question certainly. In this way: For breeding from, in spring, select seven, nine, or eleven of the best shaped, best laying and largest hens and mate with them a male bird of undoubted worth and good type. Place these birds in a pen by themselves. When all the eggs required for hatching are secured the male bird should be sold or killed, and the hens kept in the breeding pens for 14 days longer and then allowed to run with the others.

By Mr. Ingram :

Q. Why have odd numbers such 7, 9, or 11?

A. It does not matter, we give 13 eggs for a dozen in case of the breaking of one. The selection of odd numbers is a matter of custom. As I said, the hens should be kept in the breeding pen for 14 days longer, and then allowed to run with the others. This is very different and certainly attended with much more satisfactory results than the too common practice of having a number of male birds of different varieties running promiscuously with the hens and which is sure to result in nondescript offspring.

I was asked by an hon. member, while I was giving my evidence before your Committee last year: 'Why it was that the fowls in the great majority of the barnyards of the country were so small and of so mixed a description, and why in so many instances the eggs of these fowls were so small.' My answer was 'owing to hap-hazard methods of breeding, which was strictly correct. If the farmer is desirous of having birds of suitable market type as well as good layers he must breed them by careful selection; in other words, intelligent manipulation.

I have mentioned a consequence that is likely to follow the high prices which have been paid for midsummer eggs during the past two seasons if they continue. That consequence may be a scarcity rather than an increase in the production of chickens and in this way: If the farmer can obtain a comparatively high price for his summer eggs, will he not rather be inclined to sell them than to have the trouble of hatching them out and the further trouble of rearing the chickens. And another phase of the summer egg trade is worth while taking into consideration, while on the subject, and that is, if the farmers generally have their hens, which presumably have been layers during the previous winter, moult in mid-summer in order to have them ready to lay in late October or early in November of the fall, there is likely to be a restricted rather than an increased egg supply, for the moulting period, as I already said, is one of non-production. Thus, we have the possibility of the supply of both chickens and eggs in summer remaining as it is, if not actually becoming less.

But I do not fear the latter eventuality if our instructions to the farmers are observed, viz., to hatch out their chickens, which should not number more than 150—all a busy farmer can attempt to successfuily hatch and rear—in the first week of May. As I have pointed out in my annual reports, for some years past, an incubator of 220 egg capacity and costing $24 to $26 is the best means of hatching the chickens, and two brooders costing $6 to $8 to each large incubator are the best and most con-

venient mediums of rearing the chickens, at the time mentioned, namely, the first week in May. The artificial method is certainly in this case the better means to an end than hens which it would be almost, if not wholly, impossible to get in numbers sufficient, under ordinary farm conditions in early April to hatch out and afterwards rear the number of chickens mentioned. To have the chickens out in the first week of May would necessitate the eggs being placed in the incubator during the second week of April.

Q. Is that the only reason that you prefer an incubator—the difficulty in getting a supply of hens?

A. Not the only one. There is in this connection a point I would bring out here. The incubator and brooders, should a farmer wish to have his chickens of same age and uniform size, are the best means of enabling him so to do. His chickens would probably be ready for the high price early market. He would have to wait for hens which would get broody in small numbers at different times during the summer season. It would take many hens to hatch out 150 chickens at one time. If he has help from his household in the shape of a wife who may have a liking for poultry, or children, he may perhaps be able to hatch out a greater number. We have always got to take this into consideration; that the poultry department of the farm is only one of the many departments of farm work, and that the aim of the farm should be to make every one of these departments successful. It is not helping the farmer to tell him to hatch out from 500 to 1,000 chickens when he cannot readily attend to them. It is better to tell him to do something that is within his easy reach, and will certainly bring him satisfactory results. But where only a small number of chickens are required hens would certainly be suitable means of hatching and rearing them.

By Mr. Ingram:

Q. About these sitting hens, do you believe in disturbing them, taking them off their nests regularly?

A. If properly arranged they will do that themselves.

Q. There are a number of professional breeders who recommend that practice?

A. Yes, I cannot say I like the practice, but it is done. Yesterday it was remarked by an honourable member who said: 'You really seem to know more about what a hen should do than the hen herself.' You have just mentioned a practice what I stated to be an actual fact. Some people do not allow the sitting hens to do just what they like; they shut the hens up in boxes and allow or take them off the nests at a certain hour every day to feed them and allow the eggs to be aired. I have done that myself, but I prefer to allow the setting hen to come out of the nest herself and go back to it again. The sitting hens should be allowed off their nests at a regular hour. Where management is systematic, it is astonishing how soon an animal becomes accustomed to it.

By Mr. Clements:

Q. Did I understand you to say that you advocated killing the male bird off?

A. After the breeding season is over, kill and eat him or sell him, anything at all rather than allow him to run around amongst the hens which lay the eggs to be sold for eating.

Q. Or exchange the bird with somebody else?

A. Yes, that is a very good thing to do, but if that is done let him be kept by himself, anything at all rather, as I have said, than allow him to run among the hens which lay the eggs you are selling in the summer time, because if you do not there is the probability of the eggs becoming fertilized and, unless at once sold, reaching the market in a more or less inferior condition, if not with the germ partially developed.

By Mr. Blain:

Q. Is there an increasing number of incubators being used by the farmers?

A. Yes, very much so, I was informed lately of the arrival of a whole carload of incubators in this vicinity from the manufactory at Chatham, and they were all sold, I also understood, before they arrived here. You can hardly go to any part of the country now but where you will find farmers with incubators and brooders.

Q. I know that the fowl fanciers who live in towns and villages use incubators, but I ask more particularly in respect to the farmers who are doing general farming; are they generally adopting incubators ?

A. Yes. If you will allow me to mention a case in point, Mrs. Joseph Yuille, a well-known farmers's wife, told a meeting of our poultry association which she addressed last fall, that she had hatched out 101 chickens from 105 eggs at one time during the previous spring.. Mrs. Maclean, another farmer's wife living in the neighbourhood of Carleton Place, at one time got 85 chickens out of 120 eggs, and Mrs. R. A. Craig, also a farmer's wife, generally obtains 65 to 75 per cent from her incubator, which is very good hatching. It is indeed remarkable how the incubator and brooder are becoming in general use among the farmers.

By Mr. Clements:

Q. A good many buy the incubator alone, but you would strongly advise the incubator and brooder, would you not?

A. Certainly, because incubator hatched chickens will be free from lice, and it is very necessary to keep them so, through the use of the brooder. The first thing the hen—and I have no desire to belittle the old hen—does, the first present, under ordinary conditions, that the hen makes to her chickens is a lot of lice, and then follows a fight with the lice which is always disagreeable. Of course where hens are kept under clean conditions the way in which hens ought to be kept, there should be no lice, but there is always a risk. As a fact, chickens which are troubled with lice have to be fed so much more food in order to obtain desirable results.

By Mr. Ingram:

Q. What do you use to get rid of lice?

A. The usual practice has been to take a clean, soft cloth and damp it with coal oil, and rub the feathers the wrong way so that they get thoroughly impregnated with the coal oil. That is the most effective and simple way that I know of. Blue ointment used in small quantity is also effective and easily applied.

By hatching chickens in the way I have outlined with incubator and brooder, the farmer will have a large number of chickens hatched at one time; he will have the eggs laid afterwards for marketing until his hens begin to moult. In too many instances, throughout the country, the practice is to hatch out chickens during such summer months or at such times as brooding hens may be obtained. The result is that at the time the farmer should have his chickens of marketable age, so as to command the highest price by August, he has a number of birds of all ages, and many of which will not be fit for the market until the fall when the chickens from all quarters are coming in and the prices are at the lowest. It is the object of all our teaching to inform the farmer how he may get his poultry products of the best quality and at the time when they are worth most money.

By Mr. Jackson (Elgin):

Q. Supposing the farmers all accept your advice, overproduction would likely follow. They would find their products at lowest instead of highest value ?

A. Permit me to state that the facts do not seem to warrant any such pessimistic forebodings. When I first went out to Institute meetings many years ago, and told the farmers to obtain eggs in winter—when they commanded the highest prices—and to convert them in spring into chickens, I was frequently met with the statement, ' but

when the farmers adopt your advice the price of eggs in winter will become so low and chickens will be so cheap in summer that they will not be worth producing.' Such has not occurred. On the contrary, notwithstanding the very large increase in production of both eggs and poultry and the great quantities of both kept in cold storage and by other preserving means, eggs were never higher than they were last winter in the city of Ottawa, and other cities in Canada. I do not think there is the slightest fear of over-production. Proper poultry keeping is not so easy as at first glance may appear, but instead of that occurring, as I have told you, because, as I have already said, in order to have eggs in winter, hens should moult in the summer, and the moulting period is one of non-production. Hence, if the farmers adopt that practice, you will probably have a shortage of eggs in the summer time which may tend to even up any possible general winter production. There is another important feature of the situation that should be considered, and one I mentioned yesterday. It was that while we have a decrease in the export there is an increase in production and prices at home. What does that mean? That our people must be eating more eggs and poultry at home and that therefore there is not the same quantity to export.

By Mr. Clements:

Q. Have you ever advocated farmers going more into winter egg production by building suitable houses and proper treatment of their stock? The reason I ask that is that I have a gentleman in my riding who makes it a business altogether. He has built a very large poultry house of cement, and it is perfectly frost proof. He keeps between 400 and 500 hens all the winter. He keeps them on meal and cabbage and all the necessary egg producing foods, and I understand he makes it pay very well. He sends the eggs to Montreal every morning by express, and gets from 40 cents to 50 cents a dozen.

A. Yes, and I knew of another one of your constituents who did the same and may be yet does so.

Q. Yes?

A. Some winters ago I attended a series of meetings in the neighbourhood of the city of London. At that time strictly fresh eggs were 16 to 22 cents per dozen on their city market. I recommended the farmers at the meetings to send their eggs to Montreal and get 45 cents a dozen for them at a cost of two cents to send them by express. These farmers were all near shipping points and the eggs would get to Montreal within 24 hours. A few sent the eggs, and got the prices. Others doubted, and remained doubting and inactive.

By Mr. Gunn:

Q. That price could only be obtained for a very short time?

A. For the whole winter months proper, of November, December, January and February.

Q. For the whole winter?

A. Yes, eggs were 40 to 50 cents a dozen in Montreal at the time, and I told the farmers who to ship to, and that I would take the responsibility of their getting that price.

By Mr. Derbyshire:

Q. That is for strictly new laid eggs?

A. For strictly fresh and good. I told the farmers to send none but such, in order to get the tip-top price.

By Mr. Gunn:

Q. What does it cost to get them to Montreal?

A. Two cents a dozen by express, and the express companies return the crates free.

APPENDIX No. 2

By Mr. Clements:

Q. As far as my constituent tells me he is able to produce as many eggs from his hens during the winter season as he is in the ordinary summer season. What is your impression of that?

A. Yes, certainly. The statement is correct. Farmers in many instances, not only have their hens laying well in winter, but they lay in their houses without artificial heat. I have been interested for many years in an experiment with a number of hens kept during winter in a cheap and roughly constructed house in the end of a shed. The temperature of this house during winter days was very little different from that outside. With the proper food, fed in proper quantities—rather in liberal than small amounts, but ever varied—the hens laid well. The cold air did not seem to be a drawback to laying, because dry. Winter egg production in cold houses is really a matter of feeding, variety and quantity. In summer these hens rested when they moulted. As I have said the moulting period is one of non-production, and it is well to let the hen rest at that time. Should she hatch out chickens, she will also have opportunity of rest. A hen which lays well during winter will naturally slacken off during summer. Your constituent, sir, told you nothing but what we have found out by actual experience.

By an Hon. Member :

Q. Do you say that hens will lay just as well by keeping them in a cool house?

A. It is a matter of strain and management. We build up the strain by selection. If I have a number of hens that lay well in winter, I select and breed from them, and by that means I get into a strain of hardy winter layers. That is the kind of fowl I urge the farmers to get. It is not so much a matter of molly-coddling, or warm houses, as it is of building up strains of fowls to suit the climate. We have been too long a time attempting to make the climate suit the hens. We have been trying, as it were, to make the tail wag the dog. We find, as I have said, that fresh air, variety of food and exercise are effective in the satisfactory production of eggs in the winter. I think I am warranted in saying that farmers are now producing a greater number of eggs with greater ease and at less cost in winter than they have ever done before. They have also the supreme satisfaction of knowing that notwithstanding increase in production that prices are actually advancing year by year rather than decreasing. I think I have answered that question and the other of sending strictly fresh eggs in winter to the high price city market. Mr. Wright, member for South Renfrew, told your Committee last year that some of his constituents heard me in the town hall of Renfrew make a similar statement as to high city prices two or three years ago, and that some farmers' wives acted upon it and sent their eggs to Montreal and obtained the high prices. I have said to farmers, 'There are the hungry consumers in Montreal who are paying the high prices, and here are you with the eggs on your hands, or capable of producing them, and why cannot you get into touch?

By Mr. Gunn:

Q. It strikes me the business men in London must be slow in their methods or they would take advantage of those prices?

A. I state to you what are actual facts.

By Mr. Henderson:

Q. The business man in London cannot get that price from the Montreal dealer, simply because he cannot get the fresh eggs from the farmer. The farmers cannot bring them in until they are four or five days old, and it is two or three days longer

before they are shipped. The result is that by the time they get to Montreal they are stale eggs, and no longer the choice article?

A. That is practically the situation where the farmer does not ship himself.

By Mr. Gunn:

Q. The great difference in price should induce farmers to bring their eggs in.

A. What the hon. member for Halton says is practically correct, but it does not alter my position or the correctness of my statement. It is not my fault or the fault of the Montreal people that they do not get the eggs. The shipments of the choice article have to be frequently made by the farmers twice per week—if possible, once anyway. Those farmers who are situated near a city market, or, shipping point, are able to do so, if they would take the trouble. Here we are up against one reason why new laid eggs, will inevitably be in limited number and command a high price.

Q. The farmers do not engage in the industry to a sufficient extent.

A. Yes, that is one of the principal reasons. The retailers will take the eggs if the farmers will only send them, but they must have the guaranteed article.

Q. The farmers cannot ship such eggs very easily?

A. Some farmers certainly can. That is why I say there will always be a certain amount of difficulty in getting new laid eggs into the hands of the consumer. The obstacles tend to keep up the high price. You see now, gentlemen, some causes why winter prices have been and are so high for the superior article.

Q. Why should Montreal be a better market than Toronto?

A. Toronto is as good a market to-day as Montreal.

Q. Why refer to Montreal then?

A. Because I was speaking of some 10 years ago. I wanted to bring out the point of increased prices, notwithstanding increased production. Toronto has been for several years past as good, if not a better, market for eggs than Montreal. And this applies to both winter and summer and always to the choice article.

Q. Is that true of poultry to-day?

A. Yes, and I can assure you further, gentlemen, that when I say there is always a short supply of the superior quality of poultry, that I am speaking the opinion of poultry purchasers in Toronto, Montreal and elsewhere.

Q. I ship to both markets and I have found Montreal better for both poultry and eggs.

A. Yes, probably because there are a greater number of retailers at present in Montreal to ship to than in Toronto. Allow me to bring one more point to your attention. In connection with poultry development, which it has been shown is rapidly taking place, but not fast enough to supply the more rapidly growing home market, we have yet the almost unlimited English market to send our surplus to, and in order to suit that market the surplus must be of the superior quality.

Q. There is an immense quantity of poultry shipped every year to the old country from Canada ?

A. Yes, but not nearly the quantity of the superior quality there should be. Out of a $33,000,000 market for eggs and poultry, I think, Canada sent $645,000 of eggs and something like $235,000 of poultry last year.

By Mr. Ingram:

Q. Then we export largely to the United States, do we not?

A. No, not to any great extent. There is 5 cents duty on eggs. Let me ask you to bear in mind, gentlemen, that at present it would seem as if we do not produce enough of eggs or poultry of the better quality to supply our own home market either in summer or winter.

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By Mr. Clements:

Q. There is no question about eggs. We imported a great many eggs from the United States last year?

A. That is one reason why our farmers should produce more.

By Mr. Henderson:

Q. We get the southern eggs produced in a warmer climate. How is it American eggs come to Canada? There is a surplus in Canada for consumption, surely.

A. No, surely not for the superior quality, or prices would decline.

Q. I know of large dealers in Montreal who ship large quantities of eggs to the old country every steamer.

A. I am sure they do.

By Mr. Gunn:

Q. There are large firms in Montreal who ship immense quantities of eggs?

A. Our home market calls for what is more strictly new laid eggs.

By Mr. Derbyshire:

Q. Select eggs.

A. Select eggs. And they are sold at a high price. It is the staler article that is shipped. Allow me to explain that there are always quantities of eggs that are called fresh eggs, but are several weeks old from force of circumstances. I do not think many strictly new laid eggs are shipped. They are eaten at home. From year to year that demand is increasing. Yesterday I made the statement that during midsummer of the past two years that eggs—strictly new laid eggs—were bought by a leading city purveyor at 20 and as high as 25 cents per dozen. The prices were certainly extraordinary, but they go to show how poultry development is shaping.

By Mr. McIntyre:

Q. You referred to eggs gathered, and brought to the consumer right after laying?

A. Yes, that is at the age of no more than four or five days after being laid.

By Mr. Henderson:

Q. Would they be strictly new laid after four or five days?

A. I think within that limit they might be so called.

Q. That would mean that they would be five days old when shipped, and it would take a day or two to get them into the hands of the consumer. That would be seven days. I do not think any dealer would give him that price for an egg as old as that?

A. I think, any egg within a week ought to be acceptable as new laid; I have asked purchasers.

Q. It might depend upon the condition of the weather?

A. Yes, certainly, I am speaking of the winter trade. In summer eggs sold for eating should be unfertilized as I have already stated.

INQUIRIES FROM FARMERS—WHAT THEY ASK ABOUT AND THE REPLIES GIVEN.

I now beg to call your attention to the inquiries frequently asked by farmers and replies thereto every year brings a great increase in the demand, on the part of farmers and others, for information in relation to the best and most up to date methods of poultry breeding. Our instructions to farmers—the result of over 20 years of practical and experimental experience—are to have a fowl that will be to him as near

an all-the-year-round money maker as it is possible to have her to be. That means that she must be a good winter layer; be of correct market type, so that her progeny will be the same; moult in midsummer or early autumn—and be ready to begin to lay in early November—when eggs are 40 cents per dozen, and continue to lay during the winter season, furnish eggs in early April to hatch out chickens and continue to lay until she moults in midsummer. I submit these questions so frequently asked and the replies thereto, in the hope that it will in going to the country, through your Committee, reach a wide circle of inquirers.

Q. What fowls have you found to be the best for farmers, a fowl that is a good winter layer, and the chickens of which are of correct type and quick growers?

A. Any variety of the Plymouth Rock, Wyandotte or Orpington breeds.

Q. What is the difference between breed and variety?

A. A breed is composed of two, three or more varieties. For instance, we have three varieties in the Plymouth Rock family, viz., Barred, White and Buff. The Wyandotte breed is made up of Silver Laced, White, Black, Golden and Buff varieties. The Orpington family have no less than ten varieties, the best known of which are the Buff and White. These varieties have different plumage, markings and characteristics. Some are better strains than others.

Q. What is strain?

A. Strain is the development of the best points in each variety. For instance, in making up the breeding hens the best layers and best marked types are selected in order to retain and perpetuate these characteristics.

Q. What is the difference between 'utility' and 'general purpose' fowl?

A. Both terms are generally used to convey the same meaning, viz., that breeds suitable to farmers should be good winter layers, be of correct market type, so that their progeny will be the same, hatch out her young if necessary; moult in midsummer and be ready to resume laying in the fall when egg prices are becoming higher. There is this difference, however, that one of the Mediterranean breeds, such as White Leghorn, and which are non-sitters and not good table fowls, may be a money maker by being an egg layer both in winter and summer (except always moulting period), and is in consequence fully entitled to class as a 'utility' fowl. Strictly speaking the term 'general purpose' fowl is meant to describe a fowl that is good for eggs as well as flesh, hatches out her young and is a good mother.

Q. Is it possible to make fowls moult in summer?

A. Yes, after laying well all winter and giving eggs in spring to hatch chickens of the correct market type from—moult in July and August or early September. They should be in full feather and ready to begin winter laying at end of October or early November, when egg prices are on the increase.

Q. How long does the moulting period last?

A. From eight to twelve weeks according, to handling of your birds. In this connection it has been noted that the progeny of fowls which moult in summer almost instinctively do the same. This trait has also been noted in connection with winter laying.

Q. How can the summer moult be brought about?

A. Put the fowls on a little less than half rations for ten or twelve days. This will stop egg production and is said to loosen the feathers. At the end of this time resume the full rations. On resumption of full rations give cut bone three times per week, mash other three days. Put a little linseed meal in the mash. Remove cock birds from hens and allow latter to run in a field where they can find clover, grass, &c. When the hens are in their moult be careful not to get them too fat before they resume laying. It is easier to get the hens fat before than after they have resumed egg laying.

BEST MODEL FOR A POULTRY HOUSE.

Q. What is the best type of poultry house for a farmer or beginner to adopt?

A. A house that has been found suitable is one with a shed attachment, the

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latter for the fowls to exercise in by searching for the whole grain food which is thrown in litter of cut straw, chaff or dry leaves, and which should be on the floor of the shed attachment to a depth of 6 inches. In some cases cotton frames are placed in lieu of windows in the shed. In other instances, where the winter is long, stormy and cold, there are hinged windows in the shed in lieu of the cotton. At night and on very stormy days the window could remain closed. But the window should face south, and on bright days the sun should shine into the shed. There are many days during a part of which the window of the shed could be opened. There is wire netting across the windows to keep the fowls from getting out. A bright shed to exercise in is an incentive to egg production.

Q. Would you advise the use of incubators and brooders for the hatching and rearing of chicks?

A. Certainly. For every incubator over 120-egg capacity get two brooders, for if you have a good hatch from one of the large incubators, you will find one brooder too small. Put no more than 50 chickens into a brooder, such as are usually sold with 120 and 220-egg capacity machines.

Q. What is the proper food for hen and incubator hatched chickens?

A. First few hours very little food is required. If the hen has been well fed, after being taken off the nest with her chicks, she will be inclined to brood her chicks. This is desirable, particularly in the early part of the season. A few stale bread crumbs will be all the food required. Next day give stale bread soaked in milk and squeezed dry. Feed a little at a time and leave none on the platform. A little hard boiled egg finely cut up may be added with benefit. Continue this for a day or two and add granulated oatmeal or finely crushed wheat. Many persons feed finely crushed wheat from the first, and with success. With us, at the end of 10 days crushed corn was given. Whole wheat was not fed till after the twelfth day, and then a little at a time. As the chicks grew older they were fed a mash composed of stale bread, shorts, cornmeal, ground meat, &c. A small quantity of finely cut bone was eaten with avidity and with benefit. Skim or sweet milk and water were given for drink. On the chickens becoming fully feathered, the mother hens were placed with the others and the chickens returned to their coops as usual, and were allowed to remain in them until removed to more commodious quarters in the shape of a colony house, or one of the small pens in No. 2 house. On the incubator-hatched chickens becoming too large for the brooders they were removed to colony houses.

Q. What are good winter egg producing rations?

A. The following have been found most effective: Morning rations, whole grain, one pound to every 16 or 18 hens; wheat preferably. Throw this on litter on the floor. Noon, a light ration of grain, buckwheat and oats mixed on four days of the week; other three days give cut bone in proportion of one pound to every 15 hens. Afternoon, ration, mash, in liberal quantity, and composed of two parts shorts, one part ground oats or barley and one part cornmeal. Mix with hot water or hot skimmed milk to a crumbly condition and fed when cool. Add when mixing a few pinches of salt and dust in a modicum of black pepper or powdered ginger. Occasionally mix boiled turnips with mash; lawn clippings steamed make an excellent form of green food and are much relished. They may be fed in the troughs two or three times per week and at 11 a.m. Roots should always be in the pens. So should grit, oyster shells and pure water. Or, if the house is cold, a little mash may be given in the morning, say half usual quantity, and follow with a small quantity of whole grain. But the morning meal should not be fed in such quantity as to make the hens disinclined to search for their grain food.

I now wish to call your attention, briefly, to a disease to turkeys, and which is becoming too common. Every year many thousands of turkeys are carried off by the fatal disease known as 'black head,' and which is generally described by farmers as cholera. A correspondent wrote me some time ago from Elginburg, Ont., saying that several of his turkeys had become mopy, had diarrhœa and finally died. I took his

letter over to Dr. Higgins, of the veterinary laboratory, and he advised the sending of sick bird. My correspondent did so, and the examination was made by Dr. Higgins, who thus reported it to his chief:—

REPORT OF DR. HIGGINS UPON A CASE OF DISEASED FOWL SUBMITTED FOR EXAMINATION.

BIOLOGICAL LABORATORY,
OTTAWA, December 19, 1904.

Dr. J. G. RUTHERFORD,
Veterinary Director General,
Ottawa.

SIR,—I beg to report that I have examined a turkey sent to the laboratory by Mr. A. G. Gilbert, of the experimental farm, also the liver of another from the same source, Mr. W. E. Serson, Elginburg, Ontario.

Parasites invading the intestine and visible to the naked eye were not discovered.

The lesions in the turkey were found in the liver and ovecaeca. A microscopic examination of these lesions revealed the presence of amaeba meleagridis (Smith, 1895), the causitive agent of entero-hepatitis in turkeys, a disease more commonly known under the name 'black-head.'

The first investigations and study of this disease were reported by Doctor Theobald Smith in Bulletin No. 8 of the United States Bureau of Animal Industry.

As pointed out by Dr. Smith, very little can be done in the treatment of affected birds, owing to the deep seated nature of the lesions.

He also points out as the best method of treatment, the destruction of all birds and a new start from healthy stock after thorough disinfection of premises occupied by birds.

The parasite is present in the excreta, and may be transmitted directly by this means. No intermediary host is known or suspected, hence the infective agent is transmitted by direct inoculation, and the need for thorough disinfecting measures is therefore apparent.

I have the honour to be, sir,
Your obedient servant,
(Sgd.) CHARLES H. HIGGINS,
Pathologist.

From the foregoing the fatal nature of the disease and the effect it will have on the production of turkeys may be imagined. There is no cure for it, as shown, but the destruction of the whole flock in which the disease has broken out. Why I bring this to your attention to-day is simply this, that I have letters from different parts of Canada, the eastern townships on one side and the North-west Territories on the other, describing the symptoms peculiar to this disease. In the case of the North-west one man was most indignant, saying, 'Where could my birds get the disease? This is a new country and we have no infection here.' I wrote and asked him where he got his turkeys. He said from a breeder in Ontario, I think. Therefore it was clear that the infection came with the birds. On the occasion of an excursion to the farm from the Eastern Townships, two farmers came to my office and stated that for the last two years they had not been able to raise any turkeys. I asked, 'What was the matter?' They said, 'It seems to be cholera. Just when they get to the hardy age they droop and die.' I promised to inquire into it. There was not the slightest doubt that the loss of the birds was caused by black head. The most serious phase of the matter is that it would seem that when the symptoms of illness are first noticed that it is then too late to cure the disease. It is well that the farmers should understand this.

By Mr. Christie:

Q. Don't you think science has got up to the proper treatment yet?

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A. Perhaps not, but we have the results of inquiry made by a committee appointed by the United States Bureau of Animal Industry at Washington with Dr. Salmon at its head, and the committee spent years in investigating the disease. The conclusions arrived at where the same as stated by Dr. Higgins—that there is no cure yet known.

By Mr. Wilson:

Q. If there is no cure and no use treating the birds if they get the disease, what are you going to do about it?

A. At present it seems as if there was nothing to be done after the disease has shown itself in a flock, but to kill all the birds, for all will eventually become affected.

Q. Just as soon as it appears in one bird?

A. Yes. The treatment is heroic, but it is the advice of the experts who have made investigation up to date to our turkey raisers.

Q. The treatment is heroic enough. The only advantage in the good a man does to his neighbour by preventing possible infection or contagion?

A. Yes.

By Mr. Cash:

Q. Would the progeny be affected? Could you separate your flock and still breed from them as in tubercular cattle?

A. Yes, Dr. Higgins informed me that it was admissable to breed from eggs laid by contaminated birds. Dr. Higgins says the infecting parasite is present in the droppings.

By Mr. Wilson:

Q. You advise if it gets into a flock, to kill them all?

A. Yes.

By Mr. Cash:

Q. Isolate the well from the affected.

A. Dr. Salmon says that such a course has never been successful. The birds are contaminated when very young and do not show the effects of the contamination until they are partially developed.

By Mr. Derbyshire:

Q. When the bird is developed, it is too late ?

A. The disease seems to develop with the bird. I have particulars of the disease and its progress here, and which appeared in my report of 1899. It is too long to give to your committee this morning. I bring the matter up again because the disease is spreading.

By Mr. Wilson:

Q. Will that be appended to this evidence?

A. Yes, if desirable.

By Mr. Gunn:

Q. It is a prevalent disease?

A. Yes, I am afraid it is becoming more prevalent every year.

By Mr. Blain:

Q. Why do you not have turkey production and experiment at the farm?

A. In the first place, we have never had them, and in the second, we have no room for them.

Q. They are very valuable to the farmers just now owing to the high prices. So it is with ducks and geese as well, and I rather think your experimental farm people should devote some of your energy to showing the farmers what kinds they should have and how they can be most profitably raised and marketed.

A. I have thought so myself, but I am not in an executive position. I can give as an opinion that our poultry department at the farm is too limited at present, to carry on the work suggested or to take up advanced experimental work in connection with poultry development.

By Mr. Ingram:

Q. How many fowls and how much land have you?

A. 240 fowls and 2 acres of land. It is remarkable the many lines of investigation there are in connection with poultry keeping.

By Mr. Wilson:

Q. You have no water and so could not have ducks and geese?

A. No.

Q. You could not raise them profitably without it?

A. The young birds might be raised without water. The breeding stock require it in order to be in robust condition.

Q. You might put in ponds?

A. Yes, but our ground is limited enough for present requirements. We have used some of it for 18 years.

By Mr. Blain:

Q. It seems to me to be a very important thing this keeping of turkeys, geese and ducks. There is nothing the farmer could raise that brings such a return for the labour as the production of turkeys at present prices.

By Mr. Gunn :

Q. At the prices of the last two years, you may say ?

A. Yes, owing, doubtless, to the prevalence of this disease and to bad weather, the turkey supply has been very limited indeed in the past two years.

By Mr. Wilson (Lennox) :

Q. It would not be very profitable if the black head got into the flock.

A. No, it would not. It is a serious matter the prevalence of this disease particularly when you realize that it has made its appearance in the North-west, a new territory.

By Mr. Armstrong :

Q. All these people who have infected stock should really get new birds ?

A. Yes, and not only the infected birds but the whole flock should be killed, and then, Dr. Salmon says, the ground they were on should have a rest for six or eight months. New stock should not be put on the same ground but on another part of the farm. Therefore you can realize the serious nature of the disease.

Q. In obtaining new birds might a man not get some from a flock that has already been affected ?

A. That is the serious phase of the disease.

Q. Is there no way of testing the bird or knowing it is infected ?

A. No, the only way is to get them from a flock of turkeys in which there has been no sign of the disease or from a part of the country in which it has not been

known. The obtaining of and changing birds from one flock to another has been the cause of serious spreading of this disease.

By Mr. Cash :

Q. Supposing this disease has been in a flock and you destroy the turkeys, what means do you take of disinfecting the premises ? Does it require contact with the diseased germs to spread it ?

A. Dr. Salmon says the germs are discharged with the excrement, and contagion is so spread. The food and drinking water also become contaminated from the droppings. As a disinfectant the same authority recommends carbolic acid five parts to 6-100ths of water.

Q. Supposing the same flock of turkeys used these premises they would all become diseased ?

A. Certainly, sir.

By Mr. Jackson (Elgin):

Q. Don't you think that it would be in the interests of the farmers that there should be some time at the Experimental Farm devoted to the raising of turkeys? Now, with reference to that fowl, some farmers claim that a flock of turkeys although they might eat their heads off if fed grain, yet as scavengers they assist in keeping their farms clean. After the turkeys are three or four weeks old it is not necessary to feed them. They run over the fields without being looked after, and during all that time they are destroying vermin which are most injurious to our crops. Therefore it does seem to me that there should be more attention devoted to them and experiment made with them.

A. Turkeys require care until they reach the stage of what is called 'shooting the red.' After that they are hardy and do just what you say in way of foraging.

By Mr. Christie :

Q. They go to your neighbour's grain fields ?

A. When you give them opportunity, so will cows or sheep.

By Mr. Jackson (Selkirk):

Q. Won't they hurt the grain fields ?

A. If they get grasshoppers they will not touch the grain. They are foragers from first to last and do a great deal in destroying injurious insect life. When the crop has made good growth or has been taken off no harm can be done.

By Mr. McIntyre :

Q. Will you revert to another point ? In making recommendations of certain breeds of fowls, have you taken into consideration the difference between them in the strength of the shell of eggs laid by different breeds, or have you given any thought to obtaining strong shells in eggs, either the inner or outer shell, the inner shell for the purpose of keeping the egg and the outer shell to prevent it from breaking.

A. We have found out that strength of egg shell can be regulated a great deal by the food and treatment of the fowls.

By Mr. Cash:

Q. According to the quantity of lime they get?

A. Exactly. It is an object with us to see that winter rations contain a proportion of egg-forming material in the shape of lime. Besides we supply ground oyster shells for the purpose of making strong shells, and then again give a form of grit

which contains a certain percentage of lime. When we do that regularly there is no difficulty in getting a hard shell. I am glad you brought that point out. It is important as affecting winter egg production. If fowls during confinement are fed grain whole, or ground, without any regard to the supply of shell-forming material, the first intimation you will receive of lack of lime element in their rations is an egg laid with a soft shell, and if this hint is disregarded you will probably get one without any shell at all. But a man who is acquainted with the management of poultry will know that he has not only to feed his fowls in winter egg-producing foods, but that the rations should consist of a certain percentage of shell-making material.

By Mr. Christie:

Q. Do you believe in giving them glass?

A. No, I am afraid if you give them glass it might perforate the bowels.

Q. If you give them oyster shells or lime and put broken glass with it, the hens will take the glass first?

A. That may be, but I know we have to guard against perforation of the crop and bowels of the bird. We have had instances of fowls being killed by their crops being perforated by sharp slivers of oyster shells and cut bone.

Q. We feed them glass and we have never lost one?

A. I do not doubt that. How do you prepare it?

Q. Break it up with a hammer.

A. I have had fed broken delf to a slight extent, but not glass. Another reason why eggs are laid with a soft shell in winter, is because the hens are allowed to get into an over-fat condition. Then again the feeding of over-stimulating food is calculated to cause the expulsion of the egg from the oveduct before it is completely coated with lime. You now, gentleman, begin to see, I am sure, when we talk over all the various points of proper food and management that egg production in winter is not so easy as most people think. The same may be said about the placing of the strictly new-laid egg in the hands of the consumer during midsummer. I am often asked: Why is it that eggs are so high in price, and that the price is getting higher rather than decreasing? I say, because they are scarce, and they are scarce because they are hard to get. Poultry keeping is not easy. It is not only an advanced science, but it is an exact and exacting science. It is exact, because if you do not feed enough you do not get any product. If you feed too little you get the same result. It is exacting because it requires regular attention, energy and perseverance. I bring these points out more fully in a bulletin we are preparing.

By Mr. Wilson (Lennox):

Q. If you feed too little you do not get any; if you feed too much you do not get any. That is what you mean?

A. Exactly. You have to know the happy medium. If you feed too much the hens, particularly the older ones, will become so fat they will not lay.

By Mr. Derbyshire:

Q. They will be moping or idling about?

A. Yes. The fat hen is the source of a great many of the thin shelled eggs we have been talking about and of other disastrous results.

By Mr. McIntyre:

Q. It is usually thought that some breeds lay eggs with thinner shells than others?

A. The Mediterranean class is apt to do that, and so indeed are all prolific layers. They require a greater proportion of shell-forming material than the slower layers.

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By Mr. Jackson (Selkirk):

Q. Do you not think the poultry fancier who breeds show birds is responsible to a large extent for all the trouble with our birds to-day ?

A. To a certain extent he may be, if he breeds only for fine feathers.

Q. The old common fowl as we had here 25 years ago is better for eggs than the fancy fowl we have now?

A. I would not say that. I must be cautious what I say or I will be up against the fanciers. I would not like to do them any injustice.

Q. They are breeding for feathers and looks?

A. Yes, for show purposes, and if they do so at the expense of constitutional vitality and egg laying they are simply committing suicide. I have often said this to them, and they realize it.

By Mr. Blain:

Q. I did not understand that from your general discussion that the hens produced 20 years ago were equal to the hens produced to-day for the production of eggs?

A. No, I would not like you or any other honourable member to infer anything else. As far as constitutional vitality is concerned, that must be safeguarded by both fancier and farmer or disaster will surely follow.

By Mr. Jackson (Selkirk):

Q. For general egg laying would you not say hens were better birds 25 years ago than to-day?

A. I could not, or, I would not like to say so. What I say is that constitutional vitality should not be impaired. If the fancier is not careful he might do so through breeding for show purposes. I would like to make myself clear on these points. Constitutional vitality, egg laying, property and market type must be safeguarded at all hazards. I have to go out among the farmers and have also to meet the fanciers who thoroughly understand my position and I theirs. Many farmers are now breeders of fine fowls without loss of size, shape or fine appearance. Let me explain that we can have the fine feathers, and correct type and egg-laying characteristics combined.

By Mr. Christie:

Q. A hen then is just like a machine?

A. Yes; very much so, indeed.

Q. You manage and feed her properly and she produces eggs?

A. Yes, that is exactly my meaning.

By Mr. Derbyshire.

Q. Just like running oats through a fanning mill?

A. Yes, very much so.

By Mr. Gunn:

Q. Is it not a fact that if you get a large number of birds together they are likely to become diseased and die ? Is that one of the established facts of the industry ?

A. To-day much of the existence of our fowls is artificial and as a result great care is necessary to prevent disease; that applies to all classes of stock. The artificial conditions under which both cows and fowls have been kept for such a long winter period and the gentle pressure we have put on them to get results have certainly tended to an impairment of vitality, but later styles of houses and management have done away with much of this work. As I have said, care is necessary to prevent diseases.

By Mr. Cash:

Q. Do you consider for general use a graded fowl better than a thoroughbred?
A. I would not like to say that.

By Mr. Derbyshire:

Q. You stick to the thoroughbred and you are all right?

A. Permit me to say again in answer to that point that impairment is only made by those fanciers who breed for fine feathers at the expense of egg laying and market type, and doubtless there was a certain class of the community who did that, for men have told me that they really did not care whether their hens laid an egg so long as they won the red ticket, but they have seen the folly of this. Happily the great majority of farmers have stock with strong constitutional vitality, and I am happy to say that they occasionally go to a show and win a prize, but I am afraid they sometimes do not win when they should. I tell you, gentlemen, it is in the farmers' interests as well, and in the interest of the fanciers that shows conducted in such a way are calculated to do a great deal of mischief. But it should be the aim of the farmers to hold pure bred fowls, as I have tried to explain to you, in the beginning of my evidence. Breeds good for eggs and flesh and of correct market type, as near all the year money makers as they can be. With such birds farmers will get better results than from nondescript fowls, too many of which they have about their premises.

Q. And they will get better prices for chickens from such stock?
A. Yes, that is a good point.

By Mr. Christie:

Q. Are we to take into consideration the value of the chickens?
A. Yes, those of good market type.

By Mr. Cash:

Q. You take an ordinary barnyard fowl of vigorous vitality, and you make a cross with, say a Plymouth Rock, would not the progeny of that be a better fowl than the parents. The farmer then would almost have a pure bred fowl.

A. That is, certainly better than a nondescript, but I would call the progeny a compromise for you are grading her up at the expense of the Plymouth Rock. You take a small fowl and mate her with a big fowl and you have a medium fowl. She is larger certainly, but at the expense of the larger fowl. It would take two or three years to get the results you would have by breeding from pure Plymouth Rocks.

Q. Do you think by so doing you risk vitality and vigour ?

A. No. It is always better for the farmers to use pure breeds. They need never fear loss of vitality or size of offspring if they mate their breeding stock properly and rear the chickens carefully. All these points I have endeavoured to touch upon.

Now, gentlemen, I submit the foregoing remarks to you. I wish to thank you very kindly for the interest you have displayed in my remarks. I can assure you that the poultry department of farm work is bound to be in the near future not only going to be more generally adopted by the farmers of the country, but will be found one of the best paying.

By Mr. Ingram :

Q. You have another subject, which you have evidently overlooked, tuberculosis in fowls ?

A. If the committee have time I bring it to their notice with pleasure. Tuberculosis is akin to black head in its fatal nature. A gentleman at Enderby, British Columbia, wrote that he had fowls that were gradually wasting away. I took the letters to Dr. Higgins, as I did in the case of the black head among the turkeys, and

again did we procure sick specimens. On examination the tuberculosis germs were discovered by Dr. Higgins. That was the first instance of tuberculosis in British Columbia.

By Mr Wilson (Lennox):

Q. Does it first attack the lungs ? How does it affect the fowl ?

Mr. WALSH.—All the organs are affected, the liver, intestines, &c.

A. Yes, the liver, intestines and other parts. The fowl wastes away.

Q. I have seen it in a fowl apparently in very good condition when it was killed, but the disease was not far advanced.

A. Yes, when the disease has a hold it is incurable. It is of very great advantage to have such expert authority as Dr. Higgins to refer these matters to. I will append Dr. Higgins' report in full.

By Mr. Armstrong :

Q. Do you go throughout the country delivering lectures on behalf of the government ? Why I ask that is that I think it is most important that the farmers should receive such information as has been heard here.

A. Yes, I have been doing so for twelve years.

Q. The government paying your expenses ?

A. Yes.

Q. Do you go where you are invited ?

A. Yes.

Q. What time of the year do you go ?

A. I go when instructed to do so. For instance, I was in Cape Breton last fall for several weeks, and before that I was in Winnipeg.

By Mr. Gunn :

Q. You delivered a series of addresses at different points.

A. Yes.

By Mr. Wilson :

Q. Do you attend shows ?

A. Yes.

Q. Pretty generally ?

A. Yes. Some years ago I was the only one going from point to point, but now there are half a dozen.

By Mr. Derbyshire :

Q. I may say while this matter is up that our poultry men at Brockville formed a district poultry association. They thought they would like to have a man from headquarters to come to address them, so I asked the Minister of Agriculture to allow Mr. Gilbert to come to Brockville on a certain night. The minister kindly and readily consented and Mr. Gilbert came and met the association and a large meeting and delivered his address, with which they were very much pleased. If you want the same thing ask the consent of the minister, then arrange for the meeting, and I am sure Mr. Gilbert will be glad to be there. It is his business, in fact, to be there.

A. I am happy to be at the service of the committee and to go where instructed.

By Mr. Armstrong :

Q. That is important to know, for the farmers cannot have too much information about poultry raising, which is so profitable.

A. It is certainly important to convey correct information to the farmers. I have had twenty years experimental experience, and I am here to give your committee and through your committee the farmers of the country the results of that experience.

By Mr. Ingram :

Q. Do you attend the shows of fancy fowl ?

A. Yes.

Q. And work in harmony with them ?

A. Yes, and we discuss matters together. They thoroughly understand that the fancier who will breed for show purposes—the point brought out so strongly here—at the expense of constitutional vitality, egg-laying qualities or market type, is simply committing suicide and doing irreparable damage to the poultry interest of the country.

By Mr. Walsh :

Q. Why are prizes given ?

A. You are getting me on dangerous ground, because prizes are given in some cases by local governments and with the intent to develop the poultry interests of the country through the farmer.

By Mr. Jackson (Selkirk):

Q. What breeds do you recommend, or do you recommend any, for general purpose fowl ?

A. Yes, I am happy to say that after long experience I am able so to do.

Q. What do you recommend when the farmer asks you that question ?

A. Plymouth Rocks, Wyandottes, Buff and White Orpingtons, Dorkings, &c.

By Mr. Parent :

Q. Those are general purpose fowl ?

A. That is the point.

Q. As far as producing eggs, they are not the only breeds you recommend ?

A. These are for general purposes, that is good for eggs and flesh, and are good mothers if used to hatch out their young. For eggs alone, the Mediterranean family of Leghorns, Minorcas, &c.

By Mr. Blain :

Q. You recommend the fowls you first named as egg producers as well as being good for flesh ?

A. Yes, sir. Would you allow me to reply by reading from one of the replies to questions asked by farmers : 'What fowls have you found to be the best for farmers ?

'A. A fowl that is a good winter layer and the chickens of which are of correct market type and quick growers. Any variety of the Plymouth Rock, Wyandotte or Orpington breeds, for the reason that they are a general purpose fowl and make good mothers.' These are nearly all the year round money makers. On the other hand some breeds are good for eggs but are not the best for table.

By Mr. Christie :

Q. I have not heard you mention about the male fowls. Are they to be changed every year or so ?

A. That is an important point. If you have a male bird that is of correct type and from a good egg laying strain of fowls, I would advise his use as long as possible. When he is changed care should be taken that the bird which replaces him is of equally good type and from a good egg laying family.

APPENDIX No. 2

By Mr. Wilson (Lennox):

Q. How often do you change the male bird?
A. Once every two years.

By Mr. Christie:

Q. How about the chickens ?

A. I would say we generally save one or two birds in case of loss or accident. I would mate with the progeny of a male bird I knew about rather than take one from an unknown strain. That looks something like inbreeding, but I would rather have inbreeding to a certain extent than haphazard mating. This was brought out at the meeting of the Committee of last year. If I had a male bird of a good market type and it came from a good egg-laying strain, I would mate him back to the hens he came from, for he is only the offspring of one egg from one hen, but it is very different when you mate the male with his pullets, because he is the father of them all. Yet I would rather do that than breed from a bird from a poor egg-laying strain, for I would surely be going backwards. I might be going back to a poor egg-laying strain and so undo what I have been trying to build up for several years. Skill is required. Some people take up poultry-keeping without any knowledge of it, meet with difficulties they do not know how to overcome, and give up. From what I have laid before your Committee you cannot fail to see that profitable poultry-keeping is not easy in any of its phases of winter egg production, hatching and rearing of chickens, developing strain, keeping up size and vitality and renewing and keeping up to the most profitable pitch the 'strain' you have.

By Mr. Jackson (Selkirk):

Q. What would you suggest for our part of the country? The weather is so cold that the hens' combs freeze in the winter if they are let out?

A. We have the same here at Ottawa. We have to keep our laying stock under artificial conditions from sometimes the end of November to March of the next spring. We have artificial heat from coal stoves in some of our buildings.

Q. You have a coal stove in the building?

A. I do not like a coal stove, for it is one of the worst heating agents, for when you want heat the most in the early hours of the morning, say from two or three o'clock till six, the fire is lowest.

Q. In Manitoba the water freezes over night.

A. I would rather have it so than to use a stove. Even with a stove the water will freeze on cold nights with us.

Q. What fowls would you suggest for our country?

A. Plymouth Rocks, Wyandottes or Orpingtons.

By Mr. Parent:

Q. Isn't it better to let the fowls in the snow and get them used to it, rather than keep them in warm places?

A. I certainly think it is. I am happy to say that we breed fowls now to suit the climate. We are experimenting with a new kind of house by which we hope to get a hard winter egg-laying strain of fowls to suit climatic circumstances.

By Mr. Jackson (Selkirk):

Q. Who is doing this?
A. We are.
Q. At the farm ?
A. Yes.
Q. Can we get fowls at the farm?
A. You cannot get them in sufficient supply yet.

By Mr. Christie:

Q. Can we get the eggs from such fowls from the farm?

A. In a limited quantity. But we hope to have them in greater number and from the very best type.

Q. Have you started breeding and distributing eggs and fowls from such types from your own and the other farms?

A. We have sold eggs on a limited scale, but from the illustration stations inaugurated by Prof. Robertson, eggs and birds are largely distributed at low prices. Such work cannot be too highly appreciated for it is along right lines.

By Mr. Parent:

Q. You sell eggs at $1 a sitting?

A. Yes, as long as we have them.

Q. I am told that you got another kind of fowl that is supposed to be the very best of all, the Faverolle?

A. Yes.

Q. Have you had any success with them?

A. Yes.

Q. I went over the farm the other day and we could not buy any chickens from that breed?

A. The Faverolles are imported from France and they are recommended as a good general purpose fowl. I have found that when we get breeds from England or France —where they have been breeding for hundreds of years—that when they send you a breed with a recommendation as a good layer and market type that you can depend upon, the birds proving the statement to be strictly true.

Q. Are you sure that the types you have here came direct from France?

A. We imported them.

Q. Are you sure of that?

A. I am sure, because they were bought by and imported by us.

By Mr. Ingram:

Q. You have increased your fowls in number?

A. Yes, for experimental purposes.

Q. Is it the intention to go on and increase the number?

A. No, we have reached the limit of our space.

By Mr. Jackson (Selkirk):

Q. How many breeds have you?

A. Roughly speaking, 15.

Mr. BLAIN.—I have a motion here, Mr. Chairman, that I would like to put now while Mr. Gilbert is here. I will just read it:—

'Moved by Mr. Blain,

'Seconded by Mr. Ingram,

'That this Committee is of the opinion that the Department of Agriculture should commence raising turkeys, geese and ducks, on the experimental farm, Ottawa, for experimental purposes, so the results may be made known to the farmers through the printed reports issued by order of this Committee.'—Motion adopted.

I would like to get Mr. Gilbert's opinion on this matter. I move the resolution for the reason that the production of geese, turkeys and ducks is very profitable to the farmers at the present time. The price of these fowl may go up each and every year, and I do not think there is any product on the farm that will bring better returns to the farmers, than turkeys, geese and ducks, at the present time.

APPENDIX No. 2

WITNESS.—As far as my opinion, ex officio, is concerned, I have long felt the necessity of going into that and other kind of work, but we have not the room.

By Mr. Wilson:

Q. You have 200 acres as an ordinary farm?
A. Two acres are allotted to the poultry department.
Q. You have the balance of the farm to get more room from?
A. It is possible to arrange it.

By Mr. Jackson (Selkirk):

Q. You could also say you would like 10 or 11 acres of ground, if you could get it?
A. Certainly, I would. We certainly need more and new ground.

TUBERCULOSIS IN BRITISH COLUMBLA FOWL.

Dr. Higgins' Report on the Location of Tuberculosis in Sick Birds sent from British Columbia.

Early in the month of May last, a letter was received from Mr. George Lawes, of Enderby, B.C., stating that several of his fowls were in a very emaciated condition without any reason for their being so, as they had been well fed and cared for. One or two had recently died and others seem as if they would not last long. His letter was submitted to Dr. Higgins, who suggested that if a definite diagnosis was desired by Mr. Lawes that he be requested to send on one or more of the worst specimens. Mr. Lawes, soon after forwarded two sick fowls, and the post mortem examination of one by Dr. Higgins confirmed what from the first was suspected. A copy of his report which was made to the Veterinary Director General, Dr. J. G. Rutherford, and forwarded by that gentleman to our department, is as follows:—

'BIOLOGICAL LABORATORY,
'OTTAWA, May 20, 1904.

'No. 247. This fowl, a Buff Orpington from Geo. R. Lawes, of Enderby, B.C., was chloroformed on the 13th inst. The autopsy revealed lesions of tuberculosis, which cultures and microscopic examinations have confirmed.

'Very nearly all the tissues of the body were invaded by the lesions. The liver was about twice its normal size and contained tubercles varying in size from a pin point to a hazel nut. The spleen was about three times its normal size.

'The lesions of the intestines were of a chronic nature and were without doubt instrumental in communicating the disease to other fowls with which she associated.

(Sgd.) 'CHAS. H. HIGGINS,
'Pathologist.'

A copy of this report was mailed to Mr. Lawes with the statement that there was no known cure for tuberculosis among fowls, and that his birds were not likely to recover. Mr. Lawes afterwards wrote that his birds continued to die, one by one, and would likely do so until exterminated.

Such being the deadly nature of the disease it is of vital importance to the poultry keepers of British Columbia that its presence in their province and its fatal character should be known to them. From other points in British Columbia reports of a similar kind to that of Mr. Lawes were received. The correspondents were informed of the results of the examination, and advised to take immediate action upon conclusive identification of the disease, by killing off their birds at once. In one case a reply was

received that doubtless the situation was serious, but he would risk consequences. Such a mistaken attitude to be regretter, for it only postpones the inevitable and renders the stamping out of the disease more difficult.

Dr. D. E. Salmon, Chief of the United States Bureau of Animal Industry, in his book entitled 'The Diseases of Poultry,' writes as follows on the treatment of tuberculosis in a colony of fowls: 'The eradication of tuberculosis in birds from infected premises can only be attempted with a fair prospect of success when all the birds are sacrificed. Any individuals that are preserved are liable to have ulcerations of the intestines, from which the bacilli are constantly distributed. There should, consequently, be no attempt to save any birds from an infected flock. When the birds are all killed and disposed of by burning or deeply burying, the premises should be carefully disinfected.' Then follows detailed instructions as to the proper method of cleaning and disinfecting building and premises. Concluding, Dr. Salmon says: 'After the cleaning and disinfection is accomplished the premises should be opened to the sun and air for a month, if possible, before new birds are introduced.'

Writing of the tuberculosis condition of the fowl from Enderby before being killed for examination, Dr. Higgins says: 'There can be no doubt that a fowl infected to such a marked degree must have been a constant menace to all others with which it may have come in contact, as countless numbers of bacilli were present in the fæces. This is, I believe, *the first identification of tuberculosis in poultry in Canada,*

Having read over the preceding transcrips of my evidence, I find them correct.

A. G. GILBERT,
Manager, Poultry Division,
Central Experimental Farm.

MANAGEMENT OF BEES—CARE OF COMBS AND HONEY

House of Commons,
Committee Room 34,
May 23, 1905.

The Select Standing Committee on Agriculture and Colonization, met here this day at 10 o'clock a.m., Mr. Greenway, Chairman, presiding.

Mr. John Fixter, apiarist at the central experimental farm, attended at the request of the Committee and made the following statement in reference to the work in his department.

Mr. Chairman and gentlemen, it affords me a great deal of pleasure to appear before your Committee to give an account of some of the work carried on at the apiary at the central experimental farm. We have carried on a great many experiments in wintering bees in the cellar, in the root-house, in a pit dug in the hillside, outside on the summer stand, and outside with extra cases covering them.

By Mr. Wright (Renfrew):

Q. With what?

A. With extra cases covering them. Should it be the wish of any hon. gentleman for me to explain the appliances on the charts before the experiments, I shall be pleased to do so.

By Mr. Wilson :

Q. That is what you put them up for, I suppose, for the purpose of explaining them ?

DESCRIPTION OF CELLAR.

The cellar is below the private house. The walls are of stone, and the floor of cement. The bee room is twelve feet wide by fifteen feet long and seven feet high, allows of three tiers of shelves and two passages. It is boarded off from the remainder of the cellar by a partition which extends all around the chamber, and far enough from the stone wall to allow of an air space. Should a person have enough bees to fill the cellar the boarding could be left out. Under the cement floor a layer of one foot of stone, varying in size, acts as a drain and keeps the cellar perfectly dry.

Q. You will not find that in many private houses, a layer of stone one foot deep, before putting on the cement. Would not a tile answer as well, for the drain?

A. No. In going through the country attending Farmers' Institute meetings we very often take up the subject of cement floors for stables and cellars, and we hear complaints about their floors being damp; upon inquiry we find the great trouble in making the cement floor perfect is in not having that foot or more of stone which acts as a drain. It also keeps the cement far enough from the earth so that the moisture does not come in contact with the cement. In preparing for the stone you ought always

to level off the earth with an incline to a point that is lowest at the outside. Should there be any water it will follow this incline. You can put in your drain around the outside of your walls and have the water naturally follow the slant in the earth to the drain, and then with this extra stone, I should say 18 inches at one end and a foot at the other, it should make a perfect floor.

Q. The difficulty I see about it is that you will hardly ever find a cellar deep enough to do that, and to get in your drains, especially in houses already built, you might build them now, that way.

A. The house under which this cellar was put was built many years before we went to the Experimental Farm.

Q. Yes, but I am speaking of houses generally. You know as a rule that cellars are not very deep in houses.

A. That extra foot of earth must be taken out in order to allow for that foot of stone before the cement is laid ?

Q. You would not like to go too near the foundation for fear you would get into trouble. It is not perhaps pertinent to what you are saying, but I think generally throughout the country the cellars are not deep enough for that ?

A. That is a very important question, not only for bee keepers, but for all. I will explain how our cellar was made. The stone wall was built before the floor was cemented; we had not depth enough to put that depth of stone under; we took out sufficient earth to make the depth required and put the stone in its place; care was taken when removing the earth to only take out sufficient below the wall to wedge extra stone under it and no cracking in the wall could be seen. The cement was then made on a level with the bottom of the old stone wall. Some thin cement was run under it, making a perfect job.

By Mr. Brown:

Q. How did you make it drain?

A. By a drain around the outside; then this foot of stone, and the earth slanting to the lowest point. We never have any moisture in the cellar; it is dry as a wooden floor.

By Mr. Blain:

Q. Would it not do to run small drains through the cellar underneath the cement, would not that answer as well. As I understand it the stone is simply for draining purposes?

A. It is to keep the moisture that is in the earth from coming in contact with the cement. As cement will draw the moisture even between the drains.

Q. If a man did not have the broken stone and purchased tile instead would it not do to run several small tile drains underneath the cement floor for the same purpose?

A. There is no objection to the tiles, but I prefer to put in the stone. It keeps the earth from the cement; there is a great deal of moisture in the earth and the cement has a tendency to draw it.

By Mr. Brown:

Q. Take your cellar four feet deep on land that is perfectly level; how would you drain it?

A. That would be a difficult matter; you would have to get an outlet, or build a terrace around your house and keep it high enough to allow it to be drained.

By Mr. Bland:

Q. It is the best thing to do you say, and the more stone you put in the better it is?

APPENDIX No. 2

A. The more stone the better, that is my plan.

By Mr. Blain:

Q. You cannot very well have a cellar without a drain.

By Mr. Wilson.

Q. Did I understand you to say that you put a drain inside the cellar or outside?
A. Outside.

DESCRIPTION OF INSIDE OF BEE CHAMBER.

The lowest shelf is 18 inches from the floor, the second 20 inches in the clear above, and the third 20 inches above that; neither the hives on the third or uppermost shelf nor the uprights supporting the shelves touch the ceiling so that no vibration can reach the hives from above. This chamber is thoroughly ventilated, as is also the whole cellar. You will notice the ventilation, here (pointing to diagram) we have a coal stove with an extra pipe attached to the first length from the stove; this is provided with dampers which can be regulated as desired; it ought to apply to every farmer's house; there are very many of them that have no ventilation whatever. This is a cheap and simple method; another method tried there being an extra chimney; a six inch pipe with damper was put in and extended to the bottom of the cellar; this also made a good ventilator.

By Mr. Wright (Renfrew):

Q. The supports are an important matter, and attention should be particularly brought to it, that is, that these supports do not touch the ceiling, because a little jar will disturb the bees a great deal?

A. If any one was down among the bees when a person walked over the floor above, causing a vibration, you would notice them hum from one end of the row to the other.

VENTILATION IN DOORS.

Before entering the bee room is a smaller compartment with a door leading outside and another leading to the bee room. Both rooms have sliding ventilators in the doors so that outside air may be let in at will. Ventilation is carefully attended to and sudden changes of temperature are avoided; for this, a thermometer which is always kept in the cellar is watched. The best temperature for the bee cellar has been found to be from 42° to 48°. This arrangement has given entire satisfaction. In former years there was not proper ventilation, and the cellar was always damp and mouldy. Since the concrete floor has been laid and the ventilators put in, the cellar has been much drier and cleaner. It is also rat and mouse proof which is also a very great advantage.

EXPERIMENTS IN WINTERING BEES.

In cellar No. 1, six colonies were put into winter quarters and placed on the shelves. Under the back end of each hive was placed a three-inch block, such as you see shown on the diagram, each hive was besides raised from its own bottom board, by one-inch block being placed at the back so as to ensure free ventilation.

By Mr. Wright (Renfrew):

Q. Was that in the cellar ?

A. That was in the cellar. All front entrances were left wide open, the wooden covers were all removed, and replaced with cushions made with chaff, four

inches thick, sufficiently wide and long to lap over the hives two inches. Temperatures were taken once each week all through the winter, and kept very even from 44 to 48 degrees. The bees were quiet, only a slight hum being noticeable up to February. When the temperature, having risen to 52°, the bees began to get uneasy and made considerable hum.

By Mr. Wright (Renfrew):

Q. Do I understand you to say that you left the fronts all open ?
A. Yes.
Q. Did not the mice get in, or do you keep it protected ?
A. After we put in the cement floor, we were not troubled with mice.
Q. Do not the bees come out?
A. No.
Q. The mice are the only trouble we have had.
A. One of the most important questions for a beekeeper or beginner to take notice of, is to give plenty of ventilation at the entrance of the hive. Usually a beginner will place a wire netting over the entrance of the hive to prevent them getting out, and immediately the bees find that the entrance is closed or partly closed they will try to get out, but you put a large block between the brood chamber and the bottom board, as you see in the chart, and they will hang in a quiet cluster under the frames.

By Mr. Telford :

Q. If the temperature goes up to 55° it will disturb them?
A. At 55 they will get a little uneasy. We have ventilators in the cellar doors, as you will notice on the chart here, so that we open the slides a little at night and close them again in the morning. This lets the cold air in, and lowers the temperature and quiets the bees down. During the past winter every colony in this experiment was perfectly dry and clean; all came out in excellent condition. The average weight of each hive when put into winter quarters was 58½ pounds; when taken out on the 22nd of April it was 49¼ pounds per hive, showing that each hive had lost 9¼ pounds on an average.

In experiment No. 2, six colonies were put into the cellar and placed on the shelves a three-inch block being placed between the bottom board and the brood chamber only in front, making the full entrance three inches high across the whole front. The wooden covers were removed and replaced with a chaff cushion. Temperature the same as in experiment No. 1. During the whole winter all the colonies in this experiment were perfectly dry and clean and showed no uneasiness of any kind. The bees could be seen hanging in a quiet cluster below the frames any time during the winter. The average weight when put into winter quarters on November 23 was 59 pounds 12 ounces; when taken out on April 22 it was 51 pounds 8 ounces, showing that each hive had lost on an average 8 pounds 4 ounces.

In experiment No. 3, six colonies were put into the cellar and placed on the shelf, with top and bottom boards of the hives left on, just as they were brought in from the bee yard. They were watched for dampness, mold, or dysentry, also to compare the amount of honey consumed. Temperature of cellar same as in experiment No. 1. During the entire winter the bees kept perfectly dry, and a very slight hum could be heard. There were but very few dead bees on the bottom board and no sign of dysentry. On examination when set on their summer stands all the hives were found to be in first class condition. I do not mean to say that you must have a perfectly dry cellar. I have known of cellars where there is a small stream running through, and yet the bees come out in good condition. A cellar through which a stream runs is not necessarily a damp cellar, it may be a dry cellar. The cold fresh water condenses moisture from the warmer air. It also carries out impurities, and is a drying ventilating agent. If

you have your cellar well ventilated you can put your colonies in almost any way you like, with a cushion on top or off, or with covers on or off. The great thing in wintering bees successfully appears to be in having the right kind of cellar to winter them in. In this experiment the average weight when put into winter quarters on November 23 was 59 pounds 15 ounces, when taken out on April 22 it was 51 pounds 3 ounces, showing that, on an average, each had lost 8 pounds 12 ounces.

In experiment No. 4, six colonies were put into the cellar and placed on the shelves with the bottoms of the hives left on, just as they were brought in from the bee yard. The wooden covers were removed and nothing left on except a tightly sealed propolis quilt, the entrance left wide open. Temperature of cellar same as No. 1. During the entire winter the bees kept perfectly dry, and a very slight hum could be heard, there were but very few dead bees on the bottom board and no signs of dysentry. On examination when set on their summer stand the hives were found to be in first-class condition. The average weight when put into winter quarters, November 23, was 57 pounds 15 ounces, when taken out on April 22, 48 pounds 6 ounces, showing that on the average each had lost 9 pounds 9 ounces.

The hon. gentleman said some would not have a good cellar, or it would be damp. We tried wintering in the root house, and found they could be successfully wintered in such places. We simply made a shelf on the side of the wall and hung a curtain over the entrance of the hive; it was only on a small scale; if a person wanted to go into it extensively they would have to build a row of shelves to accommodate the number of hives they wanted to put away. The odour of the roots did not appear to affect them. The root house was well ventilated and that appears to be what is wanted. If a person has neither a root house nor cellar, they can winter their bees in a pit dug in the hillside. Great care must be taken in selecting the spot where you intend making the pit, to see that no water gets into it. If a large number of colonies are put in it will pay to drain the pit. We were unfortunate one season in having water get in the pit, which was high enough to get half way up in the hive. Although they did not die they suffered from that cause. Care must also be taken to put in ventilators 10 or 12 feet apart. Experiments have been tried in wintering bees outside on the summer stands. This plan I would not advise any person to follow in any country where the thermometer would go down 10 below zero. The bees will come out weaker and consume more stores when wintered outside against inside wintering or putting them in a cellar. You can control the temperature to suit all conditions in a cellar. We find in regard to the difference in the consumption of stores that it would take from 18 to 20 pounds to put the bees through outside on their summer stands, and very often they die, whereas, we can in the cellar run the bees through with from 8 to 10 pounds. Any person having 100 colonies of bees, the amount saved would be quite a saving in honey in favour of putting them in the cellar, in fact it would pay a person to build a cellar if they had 50 colonies of bees.

By Mr. Blain:

Q. A great many farmers have banked barns now, how would it do to set apart a portion of the lower storey for bee keeping?

A. I should think that would do very well if they had it partitioned off from the other portion; they require to be in a perfectly dark place; put ventilators through the upper part, so that you can control the temperature and have fresh air. We have never tried them in banked barns, but I should say that would do all right.

By Mr. Mackenzie (Bruce):

Q. Is that building of yours partly underground?

A. The cellar is entirely under ground. I would say keep your bees underground in every case during the winter. There are many people who try to winter them above

the ground in different kinds of buildings, but they are never so successful as they are underground. If you are in a place where you cannot dig a hole in the ground, I would say, make a mound of earth around and over them.

Q. Put earth around them; what do you use that coal stove for?

A. For heating the upper portion of the building.

By Mr. Telford:

Q. That is for ventilation as well?

A. The pipe connecting with the coal stove is the ventilator. The upper portion is a private dwelling. The object of showing the stove is to show how easy any person can ventilate a cellar whether bee keepers or not. In this part of the dwelling we have an extra pipe; there was a chimney that was not occupied for a stove and we put in a six-inch pipe for a ventilator. It was found between the two there was too much draught. When open we can, however, regulate the draughts at any time by dampers in the pipe. If there are no more questions on wintering I will take up the next item.

By Mr. Mackenzie (Bruce):

Q. I might say that in our part of the country where we have lots of snow, in western Ontario, we put our bees out near the fence in double hives, the snow drifts over the hives completely covering them up. We leave them in that position until the first warm days in the summer, when we shovel them out and allow them to fly out if they wish. We winter them very successfully in that way without any care or attention of any kind. Your system on the other hand requires a great deal of attention as to temperature.

A. It requires very little. Then, too, it is a great deal of pleasure to go down in the cellar and look at your bees hanging in a quiet cluster below the frames, and look at the thermometer once a week. That is very little trouble. The difference in the consumption of your stores between the bees wintered inside and those wintered outside, would pay you for this trouble. I compare the wintering of bees inside as against outside with a farmer wintering cattle inside as against outside. Every person knows that animals will consume more food when wintered outside than inside, especially if wintered around a straw stack.

By Mr. Wright (Muskoka):

Q. Should not the ordinary cement floor with plenty of ventilation be satisfactory? Would there be any more moisture there than in a place where it is insufficiently ventilated?

A. That is, you will build your cement floor on the earth.

Q. The same as most cement floors are built all over the country. There would not be any great amount of moisture there where there is proper drainage and ventilation and circulation of air.

A. If there is proper ventilation and circulation of air, I would say it would be all right. But in recommending cement floors, I would say never build it without the stone below. Many cement floors have been condemned. When making inquiries, you will find that they have simply put a small layer of stone, only two or three inches, sometimes not any, they always found the floor damp. When we advise people to build floors we strongly recommend them to put in lots of stone, the more the better. We have always found that the stone was what was required to keep the cement far enough from the earth, so that it would not draw any moisture from it.

Q. Do you not find that there is almost no system of ventilation in the cellars, as a rule?

A. That is right.

APPENDIX No. 2

By Mr. Bland :

Q. Would it not make a difference what kind of soil it is, whether it was gravelly or sandy, it would not require as much stone, or none at all ?

A. There are soils which require more drainage than others.

Q. Did you ever experiment with what you call chaff hives for wintering outside ? A great many people up in our country do that way. Put the hives in boxes and put chaff all over them.

A. We have tried that many times, and failed more than half the time. We did not find them a success, and advise every person to winter his bees in the cellar. The expense in getting your extra boxes and chaff is far greater than the trouble of simply picking up your hives and placing them on the shelves in a good cellar.

FEEDING BEES.

By Mr. Findlay :

Q. How do you feed them ?

A. During the extracting season we usually save frames of sealed combs of honey and put them away until the autumn, then about the first of September we weigh every colony in the yard, and any we find short of stores simply lift out the empty or partly empty frame and place a full one in its place. We build them up in that way. If you are unfortunate and do not have enough full combs of sealed honey, we simply feed them.

Q. With what—sugar ?

A. If you have any honey around put some of that in. The way to make the feed is to take two parts of sugar and one of water. First put the water on the stove and bring it to a boil, then set the boiler on the back of the stove and stir the sugar until it is thoroughly dissolved; set the boiler off and allow it to get luke warm. We usually do this in the evening. Then take a miller feeder and put about ten pounds of this liquid in it, place the feeder in the super above the brood frames cover well to keep in all heat. Close up the entrance to the hive to one bee space, so that no robbers can get in. Feeding should be attended to along about the first week in September. Another plan is, supposing you are afraid of robbing, feed the strongest colonies, the colonies that can protect themselves. Place a set of extracting frames over the brood chamber of a strong colony, then place your feeder inside a super on top of that, and when you get the frames full in the second division, you can remove them and place them in your weak colonies. There are times when the farmer, if he has only a few colonies of bees, neglects to weigh them to find out if they have sufficient stores to carry them through the winter, until he carries the bees into the cellar, should they be found short of honey. The best plan is to place some cakes of maple sugar on the top of the frames. Care must be taken to cover thoroughly with bags or cloth to keep in heat and provide against draughts, or you may place over the brood frames of well-sealed comb or section honey.

Q. When they are in cellars in that way, are you never troubled with them coming out and flying around?

A. If you went down with a light and stayed too long a few would come out, during the winter there is very little care required, and two or three minutes is all that you need be in the cellar at a time. There is no trouble with the bees coming out whatever. The cellar should be perfectly dark.

By Mr. Blain:

Q. If a man had a room above ground that he could keep dark and at a temperature of say 46°, which you recommend, would it not be as good as a cellar, if it was dark and of the same temperature?

A. If you would guarantee to keep it at 46° it would be all right, but the great difficulty with any room that is above ground is the variation of temperature.

Q. It is just a question of even temperature?

A. Even temperature and proper ventilation and sufficient food.

By Mr. Jackson (Elgin):

Q. How could you work if there is a furnace in your basement?

A. There is a furnace in our basement at the present time; we have it divided off as I have already stated in the first part of my paper; it is boarded off from the balance of the basement, and in that way we can keep the right temperature. The furnace does not appear to make very much difference in the temperature. The only difficulty is that we find it a little too dry this winter. I sprinkled the floor with water several times, and I found it did a great deal of good. It seems to freshen the air and act like a natural shower outside.

By Mr. Mackenzie:

Q. Does a noise overhead disturb the bees?

A. As long as the floor above does not come into contact with the hives or the uprights there is no disturbance whatever.

By Mr. Wright (Renfrew):

Q. It is the vibration merely that disturbs them and not the noise?

A. It is the vibration, the noise does not appear to affect them.

THE IMPROVEMENT OF BEE STOCK.

The next question I will take up is that of improving stock (queen rearing and care of combs—Dr. C. C. Miller's method). The question is how are you to know which are your best colonies? An easy method is to have a slate attached to each hive, and marking day and date of their performance. It is some trouble, but it will pay you well. You can keep account of the amount of surplus honey you take from each colony. The next year, select the best for your queen breeding, and a certain number for drone rearing. One thing, however, must be taken into consideration, and that is whether there has been no change of queens in any of these colonies. The colony that gave you the largest amount of surplus last year may have superseded its queen last fall or this spring, and the young queen may have met a drone of poor stock, and from this you do not wish to breed. You can count only on those colonies that have made a good record, and still have the same queen with which they began the season last year. You must also take into account any special advantages or disadvantages. The matter of swarming also comes in. A colony that has cast no swarm throughout the season ought to be expected to store more surplus than either the swarm or the mother colony that has swarmed. Nearly always, however, it will be found that the bees which do the most work are the least given to swarming, so that the excessive swarming of a colony counts against it. In the ordinary course of management, where bees are left to their own way, and all the increase is through natural swarming, there will of course be the most increase from the colonies most given to swarming, which means that the general character of the apiary will run towards swarming rather than storing honey. An easy way to improve stock even by those most unskilled in the management of bees is as follows:—

Having decided which one or two or three are the best colonies you have, watch for the first one that swarms. Suppose Nos. 1, 2 and 3 are your best, and that No. 4 is the strongest of the rest, and the rest follow in the order of their strength, 5, 6, &c. Sup-

pose No. 2 swarms; hive the swarm and put it on the stand of No. 2, and at the same time put No. 2 in place of No. 4, and put No. 4 in a new place. All the field bees that were in No. 2 will join the swarm, making it good for work. No. 2 will thus be deprived of its field bees, but on the other hand it will get all the field bees that belong to No. 4. In about eight days No. 2 will have a young queen matured, and will send out a swarm. You will now proceed much as you did before, hive the swarm and put it in the place of No. 2 and put No. 2 in the place of No. 5, putting No. 5 in a new place. The field bees of No. 5 will strengthen No. 2, and in a day or two it will send out another swarm. Proceed as before, putting No. 2 in place of No. 6, and so on as long as swarms issue. In this way you have perhaps no swarms from 4, 5, &c., but in their place you have swarms from No. 2, all of them having queens from your best stock. There is, of course, the possibility that No. 1 or No. 2 may not be among the first to swarm. With the box hives you cannot do much to control this, unless it be by feeding the one you desire to swarm, but with moveable frame hives you may do much. Take frames of sealed brood from colonies that you do not want to swarm, and give to one of your best colonies, and you can thus strengthen it so as to hasten its swarming, while delaying the swarming of those from which the brood was taken. Of course, when you take these frames of sealed brood, you will merely exchange them for frames that have little or no sealed brood in them. This is an excellent plan for persons to build up colonies that do not want to purchase queens. But I would say that a person should purchase queens and renew them. The desirability of preventing swarming if a person has 100 colonies or more is very great; they wish to store more honey to prevent that being done. Every farmer knows there is a great difference in his cows, hens and other animals, but there is too often a feeling that all these are alike, and that beekeeping is a matter really of luck. If you observe closely you will find that one colony of bees will give you a good return, whilst another sitting beside it does nothing in the surplus chamber. These are by no means all alike. They differ in disposition, temper, industry, and in other ways. It is worth while for you to have the best. Fortunately the change from poor to good stock may be made more rapidly than with any other kind of stock, and at less expense. By paying out a dollar or two, for a queen you may change a colony of the poorest black bees to Italians. All you need to do is to send off your order to a reliable queen breeder, such as advertised in our agricultural papers, and the queen will come by mail, with directions for introducing which you can easily follow.

As a worker bee only lives about six weeks in the busy season, and as the new queen will be laying from one to three thousand eggs in a day, you will see that if you get an Italian queen into a colony it will not be a great while until all the bees in the hive are Italians. Even if you do not change from one kind of bees to another, it is generally a matter of advantage to introduce fresh blood occasionally. In any case, whether you get fresh stock from outside or not, whether your bees are Italians, Black, or Hybrids, there is always something to be done in the way of improving your stock, so long as one of your colonies is better than any other.

THE ITALIANIZING OF BEES.

With reference to the work of Italianizing, the probability is that you will want Italian bees, if your bees are not already Italian. The greater industry of Italian bees, and the greater amount of honey they will store in the course of the season, together with the fact that with Italian bees you need have little fear of wax worms or moth in the hives are sufficient reasons for preferring them. For $2 or so you can buy a tested queen. That means a queen reared from an Italian mother, the young queen having been kept until young workers have hatched out from her eggs and they show up the three yellow bands that the queen has mated with an Italian drone. If such a queen mates with a Black drone, the worker progeny may have one or two yellow

bands, or they may be mixed. When you have a young queen, from an Italian mother, the young queen having mated with a black drone, you have what are called hybrid bees, although it would be more correct to call them a cross. So, if you buy a tested queen, you will know that all the workers, drones and queens reared from her are Italians. If you prefer to buy an untested queen, she is reared from an Italian mother, and has begun to lay, but none of her progeny have yet hatched out, so it cannot be told whether she has mated with an Italian or a Black drone. The chances, however, are largely in favour, in most cases of her being purely mated. In consideration of the fact that the breeder sends her out about three weeks earlier than if he had waited for her to be tested, he will charge you only a dollar or less for her. If it turns out that her worker progeny shows three yellow bands, then you are just as well off as if you had bought a tested queen, for your untested queen has now become a tested queen. It may be well to mention that the first of the ygellow bands, the one nearest the head, is very small, and if you do not look closely you may not notice it, especially if the worker is not filled with honey.

QUEEN REARING.

The rearing of queens has become quite a trade, and some bee keepers make a business of shipping queens by mail to those who wish to purchase. Although it may not be desirable for the farmer with only a few colonies to go into the subject fully, he should know enough about it to rear queens, at times, for his own accommodation. When a colony prepares for swarming, a number of Queen cells are started, six, eight, ten, possibly many more. As soon as the first one of these is sealed, the colony is likely to throw off a prime swarm. Six or seven days after this swarm has issued, the mother colony may be divided up into two or more parts, each part being called a nucleus, the word 'nucleus' merely meaning a very small colony. Perhaps you will generally have enough queen-cells in each nucleus without any, so it might happen that if you give the matter no attention you might have a nucleus without any queen-cell. Another thing must be considered. A large proportion of the queen-cells are built on the lower or outer edges of the combs. If these were left in the old colony without dividing, they might be all right. But when these combs are put into nuclei, it is harder for the smaller number of bees to keep them warm, and when a cool night comes, the bees will shrink away from the edges of the combs, and the queen-cells will be chilled. Hence you must see that each nucleus has at least two or three good queen-cells where they will be sure to be inside of the cluster of bees in the coolest nights. So you will cut away cells from the edges of the combs and from combs that have them to spare, and fasten them where desired. To cut out cells, you may use a pocket knife with a very sharp, thin blade that is more than an inch long. You need not cut away more than enough to get all the cell; but do not cut into the cell. Be sure you do not let one of the cells fall, for while the young and tender queen is in the cells a fall may cause a defective wing or leg. To fasten a queen-cell where you want it, use a very slender wire nail an inch and a-half long. Push the nail through the base of the cell, but be sure it does not enter the cavity of the cell. Nail the cell right over some of the brood, for it will be more surely taken care of there than if separate from the brood. You will find that the bees build queen-cells with the points hanging downward, but it is not important that you should have them exactly in the same position. A still better plan than a nail to pin on a cell, is a staple, the staple being an inch and a-half wide with points one inch long. Lay the cell against the comb, put the staple over it so the cell will be at one side of the staple, and then sink into the comb the staple point that is farthest from the cell. Possibly you may be inclined to think because only one queen is to be reared in a nucleus, there is no need to have more than one queen cell. That would be a mistake. Whilst most of the cells reared by a colony preparing to swarm may be of the very best that colony can rear, it is not safe to assume that all are equally good. Some cells may contain poor queens, and some cells may contain a

number of cells in a nucleus—at least two or three. The bees will be likely to use the best. You will be able to see a difference in the appearance of the cells, and while you are dividing the cells among the nuclei, you may as well see that each nucleus has its fair share of the best looking cells. The best cells are generally among the largest and longest, and are deeply pitted over the surface. A stubby cell that is not pitted, but has a smooth surface, is not so likely to be good. When the young queen is five to eight days old, she will fly out on her wedding trip, and about three days later she will begin and lay. It may be well not to look for eggs till the queen is perhaps two weeks old, for at first the eggs are few and not easily found. If you do not find eggs when the queen is two weeks old, you are not likely to find any later. The queen has been lost on her wedding trip or there is some other trouble. It is a good plan to give a nucleus a frame of eggs or unsealed brood from a choice colony when the young queen is four or five days old. If some bird has caught the queen on her wedding trip, or if some other ill has befallen her, such as entering the wrong hive, the bees will start queen-cells from this young brood. This young brood seems also to have a sort of stimulating effect on the bees, and it is believed it may hurry up the young queen in her work of laying.

By Mr. Wright (Renfrew):

Q. Perhaps this will not be a bad time to ask how you can prevent robbing?

A. Place two heavy blocks at the entrance of the hive and close them to within one bee space, then there are usually enough bees to protect the colony; in that way robbing is prevented. Should the robbing go as far as to excite a dozen colonies, we simply take the hives up and carry them into the cellar in a cool place for an hour or so, then carry them out again, let the bees out and in, in that way we drive off the robbers or discourage them. Every time I pass by the apiary I take a look around to see that all is right; it is very easily seen when the bees begin to rob. You will notice them flying around and trying to get into the top of the hive and in other places besides the entrance. The moment you see bees crawling around the top or back of the hive trying to get in, close up the entrance to one bee space so that the bees in the hives can protect themselves.

Q. I always do that, but sometimes when you have a very weak colony you cannot do so?

A. In that case I would carry them into a building or cellar for a short time, allow the robbers to get out, and then carry the hive out again. Sometimes when they begin to rob we cover the entrance over with grass, so that they have hard work to make their way through it; they get discouraged and give it up.

CARE OF COMBS AND HONEY.

At the close of the honey harvest it will always be the case that more or less of the sections will be unfinished, the number varying in different years. It will happen some years that the season will be so poor that none will be finished. Even in the best of years there will be a considerable portion left unfinished, varying all the way from those the bees have not started at all up to those that are filled with honey, but have a few cells unsealed. Those that have not been worked at all by the bees, having no honey in them, may be put away until next year, when they can be used. Be very careful, however, that you do not make the mistake of leaving such sections too long on the hives. When the harvest is over they should come off at once, for the bees will only daub them, and to such an extent that they will not accept them the following year. Many make a practice of taking off all sections at the close of the clover and Linden harvest, so as to have none of the later and darker honey in them, and so as to avoid the bee glue that will be put on them while the bees have nothing to do between the early and late harvest.

If a fall flow comes, sections can be again put on, or extracting combs. Sections that are not entirely finished will, of course, do for the table, and if to be sold must be sold at a lower price. Any that are less than half filled with honey may be fed to the bees. If you set out a super of such sections where the bees can get at them, they will promptly carry out the honey, but will be so eager in squabbling over it that they will tear down the tender combs so as to ruin it. Extracting combs are not in the same danger unless very new. To avoid having the sections ruined for future use, cover them up so as to leave a passage for only one bee at a time to get at them, or better set them eight or ten rods away from the apiary. The sections thus cleaned out by the bees will be valuable for use the next year, and one or more of them put in each super that is first put on the hives will start the bees promptly at work. If they are not cleaned out the particles of honey remaining will candy and affect the new honey that is put in them the next summer.

The care of extracting combs while not occupied with the bees, that is the larger combs, is a very important matter during the winter. If a person leaves them in the hives and happens to put them outside they are liable to get full of moths and get destroyed. Almost any bee keeper will have honey combs for a time unoccupied by bees, or occupied by honey or pollen. Such combs are valuable property and will well repay the care required to preserve them. The principal enemies of unoccupied combs, are moths, mice and mould. The chief enemy is the wax moth. If a colony dies during the summer and the hive remains unnoticed on its summer stand, it is almost certain that before the summer is over you will find it containing a solid mass of webb and cocoons, with perhaps not a vestige of comb left. A full report will be found in the experimental farm report of 1903. The right thing to do with a hive full of combs upon which a colony has died is to get the combs as soon as possible in the care of the bees. Especially if they are of Italian blood, the bees will make short work of cleaning off the frames. Take the hive of unoccupied combs, clean out all the dead bees, and also cut out all traces of the moth and put under a hive occupied by a strong colony.

Q. Put what? I did not catch that.

A. Take the lime off unoccupied combs, clean out all the dead bees, and also cut out all traces of the moth and put under a hive occupied by a strong colony.

Q. Put right in the hive?

A. Put right in here (illustrating on diagram), and the bees will clean it out at once.

Q. They do not start robbing ?

A. No, that does not start the m robbing, a strong colony does not get robbed. If there should be any entrance directly from outside into the upper hive, close it up so as to oblige the bees to pass through the lower hive in going in and out. Keep the entrance very small the first few days, for fear of robbers. After the colony has had this lower hive in charge for about a week, so as to get it cleaned out, and get used to it, you can give it a second hive of combs to care for, putting this second one between the first and the hive containing the colony, so that the bees of the colony must pass through both of the hives of unoccupied combs. If for any reason it is desired to kill worms in combs, sulphur is the usual resort. A very little of the fumes of burning sulphur will finish the worms when they are quite small, but when full grown it takes a very heavy dose, so it is well to pick out the larger ones by hand. Take a sharp fine pointed pen-knife and pick open one end of the silken gallery for half an inch, then commence at the other end and tear it open the whole length. This will drive the worm along till it comes out of the hole you first made, when you can end its existence by what means may seem best. It must be remembered that burning sulphur destroys only the worms, not the eggs, so it may be necessary to treat the combs a week or two later when any remaining eggs have hatched. Combs of honey for table use are not likely to be troubled with worms, but with black bees, especially if the combs are left too long on the hive there may be some trouble. The dose of sulphur for these may be lighter than for brood combs, and if too heavy a dose is given the white comb will have a

greenish colour. That, however, does not hurt it for eating. When extracting combs for the last time in the season, it is a good practice to allow the bees to lick them dry. Hives full of combs should be set a considerable distance from the apiary and let the bees have free play at it.

BEE ROBBER BANDS.

Q. Does that not start them robbing ?

A. Not if you put them a long distance from the apiary. The way we do it is to put them three hundred feet from the apiary and close up the entrance so as to allow one bee to pass at a time. In this way the bees will not break down their combs.

Q. Then you close up those that you are going to allow them to take the honey out of ?

A. Yes, we allow them to go in gradually, they will clean them up in splendid shape in that way. We watch carefully and as soon as clean, remove to a dry, warm, dark cellar, to be examined at short intervals, and left in the cellar until such time as the bees should be carried in for the winter. You will then remove all empty combs and hives to an outhouse or honeyroom, where they will be exposed to all frost during the winter.

By Mr. Blain :

Q. Will you give your definition of that term 'robbing'?

A. This is a trouble that very often annoys the inexperienced. Bees only rob at such times as the general scarcity of nectar forbids honest gains. When the question comes: famine or theft, like many another, they are not slow to choose the latter. It is often induced by working with the bees at such times, especially if honey is scattered about or left lying around the apiary. It is especially to be feared in spring and autumn, when colonies are apt to be weak in both honey and bees, and are thus unable to protect their own meagre stores.

By Mr. McKenzie (Bruce):

Q. Do you find the bees make honey as freely in small sections as in large?

A. No; we can get more honey in the extracting frames than in the sections.

Q. Have you any means of inducing bees to make small section honey?

A. We put in full sheets of foundation in section frame, and as I said in this last article, in sections that are not full after they have been emptied by the bees, or with an extractor we put two or three of these down the centre of the super to begin with in the season, and that has a tendency to start them up and get them to go to work. If a person has a city trade I would say go in for section honey, if all the colonies are exceptionally strong, but if you are a long distance from the market and have to ship your honey by train or express, go in for extracted honey.

By Mr. Blain:

Q. Do you find an increasing interest among the farmers in bee keeping?

A. We do.

Q. What parts of Canada are taking it up most?

A. Province of Ontario. I have had more letters from New Brunswick; they seem eager for information there more than any other part of the Dominion. In Ontario they have the Ontario Bee-keepers' Association and a great many other associations that are doing a great deal of good by giving practical information to farmers, fruit growers and others on the management of bees. I feel safe in saying if this industry had instructors giving information to the public, bee-keeping would keep its

place with other farm products; double or treble the amount of honey could be sold in Canada alone, if produced. There are many localities that know nothing about bee-keeping or the uses of honey.

HONEY SUPPLY NOT EQUAL TO DEMAND.

Q. Is there an increasing demand for honey in Canada?

A. Yes, we cannot supply the demand. I am safe in saying there is not one home in ten in Ottawa city to-day that has honey in it; people scarcely know the taste of honey. Honey is one of the cheapest foods they can purchase; it can be produced very cheaply. Why should the supply not increase to meet the demand. I simply say it is for want of instruction.

By Mr. Telford:

Q. Can they not have too many bees in one locality for the food to be found there?

A. I have never seen it. Should there be too many bees in one locality, why should we not provide honey-producing plants and trees for the bees the same as the farmer does for his stock. We can grow clovers that will produce large crops of honey fodder, and the roots will be useful as fertilizers.

Q. The honey in the red clover is not available?

A. I have seen the bees twice work on the red clover. There has been an agitation for the last few years to get queens that will raise bees with long tongues so that they can get down into the red clover and get the honey out of it.

By Mr. Mackenzie (Bruce):

Q. What do you consider a paying price for honey per pound?

A. That is a hard question to answer. I know of people who are selling honey for seven cents per pound and making money out of it. You can buy honey through Ontario, in a great many places for seven cents a pound. That would be very cheap.

By Mr. Bland:

Q. Can honey be adulterated in any way but by feeding bees ?

A. The most of the adulteration is done after it leaves the beekeeper, it is done in stores and factories.

By Mr. McKenzie (Bruce):

Q. Is there not such a thing as feeding bees in order to induce them to deposit honey in these sections ?

A. We never feed bees only when we want to rush brood-rearing or for winter stores. We usually feed them at night, and next morning it is all gone.

Q. Could you not feed the bees with glucose ? I have never done it, but I have heard that they do ?

A. I have never experimented with glucose.

By Mr. Blain :

Q. Is there any inspection to prevent adulteration ?

A. The Inland Revenue Department has charge of that work. Every year at the meeting of the Ontario Beekeepers' Association samples are brought showing this adulterated material, and I dare say it is being sold to-day; they put it up in packages, with the word 'honey' printed in large letters, and in very small letters on the corner

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the words 'and contents.' So that they evade the law in that way. There was a person in Hamilton that sold a great deal of it, and another in Montreal. There were samples taken and the names of these people published last year.

By Mr. Wright (Muskoka):

Q. Would the honey produced by bees when they are fed sugar syrup be as good as that gathered from the field ?

A. I do not think it would be as good as that gathered from the flowers.

By Mr. Telford :

Q. Will they take up ten pounds of feed in the night ?

Q. If it is a strong colony they will take up twenty pounds.

By Mr. Brown :

Q. By feeding them large quantities of sugar would that produce good honey ?

A. No. It is against the law to feed sugar and call it honey. No person can feed bees except for raising broods and wintering.

By Mr Finlay :

Q. How do you tell that the honey is short and that there is a queen in the hive ?

A. By examining the hives, also by the working of the bees. Examining for a queen take a smoker, put material in it that will make a good smoke and no flame, puff a few puffs of smoke in the entrance to quieten the bees, with a screw driver pry off the cover. Take out the frames one at a time and examine them very carefully until you find the queen. You will notice that the queen is very much larger than the drones, or the worker bees. In each colony there is but one; sometimes it takes considerable time to find her. If you find no eggs in the working season in the combs, you are pretty safe in saying there is no queen. The best thing to do is to purchase a queen and introduce her. If anything happens to the queen and there are eggs there the workers will take the eggs and put them in the queen cells and raise a queen. They look after their own interest pretty well.

By Mr. Wright (Renfrew) :

Q. Is there anything better than dry, rotten wood for the smoker ?

A. What we usually use is cedar bark, or take an old bran bag, roll it tightly the size of your smoker, tie strings around it so as to make it convenient for putting in the smoker. When wanted for use simply dip one end into coal oil so as to start it burning. It will last for hours..

INTRODUCING QUEENS.

Eight queens have been introduced during the past season, four on the Benton plan and four with frames of brood taken from several hives. All queens belonging to the colonies that were to receive the imported queen were removed 24 hours before introducing the new queen. The Benton mailing and introducing cage is ordinarily used over the country. This consists of an oblong block of wood, with three holes bored nearly through, one of the end holes being filled with good candy and the other two being left for the occupancy of the bees and queen. On the back of the cover are printed the directions for introducing, and at each end of the cage is a small hole bored through the end of the grain of wood, but which in the mails is stopped by a cork. One hole is for the admission of the bees and the queen preparatory to mailing, and the

other for the liberation of the queen, by the bees eating up the candy in the course of 20 to 30 hours, thus releasing her automatically. When the cage is received the cork covering the candy is to be removed as well as the wooden cover over the wire cloth. The cage is then placed on top of the frames, care being taken to place the wire cloth over the space between two frames in the centre of the brood nest. The queen is then released by the bees in the manner explained. I would advise all to have extra cages so that no disease may be brought in with the queen. See that the cage you introduce with is thoroughly clean, and have fresh food made from your own honey placed in the cage in readiness. Then remove the queen and the bees from the cage they were received in to the one prepared for them, and follow directions above.

To make honey and sugar thick for feeding take good thick honey and heat (not boil) it until it becomes very thin, and then stir in pulverized sugar. After stirring in all the sugar the honey will absorb, take it out of the utensil in which it is mixed and thoroughly knead it with the hands; the kneading will make it more pliable and soft, so that it will absorb or take up more sugar. For summer use it should be worked, mixing in a little more sugar until the dough is stiff so as not to work readily, and it should then be allowed to stand for a day or two; if still so soft as to run, a little more sugar should be kneaded in. A good deal will depend upon the season of the year. There should be more sugar in proportion to the honey in warm weather than in cool weather.

Another method of introducing queens, and a very safe one, is to select a strong colony, remove the wooden cover and place a fine wire netting over the tops of the brood frames, so as to prevent passage from one hive to the other, place on top of this wire cloth a brood chamber with four frames of well sealed brood with young bees just hatching out, but with no unsealed brood. Put the queen in this and close the hive bee tight, and keep it over the strong colony four or five days. By that time a respectable force of young workers will be present, and the hive may be placed on the stand where it is to remain. The entrance to be made large enough for only one bee to pass at a time as a matter of precaution against robbing, the entrance may be opened as the colony gets stronger.

Having examined the preceding transcript of my evidence, I find it correct.

JOHN FIXTER,
Apiarist, Central Experimental Farm.

THE FRUIT TRADE OF CANADA

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
TUESDAY, April 4, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Greenway, chairman, presiding.

The CHAIRMAN.—We shall hear this morning, Mr. A. McNeill, Chief of the Fruit Division of the Department of Agriculture.

Mr. MCNEILL.—Mr. Chairman and Gentlemen, with your permission, I shall speak this morning of the work of the Fruit Division, and, time permitting, of the ample industry generally. Since it was instituted in 1901, the Fruit Division has been engaged chiefly in the enforcement of the Fruit Marks Act. Incidentally a great deal of educational work has been done, resulting in a gradual but very perceptible improvement in the fruit industry.

OFFICIAL STAFF OF THE FRUIT DIVISION.

The staff of the Fruit Division consists of seven permanent inspectors, seven temporary inspectors, with the addition, during the busy season at Montreal, of four helpers.

By Mr. Wilson:

Q. Where located?

A. The inspectors are located in the different provinces with special reference to the export trade. Four are located at Montreal, two at Halifax and one at St. John. Two inspectors travel in the apple districts of Ontario during the apple packing season, inspecting the work in the orchards and packing houses, and at the same time giving instruction. One inspector is located in Prince Edward Island, one in New Brunswick, one travelling inspector in Nova Scotia, another is permanently located in Winnipeg and another has charge of the work in British Columbia.

By Mr. Cochrane:

Q. Does the bulk of the trade in the maritime provinces go to Halifax or to St. John?

A. Halifax gets the greater portion of the maritime trade, St. John gets some large consignments from Ontario, especially during the winter months. We have two inspectors available for that port if one is not able to overtake the work.

By Mr. Wilson:

Q. I do not remember that you said how many inspectors were for Ontario?

A. We have two travelling inspectors in the apple districts of Ontario. The inspectors are distributed with special reference to the export trade. Till the close of navigation four men are located at Montreal, keeping track as far as possible of the

four large lines of steamships leaving that port for the old country. They are on the watch at all times for consignments of fruit, taking every precaution to become acquainted with as many shipments as possible. Of course, it is quite out of the question to have every consignment examined, but they endeavour to distribute their services so as to secure the greatest possible amount of information.

Q. How do they do that? Do they open the barrels?

A. They open the barrels. This is done with due regard for the exigencies of the trade. We attempt as far as possible not to interfere with the regular course of trade. We attempt as far as possible not to interfere with the regular course of trade further than to secure the necessary information.

By Mr. Cochrane:

Q. What do you mean by that? Can you inspect apples without opening the barrel?

METHOD OF INSPECTION.

A. We inspect by opening the barrels, but we endeavour to do this at such times and places as will not interfere with the unloading of cars or the loading of ships, or prevent a shipment from proceeding on the steamer for which it was intended.

By Mr. Wilson:

Q. You do not open every barrel?

A. No, sir, the inspectors, however, use their discretion in selecting such barrels as they can open so as to become acquainted with every shipper's methods and enable them to check a tendency towards carelessness or fraud. These are closed and placed as nearly as possible in the condition in which they were found. This is done, of course, while the apples are being carried from the cars to the steamship on the wharves and in the sheds. Similar work is done at Halifax and St. John.

INCIDENTAL EDUCATIONAL WORK.

I would like to point out that this places our inspectors in possession of a great deal of very valuable information in connection with the apple trade. It enables them to see the defects in grading, in quality, in packages, in methods of handling and, indeed, every phase of the trade. It also enables them to assist the cargo inspectors of the Department of Agriculture in noting where the fruit is stored and recording facts that are exceedingly useful in checking the reports from the British markets. They have been instructed by the minister to use this information for the benefit of the trade, notifying growers, packers and shippers wherever it is expedient to do so. This, of course, is outside the work of enforcing the Fruit Marks Act, but indirectly it assists very greatly in improving the packing and grading of fruit. It frequently happens that a large operator has to depend upon a number of boss packers whose work he may not have an opportunity of inspecting. It often occurs that a warning note from the inspectors is the first intimation he has that fruit bearing his brand comes dangerously near a violation of the Fruit Marks Act. The inspectors frequently , too, draw attentions to imperfections in packages, such as thin staves or want of hoops, and by this timely advice prevent serious loss.

By Mr. Cochrane:

Q. What do you mean by not enough hoops?

A. Until quite recently barrels had only six hoops; it is now becoming common to use eight hoops. In the case of a six-hooped barrel a defective quarter hoop may

cause the loss of the entire barrel. Two addition quarter hoops costing only a cent each, form a perfect insurance against such loss.

Q. Do not the shippers know what barrel they are using?

A. They do not always do as well as they know, and during the busy season shippers are inclined to take large chances. The criticisms of the inspectors do a great deal to correct these mistakes.

Mr. Blain:

Q. Are the packers and shippers generally living up to the requirements of the Act?

STATISTICS OF INSPECTION REPORTS.

A. They are doing fairly well for the last two years. The following statistics will be of interest. This season we examined the work of 811 different men. Of this number 264 violated some section of the Fruit Marks Act; 264 may appear a large number, but you will understand that section 4 of this Act relates to marking only; and, therefore, very rarely indicates anything which can be designated by any worse name than carelessness; 153 violated this section only; 170 violated section 6, which deals with the grading of No. 1 fruit. Though the work of these men was afterwards subjected to close scrutiny only three violated this section a second time. Consequently, it is a fair conclusion that these violations may have arisen from a difference of opinion as to what constituted a No. 1 apple rather than from an intention to commit fraud. Section 7 deals with the crime of over-facing packages, and here there can be no extenuation on the score of differences of opinion. We find that of the 811 shippers, 46 violated this section, but it is satisfactory to note the effect of a warning, because only 4 of these 46 violated that particular section a second time. It is therefore a fair inference that the remedy applied by the inspectors was efficient. In this connection it may be well to explain that a record is kept of every inspection, and those who violate once are carefully watched to note the effect of warnings.

CANADIAN APPLES IN THE BRITISH MARKETS.

It is a pleasure for me to add that the apple shippers of Canada by the improvements which they have made in their methods of packing and grading have won a splendid reputation in the markets of the old world. I will emphasize this point by introducing here independent evidence of the value of the Fruit Marks Act, estimated in dollars and cents. From many different sources we have evidence that Canadian apples are now selling for from one to two shillings a barrel more than the same grades of American apples. This, I think, is a well-deserved compliment.

Mr. Cochrane:

Q. Do you mean by that this last season?

A. The season of 1904-5.

By Mr. Wilson:

Q. Do you attribute this to carefulness in packing or the better quality of the apples?

A. Both features must be taken into account, but I am forced to believe that it is largely a matter of packing.

Permit me to explain before reading this extract that many of the States in the adjoining republic are agitating for a Fruit Marks Act on lines similar to ours. I do not anticipate that all the States will be brought into line, and hence the effectiveness

of it will be seriously marred. Nevertheless, Maine, Massachusetts, New York and Michigan have all recognized the value of the principle of the Fruit Marks Act by their endeavour to secure similar legislation. The officers of the Fruit Division have frequently received invitations from the United States to address fruit growers' meetings to explain the principles of this Act. The Pomological Society of Maine, among others, had this subject up for discussion. At the request of the association the secretary made a thorough investigation, and after explaining the chief provisions of the Canadian Act, made the following comments:—

'Since the first year the law has been in effect, the apple sales show that Canadian fruit outsells the American by one or more shillings to the barrel. Before this Act came into effect, Maine and New Hampshire Baldwins had the lead. Not long since I met a Northern buyer. He declared that the difference in price was due to the Fruit Marks Act, for now the Canadian fruit sold almost entirely without examination and people got what they purchased when they paid for a barrel of Canadian apples.' We have many such comments bearing unmistakeable evidence of the value of the Fruit Marks Act. I will, however, introduce only one extract, and that from the 'Market Growers' Gazette,' London, England, showing fruit prices for March 11, 1905. Prices are quoted here for English apples, then for American Baldwins, Greenings and Ben Davis. Canadian apples are quoted as follows: 'Canadians all round 2 shillings more.'

By Mr. Broder:

Q. More than the English?
A. More than the English or American.

By Mr. Wilson:

Q. More than any other?
A. Yes.

By Mr. Broder:

Q. The American barrel is a little smaller?
A. Smaller than the Ontario barrel, but usually slightly larger than the Nova Scotia barrel.

By Mr. Cochrane:

Q. Does it give prices of American apples?
A. In this way: 'American apples are sixteen shillings to eighteen shillings; Canadian two shillings higher,' which would make them eighteen to twenty shillings.
Q. Does it give the prices of Canadian apples?
A. Nothing more than 'Canadian all round two shillings more.' Following this, we have the prices for the same date at another market, which gives Canadian Spies at 22 to 27 shillings, Baldwins 17 to 20 shillings, which is just about two shillings more than the quotations for American apples of the same sort.

By Mr. Broder:

Q. Are the Ben Davis quoted?
A. Yes, sixteen to seventeen shillings.
Q. They are not as high as Spies?
A. No, but they can be grown cheaper.

Those quotations will be sufficient to prove to you in dollars and cents the value of the Fruit Marks Act and the wisdom of the Parliament of Canada in passing this Act. Our apple exports for the last fiscal year were something like 1,500,000 barrels. If we accept the statements of the price lists that I have quoted in your hearing the gain

on the export trade alone would amount to the comfortable sum of $700,000. The expense, therefore, of enforcing the Act is a mere baggatelle compared with this gain.

By Mr. Blain:

Q. Do you understand that a Nova Scotia barrel is smaller than some of the other barrels?

A. The Nova Scotia barrel contains 96 quarts; the usual Ontario barrel contains 112 quarts. About one-third the trade is in the smaller barrel.

By Mr. Derbyshire:

Q. Would it not be an advantage for the apple trade to have all of one size?

A. This has been an interesting subject of discussion among the fruit growers, particularly for the last two years.

Q. What increase has there been in the trade last year?

A. The year 1904-5 will show a slight decrease in the export trade, owing to the exceptionally large crop in England and in the greater part of Europe. The American crop was also large, so that it is doubtful whether the export will reach this year much over a million barrels.

Q. What was the export four years ago?

A. In 1901 the exports were only barrels.

By Mr. Lewis:

Q. Where are these figures obtained?

A. From the Trade and Navigation Reports.

Q. Those exports are for the whole of Canada?

A. Yes.

Q. How do the provinces compare?

A. Ontario grows about half the apples that are grown in Canada, Nova Scotia is the next largest producer.

By Mr. Wilson:

Q. Is there any particular locality in Canada where apples are especially mentioned as bringing better prices on account of flavour or anything of that kind?

A. The markets of the old country do not distinguish as closely as that.

By Mr. Broder:

Q. Are not the apples of the Annapolis Valley, Nova Scotia, preferred?

A. Nova Scotian apples stand high in the London markets, and it is fair to say, perhaps, that they are preferred there, possibly because they are better known.

Q. I think the Englishman thinks whatever is grown near the salt water is better?

A. Probably. I am sorry to say that the market quotations in England do not recognize that Nova Scotia is part of Canada; they distinguish between Nova Scotia and Canadian apples.

By Mr. Finlay:

Q. What effect will it have on a Northern Spy to graft it on a Crab apple tree?

A. Little difference would be noticed. If the Crab were a slow growing variety it would have a tendency to dwarf the wood growth of the Spy, but probably would improve the fruit.

Q. The flavour would be all right?

A. Yes.

One word more on the inspection for the export trade. Judging from the letters that the shippers of fruit have sent to the inspectors, they appreciate very highly the

work that is done for them at the ports. The inspectors have taken a deep interest in the fruit shipped and have done much good by their timely advice. This is what I mean by incidental education, because every letter written by an inspector directing attention to defects is of the nature of education.

By Mr. Wright (Renfrew):

Q. I would like to ask if you have any other means of disseminating this information other than to write to the individual shippers?

A. Yes, we embody these facts in a report at the end of the year, and send it to the shippers concerned. We have in the office at Ottawa a complete list of everybody who has shipped apples and whose work has been examined by the inspectors. This will form a mailing list to which we will send the results of the year's work.

By Mr. Blain:

Q. Are the names of those who violated the Act published?

A. Not always, occasionally the newspaper reporters get these names at the trial and they are published, but it is not part of our work.

By Mr. Broder:

Q. They have to be reported to the Clerk of the Peace?

A. Yes.

By the Hon. Mr. Fisher:

Q. We don't publish them?

A. No, sir.

By Mr. Cochrane:

Q. What do you mean by a shipper? Up in our country a farmer shipped to a gentleman in Brighton, who do you call the shipper? The man who packs the apples, or the man in whose name they are sent?

A. Shipper, as I have used the term, is the man who owns the apples at the time they are packed and whose name appears upon the barrels.

We have in the apple districts of Ontario a very large field for instruction. One or more inspectors during the packing season are detailed to move as rapidly as possible among the orchards and packing houses for the purpose of giving instruction in methods of packing and at the same time drawing attention to any violations of the Fruit Marks Act. From the nature of the case, they do not advertise their route, so that growers and packers may expect a visit at any time.

By Mr. Cochrane:

Q. Do you tell me they go round in the orchards?

A. Yes, sir.

Q. I would like to have the likeness of one who has been in the orchards in our section?

A. I visited some of the orchards myself and I think I met you there.

Q. If they visit, it must be along the railways? I did not see you in any of the orchards?

A. Perhaps you are right; however, I spent some time in that district meeting other gentlemen in orchards.

By Mr. Broder:

Q. It is a very common thing throughout the country visiting the orchards?

A. In addition to our orchard visits, we have attended many fruit meetings, and farmers' institutes, as well as other places where we could get farmers or fruit growers

together during the slack season. So far as possible, this has been done under the auspices of the provincial authorities. We have placed the members of our staff at the disposal of the local officer charged with the work of agricultural education, and in this way reached a much larger number of people, and of course, do more good.

Meetings were attended by members of the staff during the season 1904-5 as follows:—

In Ontario—
18 by A. McNeill.
32 by P. J. Carey.
11 by J. F. Scriver.
14 by A. Gifford.

In Quebec—
45 by J. F. Scriver and F. L. Déry.

In Nova Scotia—
16 by A. McNeill.

In Prince Edward Island—
21 by A. McNeill and Richard Burke.

In British Columbia—
9 by Maxwell Smith.

P. J. Carey and A. Gifford took charge of a demonstration in barrel packing November 14-19, 1904, at the Provincial Fruit, Flower and Honey Show in Toronto, to the great satisfaction of many apple packers who were in attendance.

Mr. J. F. Scriver attended the annual meeting of the Quebec Pomological Society, and Mr. Maxwell Smith attended the British Columbia Fruit Growers' Association annual meeting.

I attended the annual meetings of the Provincial Fruit Growers' Associations in Ontario, Nova Scotia, Prince Edward Island and New Brunswick, and was present at the Winter Fair at Amherst, N.S., and the Farmers' and Dairymen's Association at Fredericton. I also delivered lectures at the Short Course in Horticulture at the Truro Agricultural College, Nova Scotia.

POWER SPRAYING.

In addition to this the Fruit Division has conducted two demonstrations in power spraying. These demonstrations were for the purpose of devising and popularizing a better system of doing the work of spraying. The small orchards and the rush of work on the ordinary farm renders it extremely improbable that the work of spraying will ever be done properly by the individual farmer. It was conceived that a system similar in plan to that adopted for having thrashing done might be employed for this work. In 1903 an outfit was placed in the neighbourhood of Ingersoll, Ontario, and another in the vicinity of Montreal, Quebec. In 1904 the outfit operated again in the neighbourhood of Ingersoll and the Montreal outfit was operated in King's County, Nova Scotia. I am pleased to say that these outfits have worked quite successfully. I understand that two outfits will be operated in the Ingersoll district this year as the result of this work. By this method the farmers pay five cents for each spraying and are glad to have the work done at this price.

By Mr. Broder:

Q. Five cents per tree?

A. Five cents for each tree each spraying. Many of them said they could do it cheaper themselves and probably by valuing their labour cheaper they might, but they were willing to pay this price rather than attempt the work themselves.

Q. Did the farmers furnish the material?

A. The Department furnished everything. Power sprayers have been used very little in Canada. The orchards usually are not large enough to justify their use on

the ordinary farm, but by this system it is hoped encouragement will be given to this very necessary operation.

By Mr. Wilson:

Q. What did you do with the outfit?
A. It has been sold.
Q. What power was used?
A. A gasoline engine.

By Mr. Wright (Renfrew):

Q. What is the capacity of this engine?
A. Two and a half horse power. This is quite small enough for the purpose, as the work is more satisfactory with plenty of power.

By Mr. Christie:

Q. What do you use as a spray?
A. Bordeaux mixture with Paris green. We were spraying for apple scab and leaf-eating insects.

WHEN TO SPRAY.

By Mr. Broder:

Q. Do you spray before the leaves come on?
A. The first spraying is given just as the leaf buds are opening for the purpose of killing the spores of fungous diseases and of having poison ready for the first leaf-eating insects.
Q. I can refer you to an instance of successful spraying in my own county in the orchard of Dr. John Hartley. The varieties he grows are very susceptible to the scab, namely, the McIntosh Red and Fameuse. He sprayed with great success, more so perhaps than any other man in the Eastern Townships.
A. When did he spray?
Q. He sprayed before the leaves came out at all, and then different times afterwards, four times in all.
A. Another striking example may be seen in the orchard of Mr. Harold Jones, of Maitland, Ontario.
Q. Well, you might say he is an expert.
A. Yes, he sprayed his orchard of four acres of Fameuse, for which he received a cheque of eight hundred dollars in the orchard, the buyer being a Chicago man, who considered that he made a splendid bargain. Although there were many other Fameuse orchards in the neighbourhood, the Chicago merchant would not buy any of them, as the fruit was so scabby.

By Mr. Cochrane:

Q. I have found that there is a great difference in orchards that are just separated by the road in our section of the country, so that I do not think it is conclusively demonstrated that this is a success, because they succeed in one orchard and not in another?
A. I quite agree with you that we cannot always predict the full extent of the benefit of spraying. Many elements enter into the problem.

By Mr. Broder:

Q. The location would have something to do with it?

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THE VALUE OF SPRAYING.

A. Yes. In our Ingersoll demonstration we had some fifteen orchards, but we were so confident of the results, that on the 21st of last September we took a party of seventy-five farmers, belonging to the neighbourhood, from orchard to orchard, visiting both sprayed and unsprayed orchards. I do not think that there was one of the seventy-five who made this examination that was not persuaded that spraying paid three hundred, four hundred or even five hundred per cent of the cost.

By Mr. Blain:

Q. What would be the cost of a power spraying outfit such as you referred to?

A. About three hundred dollars with gasoline engine, tank, hose and all apparatus ready to go to work. An outfit operated by gas power would be obtained for about one-half this cost, and the pumps worked by a sprocket wheel attached to the axle of the wagon for about $125.

By Mr. Lewis:

Q. Will the five cents cover all four times or just one spraying?

A. Just one spraying.

By Mr. Martin (Prince Edward):

Q. At what time would you do the other spraying after the first?

A. The second spraying would be given just before the blossoms open, the third after the blossoms have fallen, and the calyx leaves are still open.

By Mr. Broder:

Q. Is there not a law against doing spraying when the blossoms are out on account of the bees?

A. It is against the law in Ontario to spray when the blossoms are open. The thoughtful orchardist will never spray when the blossoms are opened, partly because it injures the blossoms and prevents to a certain extent the setting of the fruit, but more particularly because it poisons the bees and other pollen-bearing insects, his best friends. The fourth spraying is given ten days or two weeks after the third. The general principle in spraying is to keep all the tissue of the fruit tree covered with the protective mixture from the beginning of the growing season until the usual hot and dry weather of midsummer.

By Mr. Kennedy:

Q. Do you not use fall or winter sprays?

A. The winter spray is an excellent thing for many classes of insects and diseases. The lime-sulphur wash is quite popular.

Q. I have found great benefit from it in British Columbia?

A. The lime-sulphur wash is a specific for the San José scale, but those who use it for that purpose say that the benefits derived from its use in other respects are so great that it would pay to use it even where there is no San José scale.

By an Hon. Member:

Q. Have you experimented with any of the mixtures?

A. This is not within the scope of the work of the Fruit Division. The experimental farms and experimental stations are doing this. The Ontario Department of Agriculture are testing several sprays very thoroughly.

PEAR BLIGHT.

By Mr. Wright (Renfrew):

Q. Have you found any remedy for the pear blight?

A. Not a specific. The best that can be done for blight is to reduce the vigour of the tree by ceasing to cultivate or fertilize the orchard and possibly let it run to sod, always cutting out and burning the blighted parts.

ENORMOUS WASTE OF APPLES.

I would like to say a word or two with reference to the condition of the apple trade generally, and the very marked contrast between the conditions in one part of the country and those in another. We find men declaring that apple growing no longer pays, and they point to the tens of thousands of bushels of apples that have been allowed to go to waste in the orchards during the past season. At the same time, in other parts of the country new orchards are being planted in large numbers.

By Mr. Cochrane:

Q. Where?

A. In the counties north of Lake Ontario.

Q. Where are they cutting them down?

A. In the southern counties of Ontario. There are, of course, reasons for this and perhaps a partial remedy. There are just as good apple growing districts in Southern Ontario as that along the north shore of Lake Ontario or on the border of the Georgian Bay. Nevertheless, causes are at work which, if not counteracted, will gradually wipe out orcharding in a large part of Ontario.

By Mr. Lewis:

Q. What are the reasons?

CAUSES FOR DECLINE IN ORCHARDING.

A. Partly climatic, partly the result of historical incidents, and partly a personal matter. In Southern Ontario the season is two weeks earlier than in the district bordering the Georgian Bay. Apples that will bloom May 9th or 10th in Essex County will not bloom in Northern Ontario till the last of May. The result is that in Southern Ontario varieties are ripe the latter part of September or the first of October, which would not be ripe in Northern Ontario till the last of October or first of November. The northern grown apple at the critical period of its maturity goes at once into a natural cold storage, and is in the very best condition to become a long keeper and go upon the market in February, March or April. The same apple, grown in Southern Ontario, would be exposed to two or three weeks of warm weather and would be entirely ruined for that reason, if for no other, as a long keeper. No amount of cold storage after three weeks in a Southern Ontario autumn climate will enable the apple to hold up as a winter shipper. Therefore, the apples of Southern Ontario can only be put upon the precarious summer or autumn market, while the northern grown fruit is a winter export apple—the apple that has made the reputation of Canada.

By Mr. Cochrane:

Q. Are you talking of the same variety of apple?

A. Yes. The Baldwin in Mr. Cochrane's county will be hard and firm to enter upon the winter season; the Baldwin from Essex or Kent county will be mature by the middle of October and completely out of season at Christmas time or the middle of January at latest. It would be impossible, therefore, to store the southern apples in

ordinary storage with profit. Buyers have deserted the southern portion of Ontario, which was the first great apple growing district of Canada.

By Mr. Wright (Renfrew):

Q. Do you not suppose that there is some kind of a way by which these apples could be preserved?

A. Yes. The products of these orchards should not be regarded simply as waste, though I think the utilization of the waste in our orchards is well worthy of attention.

By Mr. Cochrane:

Q. Put them in cold storage?

COLD STORAGE IN SOUTHERN ONTARIO.

A. That, I think, is a practical suggestion. Our American neighbours have the same problem. The apple growers of New York have a similar climate to deal with. They have developed cold storage plants to a remarkable degree and are doing a large and increasing business in apples. Cold storage for apples has not advanced in Canada. We need it only for the limited area of the southern counties, but for these it would pay and pay well. There is ample room for capital and enterprise in cold storage plants that will take care of the product of the million trees growing in the southern tier of counties. Were these apples picked just when mature and placed in cold storage at a temperature of 32 or 33 degrees, they could be held without serious loss for winter trade. The Americans are increasing slightly their export trade in apples, and a new impetus has been given to their trade by the introduction of cold storage.

COST OF COLD STORAGE.

Q. Can you give us an idea of the cost of these plants?

A. Not very satisfactorily. They vary very much according to the size and system. The best idea may be obtained from the fact that in a well organized plant apples can be stored for the season at a cost of twenty-five cents per barrel. They are willing to pay this price to compete with our apples for the winter trade. Southern Ontario would have to count upon this cost in the same way, but even at this price it would pay well. Nevertheless it is some satisfaction to know that in the best winter apple districts of Canada, the orchardists are not subjected to this tax of twenty-five cents per barrel. We are, therefore, more than holding our own in the export trade. With a total production of sixty million barrels of apples, the Americans export only five hundred thousand more than the Canadians.

Q. As with butter, they are consuming a large proportion of what they produce?

A. Their export of apples is less than one-half of one per cent of their production. With us the export trade dominates the production of the country. With the Americans it is a mere incident.

Q. I have known very large stores in the United States keep shipments intended for their own people in cold storage.

A. They count very little on their export trade. I anticipate in the future that the export trade will be relatively even smaller than it is, and that Canadian apples will monopolize the Old Country markets just as Canadian cheese has.

Q. Would not the Spy be a good commercial apple in Southern Ontario?

A. No, it ripens too early. The result is always the same, too large a waste in storage during the winter.

By Mr. Wilson:

Q. Have you been down through Fredericksburg and the other parts of Lennox and Addington? Is that climate all right?

A. The climate is a little severe for the best class of winter apples. The winter apple is usually a comparatively tender tree, and I should certainly recommend growers in this district to cultivate hardier apples such as the Duchess and Fameuse type.

Q. Do you know Mr. A. C. Parks?

A. I have had correspondence with him but have never met him.

Q. Do you know Dr. Young, of Adolphustown ?

A. Yes, fairly well by correspondence.

Q. What is the matter with him ?

A. He is doing splendidly with his orchard. He has the largest Duchess orchard of any man in Canada. His orchard is a splendid demonstration of what can be done by the introduction of large quantities of one variety. He was enabled last year to sell his entire output at an excellent price, while there were thousands of barrels wasting in small orchards because the owners could not reach customers.

Q. Would he sell them by the carload or by the whole orchard ?

A. I think he sold the whole orchard last year.

Q. I know as a practice he sells his orchard. He sold for over two thousand dollars one or two years ago.

By Mr. Broder :

Q. How many trees ?

Mr. WILSON.—*I* do not know.

By Mr. Herron :

Q. What are the ingredients for the mixture used for spraying ?

A. Copper sulphate, 4 pounds; fresh lime, 4 pounds; Paris green, 4 ounces, and water, 40 gallons. Full particulars are given in a very excellent bulletin by the Horticulturist at the experimental farm. A new edition of this bulletin is now being prepared and will be issued to all applicants free.

CIDER MAKING.

By Mr. Telford :

Q. Will you have time to give us something with regard to the cider trade ?

A. The manufacture of cider is a very important and very interesting phase of the apple business. A very large and profitable cider business might be established in southern Ontario. Already a large plant is operating sucessfully in Norwich, Ont., the product of which has been highly commended. The Department had an extensive correspondence last year with English cider makers and there is still a possibility that the attention of English capital may be directed towards Canada. There is a very large increase in the quantity of cider used in England, but the Englishman is very particular about his cider. It is made from perfectly sound apples and the utmost cleanliness is observed in the manufacture, a cleanliness only equalled in the best-kept dairies. The greatest of care is given to the fermentation, racking, storing and blending, and the result is that the product compares favourably with certain classes of wine, and is likely to displace that beverage to a certain extent. Our Canadian apples if converted into cider would not equal the best English product, inasmuch as it requires an apple with more tannin than would be agreeable in a dessert or cooking apple; nevertheless, the cider made from our apples would serve admirably to blend with the English product and would furnish an outlet for much of the fruit that is now going to waste.

Hon. Mr. FISHER.—The Trappist Monks at Oka make an excellent cider which they sell in bottles in Montreal. It is used by a great many people who like that sort of thing, but they make it very scientificoally and very carefully, and as Mr. McNeill says, with as great care and skill as the winemakers in Europe make their wine.

APPENDIX No. 2

By Mr. Wilson :

Q. Is it expensive ?

A. I do not know. I think it is probably as expensive as ordinary wines. The monks do not make any very large quantity. They have not flooded the market at all.

UNSATISFACTORY SYSTEM OF SELLING.

By Mr. Cochrane :

Q. The people up our way are very much dissatisfied with the results of the crop last year ? Some of the men that shipped to these people—the commission men—have not had enough very often to pay for the barrels.

CO-OPERATION.

A. I should like to touch upon that point under the head of co-operative selling associations. No doubt there is cause for complaint and that a change should take place in the method of selling our apples. The present method has undoubtedly many defects.

I have had in my mind for a good many years whether we could not send a Canadian over there who could get in touch with the people and let him sell for Canada in the markets of Great Britain, instead of the shippers having to pay a half a dozen men to handle their products ?

A. That would be quite in line with the scheme already in hand in the western part of Ontario. Several co-operative associations have been formed and have worked quite successfully for the last two or three years. This year there has been an increase in the number and there will probably be twenty active associations working next season. It is the intention of those interested to form a union among these associations so as to place the sale of their entire product in the hands of a single seller.

Q. And that one man could sell our cheese as well ?

A. I think he would have rather too large a task.

Q. I do not mean the whole of Canada. I mean in connection with this particular district, just the one county.

A. There is a possibility of that.

By Mr. Wilson :

Q. I suppose if any organization wanted to send a man to England to sell their stuff there, there is no law which prevents it ?

A. No, some have tried it and have succeeded more or less.

Q. Generally less than more ?

A. It is very difficult to overturn established methods of trade in the Old Country, and any agent who goes over there has a very difficult proposition in endeavouring to change their methods of buying and selling.

By Mr. Cochrane :

Q. I would not fancy there was any need of change in the methods of selling there. We sell to a man in England and we have two or three men between us and the commission men that have to get their pay. It appears to me that if we had one man that we could ship our apples to, he could sell the apples to the buyers in England,

A. I think that is so.

Q. For instance, we have say three men who now have to get their pay out of it. Would it not be cheaper for that section of the country to have one man in Great Britain to handle it ?

A. Yes, I think that is a scheme that might very well be worked out. I consider these co-operative associations most important in connection with the apple industry.

Co-operation has worked so well in the case of dairy work that I am perfectly certain that we cannot do better than introduce it in the apple industry. The associations already established commenced upon a very modest plan. They united at first for nothing more than simply to ship in common.

By Mr. Wilson :

Q. What name do they sell under ?

THE CENTRAL PACKING HOUSE SYSTEM.

A. The associations usually take the name of their district, as the Lake Huron Fruit Growers' Shipping Association, or the Chatham Fruit Growers' Shipping Association.

After a short experience in shipping, the associations found a want of uniformity in packing and soon the necessity for some supervision in this was deemed necessary. In the case of Walkerton a central packing house, with railway siding facilities, has been purchased, to which the fifty or sixty members draw their fruit just as it is picked from the trees. The apples are placed by the farmers in crates or barrels without pressure and drawn to the packing house on spring wagons, or racks cushioned with hay. At the packing house a gang of skilled packers grade and pack them, each grower getting credit for the total number of barrels of No. 1 and No. 2 fruit, which he has brought to the packing house. At the present time the culls are returned to the farmer. The result is that the patrons of these associations have been able to sell all their apples at a price which is quite satisfactory to them, though good apples are rotting upon the ground only a few miles to the right and left of them. This is partly the result of having skilled men to sell, but more largely the result of being able to offer carload lots of one or very few varieties. It is also much easier to sell where the responsibility is concentrated on a single individual—in this case the manager.

ADVANTAGES OF CO-OPERATION.

These co-operative associations are working more successfully in districts that have been practically abandoned by the regular apple operators. The only available method for the ordinary apple buyer is too expensive and cumbersome to deal with the small orchards and numerous varieties of the districts, nor could he purchase his packages and distribute them as conveniently as an association. Consequently, when the price of barrels went up to forty and fifty cents each, they were largely thrown out of business. The Forest Co-operative Association, by purchasing their material and manufacturing the barrels on their own premises, succeeded in reducing the price of barrels to twenty-nine cents. I would not give the impression that the coopers were altogether to blame for the very large difference between the actual cost of barrels and the price which the individual farmer was forced to pay. Among the many evils that afflict the apple business few have been more injurious than the irresponsible buyer; he has succeeded not only in defrauding the grower but also the cooper, until the latter has refused to make barrels except at a price that will cover these exceptional losses, and even then the fact that the orders are given so late in the season rendered it impossible for him to manufacture barrels with the greatest economy. Co-operation is furnishing a remedy for these evils as well as the evils of irregular packing and grading. This method has also somewhat improved the transportation problem, though there is much still to be desired in this connection.

By Mr. Wilson :

Q. Well, co-operation has not been successful in some other lines. I do not know what it has been in apples?

APPENDIX No. 2

A. At the present time co-operative associations are succeeding better in transportation matters than individual shippers.

By Mr. Cochrane :

Q. How do the farmers who are in these associations transport their apples from the orchard to the packing house.

A. In barrels very lightly pressed. A few have manufactured square bushel crates which pack very nicely into spring wagons, enabling them to take large loads and have the same packages returned to them. These are more convenient than barrels for this purpose.

THE CARE OF APPLES AFTER PICKING.

By Mr. Broder :

Q. Do they sweat the apples before taking them to the warehouse ?

A. No, except quite accidentally. The process of sweating apples in piles is now regarded as very detrimental to the keeping qualities of the apple, and if sweating should take place it is regarded as an injury. The apple deteriorates in keeping qualities from the moment it is picked until it is consumed, but the process of ripening which soon turns to decay is retarded by cold, and consequently the most experienced men get their apples as quickly from the tree to a place as cold as possible. Of course, few have facilities for reaching the ideal temperature of about 31 degrees, but the nearest approach which can be made to that the better. One of the great evils of the present method of harvesting the apple crop of Canada is that the apples are picked and allowed to remain under the trees or even packed in barrels in the orchard for a long time before being placed in a cool storehouse. The co-operative associations remedy this by keeping a list of the stock owned by their patrons and calling this stock in as soon as it is mature, selling it or storing it promptly.

Gentlemen, I have by no means exhausted this subject though my time limit has expired. I am at the service of the Committee, but feel it would be unfair to detain you longer to-day.

Having read the preceding transcript of my evidence, I find it correct.

A. McNEILL,
Chief of Fruit Division, Department of Agriculture.

HOUSE OF COMMONS,
COMMITTEE ROOM 34.
WEDNESDAY, April 5, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day, at 10 o'clock a.m., Mr. Greenway, chairman, presiding.

The CHAIRMAN.—We will hear Mr. McNeill this morning in continuation of his evidence of yesterday.

THE APPLE TRADE IN EASTERN CANADA.

Mr. McNEILL.—Mr. Chairman and Gentlemen, yesterday I spoke more particularly of the work of the fruit division in enforcing the Fruit Marks Act. This morning with your permission, I propose to add something with reference to the apple trade

in Eastern Canada, making some suggestions for the improvement of the trade, and calling attention to the conditions of the north-west apple trade.

The general subject may be considered under three heads :—

(*a*) Ontario (south and west).

(*b*) Ottawa and St. Lawrence Valley and the Eastern Townships, Quebec.

(*c*) The Maritime Provinces.

I spoke yesterday of the anomalous conditions which prevailed whereby in certain portions of the older orchard districts of Ontario they were cutting down very fine trees, many of them in the prime of their existence, producing very choice fruit. In other sections they are planting new orchards in large numbers. This decrease in orcharding takes place for the most part in southern Ontario, in the counties bordering on Lake Erie, and to a less extent in the central and western portion of Lake Ontario, including the counties on Lake Huron.

THE CLIMATE OF SOUTHERN ONTARIO.

The reasons for this decline are numerous, first in importance is the matter of climate. Southern Ontario has too warm a climate to produce long keeping apples. All varieties grow to perfection and produce large crops, but maturing in the latter part of September or the first of October they have to endure two or three weeks of warm weather in the ordinary course of things, which hastens the process of decay to such an extent that these apples are not regarded as long-keepers. In fact, no large apple operator will purchase these apples at any price for storing stock. Many of them, of course, are purchased for immediate use, but the market for late summer and fall varieties of apples is exceedingly precarious; hence the orchardists are exposed to many and very serious losses.

TOO MANY VARIETIES.

Another defect under which they labour is the number of varieties to be found in each orchard. This being the first section of the country that was planted, farmers thought it necessary to choose varieties enough to cover the entire season. Unfortunately the local market was soon overstocked and all early varieties became a drug upon the market. Up to the present time there has been no regular foreign demand for early varieties and consequently many of them could be devoted to no better purpose than feeding stock.

THE SIZE OF THE ORCHARDS.

The orchards, too, are comparatively small. In the aggregate there are a very large number of trees, but these are distributed a few on each farm. This condition, together with the numerous varieties does not lend itself readily to the common methods of buying and selling apples in Ontario. The apple operator cannot afford to send his gang of men to any one of the orchards more than once or twice in the season, nor can he afford to do that in all cases. Hence the farmers have found increasing difficulties in disposing of their stock. This system of buying the orchard outright, the buyer doing the picking and packing is an exceedingly expensive one and can only be practiced where there is a very wide margin between the buying price and the selling price. But now that competition is becoming keener and better methods are being adopted in other countries and in other parts of our own country, the orchardist will be obliged to adopt a different system.

By Mr. Blain :

Q. I understood you to say yesterday that in the county of Kent they were cutting down trees?

A. Yes.

APPENDIX No. 2

Q. Are there any other counties where they are cutting down orchards and giving up the production of apples ?

A. Although it would not be fair to say they are giving up the production of apples, it is still quite true to say that they are cutting down trees in many of the orchards of southern Ontario. In 1900 and 1901 some very fine orchards were cut down in the county of Lincoln; I know of others in the counties of Elgin, Kent and Essex. This was owing in part to the unsatisfactory condition of the apple trade, but in part also to the fact that some of these orchards were in the peach district and were cut down to make room for peach orchards.

By Mr. Jackson (Elgin):

Q. With reference to the cutting down of orchards, it is true that the trees in some orchards are being cut down in Elgin, but I have yet to learn where there have been any modern fruit trees cut down. Of course, we cut down our old trees.

A. Permit me to explain that usually trees are not cut down until they have been some years neglected and in such a condition as to be an encumbrance on the ground, but this has been brought about by want of profit in the business.

Q. Would it not be better to put it in that way ? It would possibly be misleading to say the farmers of Elgin were cutting down some of their profitable orchards.

A. They would not cut down a profitable orchard, though I am sorry to say they are cutting down orchards otherwise good. While visiting Blenheim in the adjoining county of Kent, I noticed a farmer cutting down a very vigorous orchard, the trees indeed had grown so large that they filled the entire space and of course without pruning would have produced inferior fruit, though the trees otherwise could not have been better. The owner of the orchard gave as his reasons for cutting down the trees the want of a proper price, and the price was poor partly because of wrong varieties. If you will consult the figures published by the Ontario Bureau of Statistics, you will notice that the number of young trees reported from these southern counties is gradually decreasing, showing that the farmers are gradually going out of the business. This, I believe, is a mistake, inasmuch as the north-west will soon be able to absorb all our early apples. The orchardists who take good care of their orchards of early fruit for a few more lean years will then probably realize more for it than for late fruit.

Q. We have a great many young orchards in the county of Elgin and we are making a success of it, and I would not want the idea to go broadcast that we are destroying our orchards on account of their not being profitable.

A. I hope to offer some suggestions whereby every orchard in Elgin may be made profitable. I have no hesitation in saying that there is no portion of the earth's surface with which I am acquainted that can grow better apples than the county of Elgin as far as flavour, colour, size and quantity are concerned, but the long-keeping qualities, as they are handled at present, are lacking. It was my pleasure last year to visit the various provincial fruit growers' associations and to show a collection of apples from each province, typical of the province where they were grown, selected, of course, by the provincial authorities. In this collection we had apples from British Columbia, Ontario, Quebec, New Brunswick, Nova Scotia and Prince Edward Island, ten varieties from each, and these were shown at Toronto, Amherst, N.S., Windsor, N.S., Charlottetown, P.E.I. It is needless for me to say that different provinces excelled in different varieties. The best Baldwins in the collection, in fact the best Baldwins I ever saw exhibited in any public collection of fruit, were grown in Norfolk county, so close to Elgin county that it can at least shine by reflected glory. These apples were examined by many apple operators, one of whom said: 'Yes, it is beautiful fruit, but we would not give fifty cents a barrel for it this year.' He, of course, was speaking of it as keeping stock for the export trade. I obtained a few specimens which were preserved in cold storage until a few days ago. The quality is still good, which indicates that cold storage may yet enable us to handle these apples with profit.

BARREL PRICES.

Another cause for the decline in orcharding is the high price of packages.

By Mr. Gordon :

Q. Barrels will be cheaper this year ?
A. Undoubtedly.

By Mr. Broder :

Q. What reason can you give for this ?
A. Two years ago there was a shortage in stave material.

By Mr. Derbyshire :

Q. Cooperage ?
A. Yes, in cooperage stock. There was still plenty of material in the woods but a large demand from several sources exhausted the supply in sight and prices were consequently appreciated. Last year prices were high partly because people did not prepare in time for the demand and partly because the coopers found that they could control the market. The price of cooperage stock was not exceptionally high and where individuals or firms purchase their cooperage stock direct from the large dealers and had it manufactured on their own premises the cost of barrels was moderate. The Forest Co-operative Association manufactured theirs at a cost of 29 cents.

By Mr. Broder :

Q. There is just this defect that the local cooper cannot make the barrels and store them up ?
A. Yes.

By Mr. Derbyshire ;

Q. The trouble that winter was in getting out the logs. They were snowed up and could not be got out.

By Mr. Gordon :

Q. I do not want to interrupt, but I would like to say that the price of lumber has gone up in Ontario. The price of logs went up $17 and $18 a thousand. The shortage is commencing to be supplied from the south and as fast as the mills develop there will be plenty of material.. This year's stock will be cheaper.

A. It is a readjustment of things. The scarcity of material is certainly approaching, but let me assure you, gentlemen, that there is plenty of material yet for many years. As long as we have an abundance of spruce logs, we will have an excellent material for staves, though somewhat more expensive to manufacture than elm. Nova Scotia staves are largely spruce from which they make a splendid barrel. Messrs. Sutherland and Innes, of Chatham, very large dealers in cooperage stock, claim that elm is still cheaper than spruce, although spruce is being used for pulp wood.

By Mr. Broder:

Q. Let me ask you a question as to another matter. Referring to locality, I met a gentleman from near Hawkesbury in the County of Prescott, who has a very large orchard there, who sold one thousand two hundred barrels of McIntosh Red apples, and who told me that in that locality they do not spot at all, even without spraying. I thought that an extraordinary thing. His place is down on the Ottawa river.

A. I should hesitate to accept this as a fact without very strong evidence.

Q. It was a strong Scotchman who made the statement to me?

A. I should be the last man to impugn the word of a Scotchman, though I think it would be allowable for me in this case to hesitate before accepting his explanation of the case. It is true, however, that fungus diseases and insect pests are not so troublesome where the industry is new, and the trees few.

THE TRANSPORTATION PROBLEM.

Referring once more to Southern Ontario, I would like to draw attention to another cause for the decline in orcharding, namely, the want of proper transportation facilities and the high freight rate. It is difficult to get the railway people to appreciate the importance of this industry and its specific needs. The apple trade requires special attention in the matter of transportation facilities. The first and greatest need is a prompt service, the keeping quality of an apple depends so largely upon the speed with which it can be got from the orchard to the storehouse or the market that promptness is a first consideration. This can only come about by co-operation between the railways and the growers or some one who will speak unitedly for the growers. Preparation must be made early in the season for a proper supply of cars that will be available for particular districts or serious losses will result. At the present time, for want of cars apples are forced to remain in orchards or at stations unprotected from the vicissitudes of the weather, and, of course, deteriorating very seriously every day. Let me repeat that the apple is never so good for storing purposes as at the moment it is taken off the tree. Every hour that it is kept after it is picked before it is cooled down to a temperature of 31 degrees means a relative loss. Many of the best cold storage plants in the United States are now refusing to take any responsibility for the keeping qualities of apples that are not stored twenty-four hours after they are picked. This fact must be impressed upon the railway companies as well as upon the growers of the apples themselves, that prompt delivery from the orchard to the storehouse or to the consumers is a prime necessity for the success of the trade. I will be borne out in this by the members of your Committee here this morning who are also large apple shippers.

POOR FRUIT.

The next point I will speak of is the poor quality of fruit that results from the neglect of proper methods of orchard practice. From what has been said you will gather that in many cases the profits from the orchards in these districts are very small or altogether wanting, and under the circumstances it is easy to understand why the orchards have been left uncultivated, unpruned and unsprayed. These conditions nevertheless may give a large crop in some years, but never of good quality. Consequently, the fruit is not in demand and buyers are scarce. I visited many orchards last fall where the percentage of No. 1 apples was exceedingly small and the quality of the fruit such that I was obliged to tell the owner that I could not recommend his orchard to any buyers and that I considered it would not pay to put such fruit upon the market at all.

LAKE HURON AND INTERIOR COUNTIES.

The conditions to which I have attributed the decline of orcharding in the southern counties are in the main present also in the Lake Huron district, and the interior counties of western Ontario. They have the same difficulties with varieties, have even smaller orchards, the same bad system of selling, picking and packing, the same difficulties with packages and with the transportation companies, all of which have led to the same neglect resulting in a large crop of second quality fruit. There is, however, one difference and that a very marked one, namely, that they suffer no disabili-

ties from climatic conditions. They are so far north that they can grow a long keeping apple to perfection.

LAKE ONTARIO AND GEORGIAN BAY DISTRICT.

I would like to speak now of another portion of Ontario bordering on the Georgian bay, and as far south as the township of Mulmur, and I can take this district along with the counties bordering on the north of Lake Ontario. Here orcharding is flourishing. They are planting new orchards very rapidly, a fair indication that they are finding the business profitable. They are not in every case making as much money as I think they ought to make; nevertheless, there are examples of men in the county of Northumberland who are getting such a revenue from their orchards that they are valueing them at one thousand dollars an acre. Unfortunately, they are not all doing that, but even those who are not conducting their business in the best way are making money and so are encouraged to plant. In the matter of soil and climate they have everything that could be desired; they have also the experience of the other portions of Ontario, and consequently are not planting so many varieties. They are also planting in larger plots. It is not uncommon for one orchardist to have from ten to twenty acres, the greater portion of which are of two or three varieties. These large orchards render it necessary that the owner should make himself acquainted with the best methods of managing trees and cultivating his soil. It also minimizes the evils of the common method of selling, as he has large crops of single varieties and is thus able to place long lines on the market.

By Mr. Wilson :

Q. How far north does this apple belt extend towards Lake Superior ?

A. It does not extend very far. I do not like to speak with confidence of the district beyond what is called the Iroquois Terrace, which skirts the northern shore of Lake Ontario and represents the lake bottom of a former geological period. When you get to the high lands back of this, different conditions prevail and the climate is somewhat too severe for the ordinary winter long-keeping varieties. This district, then, including the counties on the Georgian Bay and Lake Ontario is to be congratulated on having a profitable industry in orcharding that is progressing very rapidly and making itself felt on the export trade of Great Britain.

QUEBEC AND EASTERN ONTARIO.

Apple growing is not progressing very rapidly in the Ottawa and St. Lawrence valleys, with which district we may include the Eastern Townships of the province of Quebec. The climate here is somewhat too severe for growing the better class of winter varieties. There is grown here, however, the hardy Fameuse type including besides the Fameuse the McIntosh Red and Wealthy, which though they do not possess long-keeping qualities, are regarded as the highest type of dessert fruit. In flavour, aroma, texture and colour these apples leave little to be desired. Unfortunately, though, there are large quantities of these grown; they have never been put upon the market except by one or two men in a manner in keeping with their high qualities. The commercial methods of packing barrels, quite suitable to the coarser winter varieties, are altogether unsuitable for these fine textured apples. The possibilities of the very large trade that might be built up are not appreciated by the growers themselves, and I am free to admit that the difficulties in the way are numerous, but not insurmountable. The possibilities are that in the future this will be a very large apple growing section of Canada. They will not attempt such winter varieties as the Baldwin or the Spy, but will confine themselves probably to this Fameuse type which grows here with a lusciousness as well as a keeping quality scarcely equalled anywhere else. If success is to be achieved it will require greater skill in the growing of the apple and the care of the orchard than is in

use at present. This variety is particularly susceptible to the black spot, and is comparatively worthless, if not perfectly clean. Great skill is necessary in picking and packing owing to the delicacy of its texture; and it will be necessary to market it as a luxury among people who are willing to pay a high price for such a delicacy.

By Mr. Broder:

Q. The Fameuse appears to have deteriorated. It is not at all the apple it was years ago.

A. I am not sure, but the fault lies with us. I am sometimes, however, led to doubt whether it has all the crispiness and luscious mellowness that I associated with it as a boy, but I am reassured when I notice how great a favourite it is with the present generation of boys and girls. This must be admitted that fungous diseases are ever on the increase and a scabby Fameuse is perhaps the lease desirable of all apples.

FEW VARIETIES AN ADVANTAGE.

At first sight it may seem a disadvantage to this district that they can grow so few varieties of market apples, yet properly considered, this fact will be rather in its favour. The great difficulty in marketing many of our products is that we grow them in too small quantities to impress the market. It will require thousands of boxes of Fameuse apples, although relatively so well known, to secure a standing in the best markets of the world. Among the obstacles in the way of working up this trade, must be noted the fact that spraying is not a common operation in this district, and in many seasons without spraying the apples are not worth the harvesting. Unfortunately, we have an exceptional year like last year, when the crop is fairly clean, without spraying, which serves to encourage the idea that spraying is only occasionally necessary. The fact cannot be too strongly impressed that if this business of growing Fameuse apples is to be established upon a large scale and a permanent basis it will mean not only that spraying must be done every year, but it will have to be done more persistently than with other types of apples. A second difficulty lies in the very crude methods of preparing the fruit for market. A the present time it is packed in barrels, very poorly graded and often overpressed, and in consequence are most unsightly when placed upon the table of the consumer. This will have to be reformed altogether.

HOW TO PACK THE FAMEUSE.

They should be packed in boxes, each specimen wrapped in paper the same as oranges, and they well deserve it. Only perfectly clean specimens should be marketed, and these should at all times receive the greatest care to prevent bruising and overheating. It is also a mistake to place them in competition with ordinary fall and early winter stock upon the general market. If these apples receive the care which I have mentioned, and if only the perfect specimens are packed they will commend themselves to a special market as a luxury and will be paid for accordingly. Even with the imperfect methods of handling now in vogue a Fameuse apple in Boston or New York, when in season, will bring the price of two oranges, and it is difficult to predict how large and profitable a trade might be built up among the rich people of the large English and American cities. This is presuming a great deal of skill on the part of the fruit growers of this district. The growing of winter apples in western Ontario, such as the Baldwins and the Spies can be safely entrusted to farmers who are growing many other kinds of produce. It requires comparatively little skill. Not so with the Fameuse apple; its production requires skill.

By Mr. Cochrane :

Q. In the growing as well as in the packing ?

A. In every process of the production. In the process of spraying, the careful handling and wrapping in paper, in the packing and in the skilful appeal to the proper

market. It would be a shame to place a Fameuse upon the same market as the Baldwin or the Ben Davis. It should go as a delicacy, a luxury to be bought by the rich; and to successfully appeal to such only the choicest specimens should be marketed.

Q. Will it stand shipment to the old country?

A. Yes. Mr. R. W. Shepherd, of Como, P.Q., has been exporting it for a number of years. He gives great care not only to the growing of the apples, but to the method of packing them. He uses a special box with a pasteboard filler having compartments like an egg case. Of course, packed in this way his products appeal to a very select class of customers in the old country. His business is increasing to such an extent that his own orchards are insufficient to supply the demand, and he buys from his neighbours when their apples are of sufficiently high quality. It is understood, of course, that he does not place his fruit upon the general market at all, everything going to private customers. Nevertheless, there is ample evidence that Boston, New York and Chicago, as well as the old country cities, will furnish a ready market for all fruit of this class.

By Mr. Wright (Renfrew):

Q. We grow large quantities of the Wealthy apple and we grow as good a specimen as I think I ever saw, not only as to size but as to colour, texture and other qualities. When putting them in cases, how are we to sort them, and are we to put the same size in each box? In the case of oranges the number of oranges is on the outside of the box, and all are of uniform size.

A. It will be necessary to use the same methods and the same skill in the packing of these apples as is used by the packers of oranges. They should be graded so that apples of one size only will be found in a box, and it will be quite possible to put the number of specimens on the box. Permit me to say that the apple growers of Eastern Canada fail most lamentably in box packing. The skilled apple packer of Oregon, Washington, California and our own British Columbia, will take apples of any size and pack them in tiers, filling the box completely with fruit without the necessity of using packing material similar to excelsior or paper shavings.

Q. What is the system?

A. I cannot explain it more briefly than by referring you to the methods which may be seen in orange boxes at any of the fruit stores in the city. I have been investigating box packing for the last two years and have been impressed with the necessity of more skill on the part of our eastern fruit growers. The best western packers profess to have some sixty or sixty-five different devices or combinations of fruit and tiers that may be used in the packing of a box of apples. Apples will pack in three, four or five tiers, and there is room for three, four or five rows in each tier one way and eight to twelve the other. Each fruit may be placed in three or four different positions and when all these combinations of rows, tiers and individual fruits are taken into account one is ready to admit that a great many different devices may be invented. It is quite possible that the honourable minister may take this subject of apple packing into consideration the present season and provide instruction.

The outlook for the Ottawa and St. Lawrence valleys and the Eastern Townships is hopeful, though a complete revolution in the present methods of handling the crop is demanded.

MARITIME PROVINCES.

The maritime provinces have long been famous for their apples. Ontario produces perhaps the largest quantity of any province, Nova Scotia being the next largest producer. New Brunswick has not yet developed a very large apple trade but produces somewhat more of fall and early winter varieties than the local market will consume, and I am pleased to say that notwithstanding the very large European crop of fall

fruit this year, New Brunswick was able to export to Great Britain at a good profit several shipments of Duchess apples from the St. John valley. I see no reason why this trade should not increase. Their proximity to the English market and the remarkable shipping qualities of their Duchess will always insure them a safe market. The industry in Prince Edward Island is improving very rapidly. It has not at the present time a large number of trees, but sufficient to demonstrate that certain varieties grow to perfection, and it is not too much to expect that in the near future Prince Edward Island will compete successfully with some of the best apple producing portions of the maritime provinces. The Gravenstein is an apple that is almost universally associated with the Annapolis valley. Nevertheless, Prince Edward Island can grow this apple to perfection as far as size and colour are concerned, with this additional advantage that they come in two or three weeks later during the cool fall months and will ship much more safely than the Nova Scotia product.

By Mr. Black :

Q. Are they better than Nova Scotia Gravensteins?

A. You cannot get better Gravensteins for size and colour and eating qualities than are grown in the Annapolis and Cornwallis valleys, but they are a little tender to ship quite safely, and it is in this respect only that the northern grown Gravenstein has the advantage. This weakness in the Nova Scotian Gravenstein has been recognized, I think, by the Nova Scotians themselves, who are no longer recommending this tree in the planting of young orchards. This is partly due, of course, to the shipping qualities of the fruit and partly to certain weaknesses apparently in the constitution of the tree.

By an Honourable Member :

Q. It is because they have sufficient for the early market.

A. There may be something in that.

By Mr. Black :

Q. Have you heard of the collar rot ?

A. This disease is scarcely known in Quebec or Ontario, but it is exceedingly serious in Nova Scotia. It attacks the trunk of the tree near the earth, the bark appears to rot at this point and practically girdles the tree till it dies.

By Mr. Broder :

Q. What is the cause ?

A. The causes of the disease are obscure. I cannot give a satisfactory explanation of it.

POOR FRUIT ON PUBLIC TABLES.

Q. I notice while travelling on the Intercolonial Railway that the poorest fruit they can get is offered on the table. I look upon it as a very poor advertisement, that is, a government railway should have the very best fruit in the country.

A. So they should. I will take the opportunity this morning of preaching a sermon, one which I preach in season and out of season.

Q. Are there any sinners here ?

A. Well, yes, I think so. If I may say it with due deference to this august body, I believe there are here some of the very worst sinners in this particular matter. The sermon I would preach, would be, that it is the duty of fruit growers and apple men as well as those who represent apple men in parliament never to tolerate either on the dining cars or in the hotels a poor quality of fruit. I feel certain that if such men as you,

were to persistently ask that these poor, scabby worm-eaten, shriveled specimens be removed, a marked change would soon be observed in the quality of fruit offered to the public. I therefore trust that you will all use your influence in this way to secure a higher standard for fruit placed upon public tables.

Let me explain, however, that the hotelmen are not always to blame. It sometimes happens that no first-class fruit is on the market.

By Mr. Derbyshire :

Q. He could get better if he put up the price ?

A. There could be no better stimulus for the fruit grower.

THE EVIL OF SMALL LOTS.

The system of selling adopted in the Maritime provinces for the export trade is much better than in Ontario. There are fewer middlemen between the grower and the consumer. The system, however, is not perfect. The individual shipper of apples places his fruit in the hands of the broker on the other side of the water, and consequently they must appear upon the market in comparatively small lots, or to use the market phrase 'in short lines,' inasmuch as each man's fruit is sold by itself. Not only so, but each variety forms a separate line and it can thus be seen that this method of sale will not attract the large buyer. If he buys at all it must be at a reduced price to compensate him for the trouble and expense of many examinations of these small lots. A remedy for that would be the adoption of the co-operative method of selling, spoken of yesterday, whereby large quantities of the same variety and grade of packing could be offered.

It is also unfair to the seller that he should be forced to place his goods almost unreservedly in the hands of the buyer, because when fruit leaves the premises of the grower for the market it is impossible to recall it or to delay the sale until there can be an agreement with reference to price and quality. So long, therefore, as the consignment plan is followed, so long may the fruit grower expect to receive only what can be forced by the competition between brokers. There are so many schemes whereby this principle of competition in selling is broken down that it is a common belief among apple growers that the price they receive is not that which would be justified by the prices paid by consumers, but only such as will prevent them from destroying their orchards and going out of the business. A remedy for this could also be found in the co-operative plan because by this method of co-operation such large lots of fruit could be accumulated in storehouses on this side of the water that it would attract reputable buyers from the Old Country, and all questions of grade and price could be settled when buyer and seller were dealing upon equal terms.

By Mr. Broder :

Q. Do they not sell them by auction upon the other side ?

A. They sell very largely by auction, but there are not wanting fruit growers who have examined the methods even in the auction room, who say that there is not the free play of a full competition even there.

Q. Supposing they sent up a slack barrel as a sample of the shipment, then the whole load is judged by that barrel, and is sold on that sample, consequently the whole load is sacrificed.

A. This is one of the evils of the present system, but there are many others.

By Mr. Wright (Renfrew):

Q. They will not take one barrel as a sample of a shipment; they have to take more than that. Sometimes you have to take up to ten barrels.

APPENDIX No. 2

A. Different methods are adopted in different markets and by different firms and buyers in the same market. No method would be so fair as to accumulate the fruit in large lots at some convenient shipping station in Canada, where buyers and sellers could meet upon equal terms.

I would also suggest that even with the present methods of consigning, it would be a very great improvement if uniformity could be secured in the matter of packing and grading.

By Mr. Broder :

Q. Growing larger quantities and not so many varieties ?

A. Fewer varieties, uniform in quality.

By Mr. Black :

Q. They are building warehouses all the time on the lines of railways to accommodate this trade.

A. The objection to these warehouses is that they are usually controlled by a single English firm, and therefore if you store in them, it is equivalent to consigning to these particular firms.

Q. There are a number of private warehouses.

A. These private warehouses are to be highly commended, and it is sincerely to be hoped that their number will increase. In this respect the people of Nova Scotia are ahead of the people of Ontario.

By Mr. Cochrane:

Q. Where is the improvement ?

A. The establishment of private storehouses implies that the fruit will be better taken care of. It also enables the fruit grower to negotiate freely for the sale of his goods. I would make this further general suggestion that much educational work is required in the orchards and at the packing houses; this will have to be undertaken largely by the provinces, but the Department of Agriculture will no doubt be glad at all times to co-operate with the provinces in work of this kind.

By Mr. Broder :

Q. You are dealing with this matter of education now ?

A. Yes, the fruit division can do much in this matter incidentally. A great deal of most excellent instruction can be obtained from the reports and bulletins of the experimental farm and the fruit division, and it is to be hoped that fruit growers will avail themselves of this literature which is supplied to them for the asking.

I am glad to say that the transportation facilities in the Maritime provinces have greatly improved of late years; nevertheless, there are still many pressing evils, which will require serious attention.

In concluding my review of the conditions in the Maritime provinces permit me to say that I think them particularly good for the apple grower, and I see no reason why the orchards should not be largely increased if the planting is done with due consideration for the experience of the last few years. The climate, soil, proximity to markets, the concentration of the business in large orchards in favoured localities, as well as the intelligence of the people, will undoubtedly place these provinces in the foremost rank in the production of apples.

THE NORTH-WEST TRADE.

The apple trade with Manitoba and the North-west Territories from eastern Canada calls for some special comment. Within a reasonable limit of time this market

will rival even that of Great Britain, and will perhaps be even more regular. It will almost certainly furnish a better market for our early apples and all the fruit of southern Ontario. It is, therefore, only the part of wisdom to note the conditions of this prospective market, and lay the foundations that will secure it to the Canadian fruit grower. It must be confessed that Ontario, the nearest point that is in a position to supply an unlimited quantity of fruit, has not by any means held her own in the earlier and soft fruit. Ontario has practically lost the North-west market for small fruits, plums and peaches. Our trade, however, in apples is still large, but I am sorry to confess that the methods which have lost us the market in other fruits are being followed in too many cases in the apple trade. We have keen, shrewd competitors south of the national boundary line, who are ever on the alert to take advantage of our mistakes, and who are securing from year to year an increased percentage of the fruit trade, but there are signs of improvement, although it will require the united effort of everyone to control the business and secure it for Canadian fruit growers. Speaking more particularly for Ontario, it cannot be too strongly impressed that 'any old thing' in the way of an apple will not do for the North-west trade. The people of this new country are saying in the most emphatic way: 'Send us up the best you have and we will give the price.'

By Mr. Broder:

Q. It is a great market and we should cultivate it.

A. Exactly so, but the apple growers of Ontario have responded too often: 'You cannot grow apples up there and should be satisfied with anything we send you.' Acting on this principle then, much of the fruit that has gone there the last three or four years has been culls that were not fit for the export trade, but were considered good enough for this market. Consequently, our apples did not bring the price and the trade is in somewhat bad condition. I would like to emphasize that the expenses are probably even greater in sending fruit to the North-west Territories than in sending it to Liverpool, and the quality tells in one place just as it does in the other. Consequently it is a short-sighted policy to attempt to unload this second and third-class fruit on this northern market.

Another very much needed improvement for the North-west trade is a better system of packing our fruit. This subject, however, I will not attempt to expand further than to say that improvement is imperative.

By Mr. Wright (Muskoka):

Q. My experience has been that all the best apples are shipped out of the country.

A. Perhaps too large a proportion of the best is exported.

Q. What are you going to do with the medium class fruit if the buyers in Ontario and the North-west and everywhere else want the best fruit ? There is a large quantity of second quality fruit which you cannot ship to the Old Country nor to the North-west nor to the best cities. We have not got first-class fruit to supply these markets.

THE UTILIZATION OF BY-PRODUCTS.

A. This is very true. At the present time only about twenty per cent of our fruit would rank as No. 1. The suggestion I would make is that fruit growers pay more attention to pruning, spraying and clean culture in orchards. In the meantime, I think it would be better to let culls and poor fruit rot in the orchard or be fed to stock rather than pack it and try to sell it. Nevertheless, even with the best methods there will always be a certain proportion of second quality and rejected fruit, and I would suggest that this fruit should not be treated as a simple waste product, but should be converted into jams, jellies, apple butter, cider and cider vinegar. The amount of fruit that goes to waste in Canada that might be converted into these products would form a very re-

putable export trade. I seriously commend to the legislators of this country the problem of providing some scheme to encourage the establishment of evaporators, jam and jelly factories and cider plants. The utilization of these by-products will not likely be urged by individual farmers and fruit growers whose individual interests in these products are after all very small. It is the work of the statesmen to devise plans for the utilization of these smaller items which in the aggregate would assume national importance.

By Mr. Kennedy :

Q. What class of apples does British Columbia send ? I think you classed this province as a competitor for the North-west trade ?

A. It is a pleasure to state that one redeeming feature, at the present time, in the North-west trade is the fact that British Columbia maintains the Canadian good name. Her apples are all packed in boxes, and so far as I have examined them, the packing is most creditable, the only difficulty is that there is not enough produced in this province to supply the market.

Q. We are going to do it.

A. If British Columbia pursues the same methods she is pursuing now and at the same time increases her output, this province will be a keen competitor for the North-west trade, as far east as freight rates will permit.

By Mr. Broder :

Q. Are British Columbia apples better than the Californian in texture ?

A. I think Mr. Kennedy will agree with me that British Columbia grows many different qualities of apples. The low country produces an apple of somewhat poorer quality than some of the more favoured valleys, but there is a very large area in which the very finest fruit may be grown. Speaking generally, British Columbia has nothing to fear from a comparison of quality with California.

By Mr. Kennedy :

Q. Our local government sends a man around in the summer and fall giving lessons in packing apples. He appears on the market at New Westminster and gives the farmers lessons there; he will often pack a box and then turn it out again, asking some farmer to replace them. Not one in a hundred can do it.

A. This is a commendable system and explains the excellent packing which is found in British Columbia packages.

By Mr. Broder:

Q. They are drawing inspiration from California.

A. Probably. It is in Oregon and Washington Territory, however, where we will get the best system of packing apples. British Columbia is certainly the best Canadian example of good box packing.

By Mr. Blain :

Q. The apple trade from Ontario and eastern Canada with the North-west is increasing ?

A. Yes, and it will likely increase much more rapidly in the near future. The fruit-eating public are confined not exclusively, but in a very large measure, to cities and towns and with the growth of the cities and towns we may expect a corresponding growth in the fruit trade. It should be noted that as soon as a town becomes large enough to take a carload lot, the consumption per individual increases very largely.

For the extension of this trade there is one additional feature which should receive very careful consideration, namely, the matter of transportation. It is not my

purpose this morning to pursue this phase of the apple industry further than to say that the first essential is a better class of refrigerator cars, a better time service in freight, and lastly, cheaper freight rates.

By Mr. Miller :

Q. Is there to-day a large and profitable market for Canadian apples in Germany?

A. The trade with Germany is not very large. In 1903 the United States exported $440,260 worth; Canada, the same year, exported $49,323 worth of green fruit. The German market for evaporated apples is much larger. We exported $194,168 worth of evaporated apples the same year. It is quite possible that this market may be extended.

By Mr. Wright (Renfrew):

Q. Allow me to tell you my experience in the evaporated fruit business. Consumption is decreasing here every day, and for this reason we can get so easily all kinds of fresh fruits, such as bananas and oranges, that the business in evaporated apples is practically wiped out.

A. I would not advise any one to go into the evaporator business to supply our local market. We have fresh fruit almost the year round, but the foreign markets and the North-west trade will take large quantities. The export value of green fruit last year was in the neighbourhood of four and a half millions ; the dried apple exports amounted to about four hundred thousand, Germany taking half of this. There seems no good reason why we could not compete with our neighbours to the south for a larger share of the evaporated fruit trade. We do it successfully in green fruits and it is perfectly certain that the Americans cannot get evaporating stock cheaper than it is offered in Canada. The inference is therefore plain that there is an opening for enterprise in connection with this branch of the apple business. The bureau of statistics last year for Ontario, gives the production of apples in Ontario at about thirteen million barrels. It is safe to say that not more than a million of these were exported. The distant home markets certainly did not absorb another million, and making the most liberal allowance for home consumption, there must have been several millions of barrels that were fed to stock or allowed to rot in the orchards. I cannot help thinking, therefore, that this enormous waste to which I draw your attention and which is duplicated in other apple-growing portions of the Dominion, should receive careful attention.

By Mr. Lewis :

Q. You spoke of fruit being injured in its keeping qualities by leaving it out of doors. In parts of the country about Lake Huron it is a common practice to pile the apples under the trees in the fall. Does this injure them ?

A. Yes, most decidedly.

Q. There seems an unwritten law to leave them there so many days before packing.

A. The best packers now believe this practice to be very detrimental to the apples.

Q. It is when the weather is cold ?

A. Piled thus even in cold weather the fluctuations in temperature between night and day would be considerable. If they were packed in barrels they would take less harm. They should not be packed in bulk, as they heat, and of course ripen. They should be stored where there is ventilation to carry off as rapidly as possible any heat that may be formed. If possible they should be put in a building with insulated walls so arranged that ventilators and doors could be thrown open cold nights and everything closed tight during the warmer days. This would give you a fairly uniform cold temperature.

By Mr. Christie:

Q. The system of buying is at fault. The packers come and buy your apples and leave them on the ground till they are ready to pack them.

APPENDIX No. 2

CO-OPERATION THE REMEDY FOR MANY EVILS.

A. The apple packer, under present conditions, can do almost as he likes. I have just been drawing attention to this bad system of selling orchards, and have expressed the hope that co-operative selling associations will take the place of this system so that farmers can pick their apples and have them properly packed to proceed at once to the proper market or be placed under the best conditions in a storehouse. Certainly no apple intended for market should be allowed to touch the ground.

By Mr. Lewis :

Q. Does it pay to put winter varieties in the paper boxes ?

A. I do not think so, except it may be for the very choicest specimens of varieties equal in flavour to Kings and Spies.

By Mr. Gordon :

Q. Do you know anything of the possibilities of Oregon and Washington for apples of the finest quality ? I was told recently by an apple buyer that in a few years the business of Ontario would be at an end so far as outside shipments are concerned.

A. You need not fear for Ontario, if our apple growers will put the same intelligence and skill into the production of apples and the marketing of them as they do in Oregon. Ontario can produce as good an apple of as fine a flavour as anywhere else in the world. But this province does not monopolize the trade. British Columbia, with her limited output has met Oregon successfully in common markets. The Nova Scotia Gravenstein is still a standard of excellence, and no apple from the Pacific slope is so favourably received in the great cities of the republic to the south of us as the Quebec Fameuse.

Q. The St. Louis exposition showed this very plainly.

A. It is no idle boast. All we need to do is to improve our educational and business facilities and there need be no fear for our apple trade.

By Mr. Miller :

Q. If you were planting a large orchard, what varieties would you put in it ?

A. This would be a question of locality. Another important consideration would be the market for which you were catering. Presuming, however, that you are planting for the winter export trade, for Southern Ontario, provided cold storage was not used, I would plant Ben Davis, Starks and perhaps Russets, inasmuch as these are the only apples that would have keeping qualities that would justify storing them. For the rest of Ontario, I know of nothing better than Baldwin, Greening, Spy, Golden Russet, and Ben Davis and Blenheim. For the St. Lawrence and Ottawa valley and the Eastern Townships, I would plant Fameuse, McIntosh Red and Wealthy. Nova Scotia grows Gravenstein, Ribson, Blenheim, King, Nonpareil and Golden Russet, any three or four of these may be successfully planted.

Q. What about the Duchess of Oldenberg ?

A. It is an early apple, and I would hestitate about recommending it except for a local market.

By Mr. Wright (Muskoka):

Q. What do you recommend for the higher districts ?

A. The Duchess, Yellow Transparent, Red Astrachan, Fameuse and Wolf River will grow almost to the limits of the present settled district.

Q. Do you know a variety called Grimes Golden ?

A. It is considered one of the best flavoured varieties, but it is not popular as a commercial apple.

By Mr. Schell (Oxford):

Q. It does not ship well, nor does it grow uniform in size or quality.
A. This affects its value as a commercial apple.

By Mr. Broder:

Q. What about the Wealthy ? Do they not fall easily from the tree ?
A. They have this failing, but are still a most profitable variety.
Q. They are very prolific ?
A. Yes.

By Mr. Wright (Renfrew):

Q. For the northern section it is the king of all apples.
A. It grows well in the north.
Q. What do you think of the Ben Davis ?
A. The Ben Davis will supply a market from March till June, and perhaps somewhat earlier in the season. There is not yet a surplus. At present it is a more profitable apple than the Spy.

By Mr. Broder:

Q. Some buyers say that in ten years from now they will not buy them ?
A. The same assertion was made by a most experienced apple buyer fifteen years ago at the Ontario Fruit Growers' Association, held in Windsor, Ontario. This buyer is now paying as much for Ben Davis apples as he paid then.

By Mr. Elson:

Q. What about King of Tomkins' County ?
A. It is an exceedingly fine flavoured apple, not quite so good a keeper as the Spy and not prolific enough to be regarded as a first-class commercial apple.
Q. I find the tree very delicate; it soon dies.
A. It is not regarded as particularly hardy in the north, but in the southern portions of Ontario and Prince Edward county, is quite hardy and vigorous and when top-grafted nearly always prolific.

By Mr. Wilson (Russell):

Q. What experience have you in grafting a Spy on Tolmon Sweet ?
A. It makes a better tree, somewhat hardier and comes into bearing much sooner. I would certainly recommend those who propose planting Spy orchards to use Tolmon Sweet stock and top-graft when the trees are three or four years old.

Having read over the preceding transcript of my evidence, I find it correct.

A. McNEILL,
Chief of Fruit Division, Department of Agriculture.

APPENDIX No. 2

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
FRIDAY, July 14, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock, Mr. Greenway, Chairman, presiding.

Mr. A. McNeill, Chief of the Fruit Division of the Department of Agriculture, was called and gave the following evidence :—

FRUIT PACKING AND PACKAGES.

Mr. MCNEILL.—Mr. Chairman and Gentlemen, I desire to call your attention this morning to the matter of fruit packing and packages, especially in its relation to the distant markets of our own Dominion. It augurs well for this industry that you have given it so much of your attention in the House, as well as in this Committee. Frequent reference has been made to the enormous waste of fruit in various parts of Canada. No one denies that thousands of barrels of apples were fed to stock or allowed to rot on the ground. Many different causes for this have been suggested. One person attributes it to the natural increase of insects and fungous diseases, another to lack of cold storage, and still another lays it all to the sins of the tranportation companies. Small orchards, and too few of them in one locality, wrong varieties, inferior fruit, bad business methods, wrong grading, expensive packages and improper packing all have been assigned by enthusiasts as the main or even sole cause of this acknowledged waste. Undoubtedly all of these causes have in some degree contributed to bring about the conditions we deplore, but I venture the opinion that none have had a greater influence than poor packing and unsuitable packages. Do not mistake me—I would not belittle other causes. They are passed by at this time because we can deal with only one thing at a time, and I wish now to concentrate your attention on what I consider the fundamental defect. Cold storage, equitable freight rates and proper transportation faciltities are all subjects pressing for your investigation and consideration, but even the facilities now at your dsposal would be fairly efficient if our fruit were properly packed.

By Mr. Blain :

Q. Are the losses in fruits other than apples very serious in Canada?

A. In 1903 thousands of baskets of plums were never harvested. One grower offered five cents a basket to have them removed, so as to get rid of the danger for the following year of contagion from the decaying fruit. At present there are no unsold surpluses of other friuts.

Q. Is there a market for plums ?

A. In 1903 the outlying districts of the home market were not well supplied. There was a shortage of fruit in Great Britain the same year, and the wasted fruit might have been exported there as plum pulp if we had had suitable trade relations.

NORTH-WEST TRADE.

My attention was especially directed to this matter of packing within the last few weeks by a visit which I paid to the North-west and British Columbia, and by criticisms which I heard from the merchants of the North-west and from fruit-growers of British Columbia. The merchants of the North-west declared that they were ob-

taining better results from American fruit than from the Canadian, and, making a comparison between the east and west, much better results were obtained from British Columbia fruit than from that of Ontario. In as far as the contest goes between British Columbia and Ontario, I think all patriotic Canadians will say 'Godspeed to both and may the best win.' Every Canadian should have an opportunity to develop, without let or hindrance, the resources with which he is surrounded. We can, however, without malice or evil intent towards our neighbours to the south, bend all our energies to confine this trade to the greatest possible extent to Canadian territory.

Mr. DERBYSHIRE.—Hear, hear.

Mr. MCNEILL.—To secure this result two remedies suggest themselves; one is the imposition of a protective duty high enough to exclude everything not Canadian. I pronounce no opinion whatever upon this. The other method is one that will appeal to all classes alike—it is to raise the standard of our Canadian fruit, making it so satisfactory to those who grow it, so profitable to the merchants who handle it, and so palatable to the consumers who use it that it will drive out any thought of American fruit. I believe that no matter what other remedies we may have, we are bound in justice to ourselves and to humanity to use this method first.

That the whole fruit trade, especially between Ontario and the North-west, is not in a healthy condition, must be admitted. The fact is brought home to the fruit grower by his small sales and meagre returns. The argument is clinched by the assertion of many of the Winnipeg merchants that they do not care to handle Canadian fruit at all except our apples and grapes, and possibly a few pears.

By the Chairman :

Q. Principally on account of the packing ?

A. For the most part on account of the packing and grading. The North-west merchants assert that American fruit is more satisfactory than Canadian with reference to (1st) packing, (2nd) package, (3rd) grading. They also prefer the business methods of the Americans.

By Mr. Cochrane :

Q. Do you refer to the whole range of our fruits ?

A. Yes. In the matter of grading the North-west merchants complain, and I think their complaint is well founded, that the Canadians are not particular enough in having only one grade of fruit in the package. 'This,' said a Winnipeg merchant, holding up a box of strawberries, 'is what they send us from Ontario. Why, look at it. There you see berries of every size from the largest to the smallest. There are at least three varieties in that box, and along with good berries are nubbins that never should have been picked. This,' holding up another box, 'is the way we get the fruit from the Hood river district.'

By Mr. Jackson (Selkirk):

Q. This is this Hood River, Oregon ?

A. Yes. With this box he showed me a coloured plate of the fruit used as an advertisement, and which I submit to you with the assurance that Hood River growers are sending just such fruit in commercial packages.

By Mr. Lewis :

Q. Where was this ?

A. At Winnipeg.

By the Chairman :

Q. It is the favourite berry with us

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A. A careful examination will show no superiority in the quality of the fruit, no superiority in the berry itself, even in its keeping qualities, although I could not judge conclusively of this. The main qualification was the fact that it was properly packed and graded, and there was only one kind of berry in the box, one variety, one size, one quality.

By Mr. Armstrong :

Q. How much more would they receive a box for that ?

A. The Ontario berries went for $1.50 to $2 a crate. The Hood River berries went for $2.50 to $3. That would make a difference of 4 cents a box, 25 boxes in the crate.

By Mr. Cochrane :

Q. What were the sizes of the boxes ?

A. In the matter of boxes the size was about the same thing. The Oregon box holds a full Winchester quart, the Canadian holds four-fifths of an imperial quart, so that would bring them just about the same in quantity. The same principle of grading and packing is followed with apples, plums, peaches and cherries. Without doubt we are wasting thousands of dollars every year. The methods of a primitive system of fruit growing have become so ingrained in our older growers, that it is with difficulty they can be induced to change. Frequent appeals to the public should be made by our agricultural colleges, our newspapers, and by everyone who moulds public opinion. Particularly should we take every opportunity to put the younger people in the way of securing the best instruction in fruit packing.

REFRIGERATOR CARS FOR EXPORT OF FRUIT.

By Mr. Lewis :

Q. What is the difference in the time between the Hood River and Ontario ?

A. About the same. The Hood River people are the farthest from market, but on account of their larger business they get solid trains which run very much faster than our trains.

Q. Which way do they come from Hood River ?

A. They come over the Northern Pacific and in from the south.

By Mr. Derbyshire :

Q. And in refrigerator cars ?

A. In the refrigerator cars.

By Mr. Armstrong :

Q. Have you any idea of the temperature at which they are carried ?

A. It is desirable to keep them as near 32° as possible, but no thorough investigation of the refrigerator car service for fruit has been made, and so no positive statements can be made.

By Mr. Derbyshire :

Q. The refrigerator car service is the weakest point we have ?

A. At the present time it probably is.

By Mr. MacLaren :

Q. Refrigerator cars have been shipped from Ontario ?

A. Yes. There have been no thermographs available for these cars, and no positive statements of the temperature can be made except by having some such instru-

ment. Still the fact that the fruit has reached its destination safely shows that it has been carried at a good temperature.

By Mr. Armstrong :

Q. Do I understand from you that the fruit is carried from Oregon at a temperature near the freezing point ?

A. That is the ideal temperature and we judge it has been so from the condition in which the fruit left and the condition in which it was received.

By Mr. MacLaren :

Q. Do you know any instance in which fruit has arrived in that condition from Ontario ?

A. Fruit has arrived in Winnipeg in good condition from Ontario in refrigerator cars, but we have few authentic reports. I think there is room for improvement in the matter of transportation in refrigerator cars.

By Mr. Crawford :

Q. Have there been any complaints from the dealers on that point ?

A. Yes, but let me warn the Committee that the complaints of the dealers are not always trustworthy. They have their side of the question to put forward, and it is possible that the bad condition of the cars is exaggerated as an excuse for lowering the prices back to the shippers. I make this assertion upon my own personal responsibility.

Mr. WRIGHT.—That is all right, that is a fact.

By Mr. Blain :

Q. I have always understood that the greatest drawback to putting our fruit on the Manitoba market was the excessive freight charges. There has been greater complaint against that than about cold storage—that is as regards strawberries.

A. No doubt that is true. Nevertheless our strawberries come in at a less rate than the strawberries from Hood River—they have a shorter distance to go.

Q. How much less freight ?

A. It would be about 15 cents per crate. That would make less than half a cent a box, which is not a serious matter. It is not wholly a question of rates, although that has its effect.

Q. I think that touches the apple crop.

A. Very seriously. There has been a little reduction in freight rates that has worked advantageously for the fruit interests. The representations of the fruit growers before the Railway Commission last year resulted in reducing the rates, so that every mixed car of fruit that went to Manitoba benefited to the extent of about $40. The rate on apples has not been lowered. The question is still under consideration by the Railway Commission.

By the Hon. Mr. Fisher :

Q. In regard to cold storage from California, of which you spoke, do they have thermographs ?

A. No. There is the statement of the railway official only for the temperature, and therefore we cannot place implicit confidence in the statement, because it cannot be checked except by the condition of the fruit.

By Mr. Armstrong :

Q. Did you examine the cars from Oregon and also those coming from Ontario ?

A. Not on this particular trip. Still I know the cars fairly well.

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Q. Well, can you give us any idea as to the insulation and the difference in the make of the car ?

A. The present best makes of the Wicks and the Bohn cars are perhaps quite equal to the fruit cars of the west, though not finished as elaborately, and with this difference, that the fruit cars of the west are usually confined to that trade, and are often in a better condition than some of our refrigerator cars here that are used for every purpose and sometimes become slightly contaminated.

Q. You mentioned a particular kind of car, but there are not many of those in use in our country—I mean the Wicks and the Bohn cars ?

A. These cars are used, the one by the Grand Trunk and the other by the Canadian Pacific Railway. They do not pretend, of course, to have a full supply of them but they assert they are getting them just as fast as their facilities will permit them. Of course that is a subject that requires constant attention.

PACKING FRUIT FOR EXPORT PURPOSES AND CORRECT PACKAGES.

Now, with reference to the packing and packages. I want to call your attention for a moment to this fact: in our eastern Canadian packages we have developed a type of package that is quite satisfactory for the local trade, but fails when it comes to the long-distance trade. The packages which I have here (exhibiting climax baskets), are the ordinary baskets used by the fruit dealers of eastern Canada for peaches, pears and plums—this is usually the grape basket, but is also used for gooseberries and cherries, and holds about ten pounds. Now these packages, I have no hesitation in saying, are admirable packages for the nearby market. They are cheap, very strong for the weight, and contain a reasonable quantity of fruit that can be handled easily from the store to the consumer's premises, and are otherwise a very admirable package for local use. They break down entirely, however, when it comes to long distances. These are the packages that our plum growers, our peach growers, and our grape growers and using for the North-west trade. The larger baskets contain too much fruit of the softer kinds, such as peaches, plums and cherries. In the next place, while it is an exceptionally strong package for its weight, yet when piled in cars, as is required, to hold a minimum load, the shunting and swaying of the car makes a constant side movement of the pile that breaks the fruit and causes milldew and decay. The fruit arrives sometimes in a very discreditable condition indeed from this cause. The Pacific slope packages are of the nature of boxes made so as to resist horizontal motion as well.

By Mr. MacLaren :

Q. What size are those packages? (Referring to baskets shown.)

A. Eleven quarts and 6⅔ quarts.

Q. In England you will find baskets about half the size of that one and they will sell like hot cakes.

A. It is quite possible that some change in that respect may be asked for later on. The size of our baskets is not quite satisfactory, but I am finding fault now, not with the size, but with the design of the package.

Q. The size I am referring to is half the size of the 6⅔-quart basket.

A. Just so, that would undoubtedly be a very suitable package for extra fancy fruit. The packages used in British Columbia and Oregon, and in the west generally, are certainly to be commended for long-distance shipments.

By Mr. Cochrane :

Q. What is the distinguishing difference between their packages and ours ?

A. Instead of being in the form of a basket with sides of thin veneer and no adequate protection on top, it is in the form of a box. This box varies in depth according

to the fruit packed in it, from 2½ inches for cherries to 10 inches for the apple box. For cherries it is divided into two parts by a partition holding about 10 pounds in each. The sides, top and bottom are thin, so that it is light, yet it is strong and rigid, and when piled one upon the other there is no give or movement that shakes the fruit so as to cause any abrasion of the surface. These are undoubtedly the packages that our eastern growers will have to use before they can hope to be successful in holding their own in the long-distance trade.

Q. From the quantity it holds and the size of the box it would be considerably more expensive, would it not ?

A. Very slightly more expensive, but not sufficiently so to make any offset to the higher price that they would bring in the market.

Q. There would be no handle upon them ?

A. There would be no handle upon them, so that they pile more economically in the car. They are piled with a slat between each layer of packages, so as to prevent any shaking by shunting and to permit of free ventilation. They have also developed a package for tomatoes and plums, holding about five pounds. Four of them are put in a crate, light and strong. That enables them to be handled just as readily as a box. These packages entirely prevent many of the losses and at the same time they are conducive to good grading.

DISTRICT EXPERIMENTAL FRUIT STATIONS.

By Mr. Armstrong :

Q. Just before you leave perishable fruits, and the most delicate fruits, would it not be possible for the people to be educated to raising better fruits if we had experimental stations in the fruit district ? Would that not educate the people to grow fruit of better quality and greater firmness ?

A. I think that is quite practicable. The government officials at Toronto have intimated that as the matter of education comes particularly under their jurisdiction they are prepared to take up this question. As far as Ontario is concerned you will find that the local authorities are fairly well equipped in this respect, having a system of fifteen experimental stations situated in various parts of the province in addition to the experimental farm at Guelph. I think the fruit men will agree with you that sufficient use has never been made of them.

The benefits derived from good packing and packages is often ascribed to the better keeping qualities of the western, particularly the Californian fruit. There is some truth in this. The British Columbia climate is, of course, varied, but in the interior valleys it is not very different to that of California, except that the winters are more severe. They have a sufficient area of land there to grow an enormous quantity of fruit, and of a kind not dissimilar to that which is grown on the western slopes of the dry valleys of California, Washington and Oregon. It must be admitted that our eastern grown fruit of the same variety has more juice in it, but it is not such a good keeper, although I believe it is generally conceded that it has a higher flavour, but we must not lose sight of the fact that we can materially improve the keeping qualities of our fruit by using proper methods of packing and proper packages.

IMPORTANCE OF HOME COLD STORAGE OF FRUITS.

By Mr. Derbyshire :

Q. If we had the proper fruit and the proper box, and if the fruit was properly packed and there was cold storage for keeping the fruit between the time of packing and shipping, do you think that would be an improvement ?

A. That would be a very important thing indeed. We have yet to appreciate the importance of putting tender fruit directly into cold storage when picked.

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Q. That is one of the reasons that our fruits have not always shipped well ?

A. Most assuredly. The fruit growers themselves have not appreciated the value of prompt cool storage, and until they come around to this, and put the tenderer fruits into cooling rooms as soon as picked, they will not succeed to the fullest extent. In addition to cooling rooms for fruit intended for long shipments, we may choose some less juicy variety. We can grow as dry a fruit as they would care to grow in California, but it would not be of the same variety.

By Mr. MacLaren :

Q. Take delicate apples. They decay quickly unless put in cold storage. I saw lots of apples last fall, thousands of barrels, that decayed under the trees. Supposing they were put into cold storage at once, could they have been handled ?

A. Undoubtedly.

Q. That means that millions of dollars in the apple trade is lost ?

A. Yes. Lost for want of intelligence in handling and want of cold storage space.

By Mr. Wright (Renfrew):

Q. Supposing we got in a consignment of Canadian fruit and they were given to us in perfect condition in cold storage; we put them on our shelves. On the same day we get a consignment in the same condition from California. Our Canadian fruit will not, after they come out of cold storage, stand up beside California fruit.

A. California fruit would have the same advantage relatively out of cold storage as it would have if placed side by side without it. Our fruit is not grown for long-keeping qualities.

Mr. ARMSTRONG.—That is right. Our people are not educated along that line. We are making progress, however.

STAGE AT WHICH FRUITS SHOULD BE PICKED.

By Mr. Cochrane :

Q. We allow our perishable fruits to get too ripe.

A. Picking at the right stage of maturity is an important factor in securing keeping qualities. Pears, plums, peaches and grapes are often allowed to get too ripe for long-keeping. On the other hand, our apples are often picked too green.

By Mr. Wright (Renfrew):

Q. We cannot get any of them to equal the California fruit, which will stand up on our shelves a great deal longer than the Canadian fruit however you handle it.

A. That is undoubtedly true of the same variety. I have experimented with the Crawford peach, grown from California buds in Ontario. The texture of the fruit was entirely changed, so that it was a luscious bag of juice, while the California peach had so much more woody fibre in it that it would stand up a great deal longer than ours.

By Mr. Cochrane :

Q. It was packed earlier.

A. I am willing to admit that we have not sufficiently aroused the growers to the necessity of properly packing the fruit. We have been packing for the near market and have not acquired skill for packing for the foreign or distant markets. That is why this discussion must be of use to the fruit-growers. While the Canadian Crawford peach will not stand alongside the California Crawford peach, I would choose a type like the Canadian Smock or Elberta to stand beside the California Crawford. We must grow, not the identical varieties they are growing in those dry climates, but a

peach that will develop the proper degree of firmness in ours. We must accommodate ourselves to our environment.

By Mr. Lewis :

Q. People in Chicago will not take California fruit because they say it is picked too early.

A. If you get good shipping qualities you will not get the best qualities as tested by the palate. You may be quite confident that just to the extent that you develop the shipping qualities, the flavour and the qualities as tested by the palate deteriorate.

By Mr. Jackson (Selkirk):

Q. Yet you would suggest growing this woody-fibred fruit to ship to Manitoba, this fruit that has no flavour in it. As I understand it, this is the suggestion to the Committee. You want to get the right kind of fruit to stand shipment ?

A. I quite appreciate the point made by Mr. Jackson. The fruit growers of Ontario would be glad to send their most delicate and palatable fruit to Winnipeg, but it will not stand the journey. But the fact that they cannot send their best fruit should be no bar to trying to send their next best. Their desire is not to give poor fruit but to give the very best fruit they can, but they must get it there, and therefore it must have shipping qualities first and foremost.

By Mr. MacLaren :

Q. Fruit is first class in Ontario now ?

A. First rate as tested by the palate, but much of it has not good shipping quality.

Q. They allow the fruit to rot almost before they put it in cold storage.

A. That is one of the causes, we have not been careful enough.

Q. That is the way they do at the cheese factories, they put the cheese on ice after it has been standing too long.

By Mr. Cash :

Q. It is also clear that they don't ship their most luscious fruit from California.

A. That is very true. You only get the wooden fruit from California, and in no country in the world is there more luscious and delicious fruit than in California, but it seldom leaves the State.

By Mr. Armstrong:

Q. We cannot expect to control the North-west market unless we change the quality of fruit and the transportation facilities that we have to-day.

A. In attacking the problem these things must be considered. While I am endeavouring to draw special attention to packing and packages, I would not minimize the other disadvantages under which we labour. We want varieties grown specially for the long-distance trade. It will not do any longer to attempt to pack fruit which is quite satisfactory for local markets, and if we have a surplus here send it by train to the North-west. That means failure, because these varieties, although perfectly satisfactory for local conditions, are not at all satisfactory or suitable for the long-distance trade. Certainly one of the means by which we will improve the North-west trade is to grow varieties especially for the North-west.

Q. How can we undertake these experiments in packing and packages and transportation ?

A. They should be undertaken by the government and they are being undertaken now. Last year Professor Reynolds, of the Agricultural College at Guelph, under the supervision of the provincial government, took up a trial shipment packed in this way in packages of this sort and made a beginning, so that there is something being done.

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We want to do a great deal more, and I feel certain that if you will back the Department of Agriculture at Ottawa, that the Department will do all that can be expected in this connection.

By Mr. Blain :

Q. On that point of a special kind of fruit to be grown for Manitoba and the North-western trade, are we to understand that there is a special kind of fruit that we are not growing in Ontario now that we could grow to suit that market, when you consider this fact that you can pick peaches and in 42 or 48 hours have them in Winnipeg, surely our tender fruit will stand the journey ?

A. Is that practicable ?

Q. You can get it in Winnipeg in 42 hours.

A. An express car from St. Catharines to Winnipeg usually takes about 72 hours, and costs over $400 for express charges

BEST VARIETIES OF STRAWBERRIES FOR EXPORT.

Q. I am not talking about freight. That is another proposition. I am only asking for information. I live in a fruit section myself. I am asking if the kind of strawberries grown in Peel county would be the same kind that the people living in Winnipeg and Manitoba would desire ?

A. Yes, if they could get them.

Q. Are you sure of that ?

A. Yes.

Q. And it does seem to me that there is no special kind that we could grow that would suit them better than the kind we now grow. If there is such a thing our people would know it.

A. The Clyde is a variety grown in Peel. It is a good variety for Toronto, a very prolific bearer, very palatable though a little light in colour, but you could not ship the Clyde from Brampton to Winnipeg with confidence. It is too soft.

By Mr. Wilson (Lennox):

Q. In cold storage ?

A. It will hold up longer there, but even when put in cold storage it is not safe. On the other hand, the old Wilson will stand up fully twice as long, I can assure you of that.

Q. Is that personal ?

By Mr. Wright (Renfrew):

Q. Do you refer to the Wilson's Albany or the old Wilson ?

A. I can assure you that the Wilson is no disgrace to Canada. The Wilson berry is a good shipper.

By Mr Jackson (Selkirk):

Q. You are referring to the old Wilson's Albany ?

A. Yes. It is not as acceptable to nearby customers as the Clyde, but for a long distance it is much better than the Clyde.

Q. Wilson's Albany is a wedge-shaped berry. Will it pack as well as the round berry ?

A. No fault is found with it on that account.

By Mr. Smith :

Q. Is the flavour of the fruit dependent on the climate ?

A. Yes, somewhat.

Q. Then the fig insect experiment in California rather shows that it depends upon local conditions ?

A As far the fig is concerned, that depends upon local conditions. That is one of the fruits that depend upon special insects for pollination. Climatic conditions of course affect this.

Q. Is it not the way the fruit ripens ?

A. That is another view of it. A dry climate with a long period of not too warm weather will give more woody tissue than a short hot summer as we have in southern Ontario.

By Mr. Lewis:

Q. Why is it that the California berry, although so much earlier, always looks ripe and luscious, although it does not taste so ? When compared with our berries it is tasteless.

A. It has been largely a case of selection on the part of the growers in California. They had to go through a very serious and critical education in the matter of fruit-growing. They found that their market was a long distance away, and their existence depended on fruit-growing, so they went into it with a vigour and broad intelligence that has probably never been equalled in the history of fruit-growing, and by this combination they produce fruits that are peculiarly suited to their conditions of climate, market and transportation facilities.

By Mr. Wright (Renfrew):

Q. The dealer has to get down to business. He will buy fruit and sell the fruit that stand up the longest, even supposing it is not first-class quality, and make the money on that. He will not get in the luscious fruit that will not keep and half of which he has to throw out and lose money on it.

A. That is right, the middleman is a factor. He has to be consulted, and it is not simply a question between the consumer and the producer. The man who gets it from the producer to the consumer has to be consulted and his interests are important.

PROPER PICKING STAGE OF FRUIT.

By Mr. Cochrane :

Q. I would like to ask this question : What I have been listening to for a great many years proves that there is more in the picking and packing than there is in the fruit itself. It appears to me, if you take the Canadian plum, and it is picked when it is ripe and pleasant to the taste, it is all right to send to the local market, but has there been any experiment to try to pick that fruit earlier for the distant market instead of letting it get ripe and selling what you can on the local market and sending the balance away, although not picked in proper condition to stand the journey ?

A. Some experiments have been made, but few in Canada. The fruit must not be picked too green. It must be at the stage known as mature without being ripe—I cannot describe it in words. There is a period just before it has received its highest colour when the fruit can be taken and kept for the longest time. If you pick fruit too green or too ripe it will not keep as well as when it has just reached maturity.

Q. But you can destroy the flavour ?

A. Of course you can, completely. But there is a difference in the fruits. Pears should be picked quite green. A Keiffer pear is much better when it is picked three-quarters the full size, than if you let it grow to maturity on the tree, but with a plum or apple that would be disastrous.

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By Mr. Wilson :

Q. Do you mean to say that the flavour of a pear is better if allowed to mature off the tree ?

A. I think so.

Q. That is very strange, it seems an unnatural way.

A. It is, in a way, but it is an actual fact. You will be surprised how much more luscious a Bartlett pear is, picked when it will easily break from the stem as it is lifted, then put in a warm, dark place to ripen.

By Mr. Armstrong :

Q. The western fruit comes in earlier in the season and the people's appetites are somewhat slaked with reference to this particular fruit. Would there be such a thing possible as to curtail the enormous western trade and keep it for our fruit when it comes in ?

A. Personally, I would not turn my hand over to keep out early American fruit. It is very true that a little of the trade is lost during the first few days that Canadian grown fruit is put upon the market.

FRUIT-GROWING IN BRITISH COLUMBIA.

I drew attention a few moments ago to the fact that eastern Canadians are somewhat behind the people of British Columbia in fruit-growing. They are behind them with reference to methods of culture, varieties, packages, and grading. The average conditions are better in Eastern Canada.

By Mr. Wilson (Lennox):

Q. The qualities of both classes are about the same ?

A. Yes. Do not mistake me. The best fruit farm I have seen in Canada is in Ontario. I am speaking of the averages, and the average fruit-grower of eastern Canada has much to learn from the people of the west, and while the people of British Columbia are most excellent in their methods, yet the people of the North-west complain that often they are behind the people of Washington and Oregon in the matter of grading. They can go to Hood River and get solid carload lots, all of one variety. That is one of the things that assists the American trade.

By Mr. Wright (Renfrew):

Q. Is that not because the Americans go into it in a wholesale way ?

A. Yes. And just as soon as we can get carload lots the better our trade will be. I would also like to draw your attention to this fact: that in a neighbourhood it is much better for the farmers to confine themselves to one or two varieties than to grow half a dozen. Then buyers would be able to get carload lots, the product, it may be, of several different growers. When there is co-operation among the farmers they can get wholesale methods much sooner than by working independently. In Hood River this has been obtained by individual growers and shippers, who as a business speculation take up fruit growing and shipping and do it without co-operation. But we can obtain the same results much more easily with co-operation.

HOW BEST TO PACK APPLES IN BOXES.

Referring to the details of the methods used in packing a box of apples, permit me to say that few eastern growers appreciate the value of the devices used in the west. To impress this, the Minister of Agriculture has secured the services of a skilled packer with experience in California, Oregon and Washington Territory, and later at

the Aberdeen Ranch at Vernon, B.C. These skilled men claim that there are at least sixty devices or different combinations of the position of the fruit that can be used to fill a box with any size of apple, so as to require no filling of paper, shavings, or excelsior to make a tight package. The methods he will illustrate enable the people of Oregon to get $2 and $2.50 a box for their Newton pippins. They are getting this large price, not because the fruit is at all better than many of the varieties that we have, but because they are graded and packed according to better methods. Box packing though it requires more skill than to pack a barrel, is not expensive. An average day's work at Hood River is about 60 boxes a day for a girl, who wraps each apple or pear with paper and places it properly in the box.

By the Hon. Mr. Fisher :

Q. Are the fruits each rolled?

A. Yes. They make a practice there of wrapping much of their fruit. No two sizes of these are packed exactly alike. By a particularly ingenious device the apples are so arranged that the boxes can be completely filled. This will require considerable skill, but it is not beyond the possibility of practical work in Ontario, and I believe that the work which the minister has taken up here in introducing that style of packing in this country, will lead to splendid results. If we appreciate the fact that our apples and pears can be packed in packages to look as well and taste better than California fruit, we will admit the possibility of an enormous expansion in fruit-growing.

By Mr. Cochrane :

Q. Suppose that I undertook to adopt that, to have those boxes and a skilled packer and have it all packed properly and have no cold storage or no place to put them in, until I can have them shipped to Brighton, what would become of my fruit ?

A. You would be working at a disadvantage. I certainly strongly recommend that pears, particularly, should be cooled before they are packed or leave the farm. Of course for the later apples and pears this treatment will not be required.

Q. Is it not a fact that only the earlier varieties pay a farmer to handle them in that way ?

A. The earlier varieties of apples and pears require artificial cold storage.

By Mr. Derbyshire :

Q. Would it not pay to handle all kinds of fruit in cold storage ?

A. For special purposes and particularly in southern Ontario it might.

By Mr. Armstrong:

Q. I have a proposition from a very prominent New York man, well connected, with reference to the establishment of cold storage and cold storage plants in different parts of the province, and in the eastern parts of the province especially, and with proper transportation in cars and cold storage across the water, including cold storage in the cities of England. It is a very large undertaking, but if it was properly developed here, and the fruit carried in the cars in a proper condition and taken to Europe and distributed there in a proper manner, would it not mean millions of dollars to the farmers of this country?

A. Undoubtedly it would help, but you must remember that it is only one element of a complicated problem. I think that cold storage needs to be developed.

Having read over the preceding transcript of my evidence, I find it correct.

A. McNEILL,

Chief of Fruit Division, Dept. of Agriculture.

APPENDIX No. 2

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
TUESDAY, July 18, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., the Chairman, Mr. Greenway, presiding.

Mr. A. McNeill, chief of the Fruit Division of the Department of Agriculture, was present by re-call, and addressed the Committee as follows :

FRUIT PACKING AND PACKAGES.

Mr. MCNEILL.—Mr. Chairman and Gentlemen: On Friday last I spoke to you with reference to packages and packing, but did not quite conclude. This morning I have with me the packages upon which, with your permission, I would like to comment, with a view of showing the necessity of using these if we propose to secure and hold the trade in distant markets. I shall take up the apple box first. You have authorized a minimum size of box at this session of parliament, a sample of which I now show you, having the dimensions of 10 x 11 x 20, inside measurements.

By an Honourable Member :

Q. Will you please mention the size again ?

A. Ten by 11 x 20, inside measurement. The inside measurement is used so that the space for fruit will not vary through the thickness of the material of which the box is made.

By Mr. Wright (Renfrew):

Q. May I ask where the box that you hold in your hands was manufactured ?

A. This was made in British Columbia. It may seem a reflection upon a wooded country such as the Ottawa valley to go to British Columbia for boxes, but I will explain that the top, sides and ends of this are each made of one piece. Even in Ontario it is difficult to procure the material for making a box with all the dimensions of one piece.

By Mr. Barr :

Q. That piece (the cleat) at the bottom, would affect the cost a little. Is that necessary ?

A. Very necessary, as I will explain when I take up the question of the transportation of the box.

By an Honourable Member :

Q. Is it ten deep ?

A. It is 11 inches wide and 10 deep. It does not look so well with the dimensions reversed, but would have the same fruit space.

By Mr. Elson :

Q. Are they pinned, or how are they attached to the bottom ?

A. They are nailed to the bottom. I might explain here that in eastern Canada we have a difficulty in getting wood that has the necessary size and elasticity to make

good tops and bottoms for boxes. This box is supposed to be filled with apples in tiers. in barrels promiscuously, to realize that each apple should be handled separately and in barrels promiscuously to realize that each apple should be handled separately and placed snugly with others in tiers. You will notice that this box is marked 'four tier Spy, Grade No. 1,' in addition to the other marks required by the Fruit Marks Act. Four tiers mean, of course, four layers of apples. In the arranging of these apples there is a number of different devices. It would be impossible simply to take apples of different sizes and put three or four side by side and have them always come out even so as to make a tight, full box. The apple packers—and I will not go into details, as this part of the subject would be purely technical—have 40 or 50, and some say even 60 different devices, some of which are illustrated in this chart. I will not explain further except to say that the honourable the Minister of Agriculture has authorized the securing of an expert packer, Mr. B. T. Boies, from the Coldstream Ranch, Vernon, B.C., who will later in the season give demonstrations at agricultural and fruit exhibitions and in packing houses in the fruit districts of eastern Canada. Mr. Boies will fully illustrate every one of these devices, and I believe that fruit packers will find this a splendid opportunity for becoming familiar with this matter of box-packing. In filling a box the skill of a packer is exercised so as to have the apples come slightly above the ends, but at the middle of the box considerably above the top, say half an inch or more. A press is used to bring the ends of the top down to place with the least possible pressure on the middle of the box. It will curve up three-eights of an inch or less in the middle and there will be a corresponding curve in the bottom of the box. As the boxing is finished these two cleats are nailed across the ends of the top.

By Mr. Wright (Renfrew):

Q. Are they put on with nails or screws ?

A. With nails.

By Mr. Findlay:

Q. A corrugated nail ?

A. A corrugated nail that will hold in the ends either way of the grain so that there will be less danger of the box pressing apart. The corrugated nail has been found to be the most satisfactory. The ordinary wire nail, rusted or covered with rosin, is a substitute.

By Mr. Blain :

Q. Do you put anything between the top of the box and the apples ?

A. The only thing that should be used is a sheet of pasteboard or paper pulp. If the wood is fairly smooth the western shippers very seldom put anything between the apples and the top of the box.

By Mr. Wright :

Q. Is this cover smooth on both sides ?

A. Only on one side. It is cut with a very fine saw so that the marks will not show on the apple. If it were cut with a coarse saw it is quite true that the marks would be very perceptible on the top of the apple. A smooth surface, however, must show on the outside. I would like to explain that this bulge in the top and bottom is a very essential feature in the packing of apples, because if that bulge were not there you would find that the box would soon become slack. All apples will evaporate slightly after they are put in a package, whether it be a box or a barrel, and if there is no device to check it, 'slackness' is the result. That does not happen when this bulge is present if the top and bottom piece has sufficient elasticity to take up the slack. This explains the fact that the white spruce of British Columbia is a better material for this

purpose than the basswood, or even the pine of eastern Canada. When the box reaches the market the bulge will have disappeared, and the box will again show straight top and bottom.

By Mr. Wright (Renfrew):

Q. What material is that ?
A. It is British Columbia white spruce?

By Mr. Lennox :

Q. Will not the fact that it is fastened at both ends permanently prevent it taking up the slackness ?
A. The slackness is very slight and the material and fastenings are not rigid, or it might.
Q. It works in the way you say ?
A. Yes

LOADING.

Now, in the piling of these boxes in the cars and on the steamships, they are placed in rows with the boxes on their sides. The cleat keeps the boxes separate as they are ranged side by side. They are dunnaged both on the car and on board ship. A narrow slat goes between the tiers of boxes and extends completely across the car so as to touch both sides of the car or ship chamber, and is then tacked into the end piece of each box so as to make everything in the car or chamber perfectly rigid.

By Mr. Wright (Renfrew):

Q. I do not understand the word 'dunnaged.'
A. It is a word used by the steamship people for thin slats that run between packages to brace the whole cargo solidly together and yet keep the individual packages apart to secure ventilation.
Q. These are loose strips in the car and you tack them at the ends ?
A. At the ends and to each package if necessary. The effect of this bracing is that the boxes are held perfectly rigid in the chamber in which they are placed so as to resist the shunting of cars and the rolling of the ship. In addition to this it furnishes ventilation space so that in cold storage or ventilated chambers the air has a chance to circulate all around the boxes.
Q. How large is this strip ?
A. Usually an inch or less. The idea is not to have an unnecessary amount of room wasted with dunnage.

By Mr. Blain :

Q. How many boxes will the ordinary car hold ?
A. The ordinary car will hold about 400 boxes and a little over. I fancy the larger cars will run to nearly 600.

By Mr. Wright (Renfrew):

Q. A 60,000-pound car ?
A. Usually small. Ten tons is a minimum load for fruit.

By Mr. Armstrong :

Q. Forty thousand ponds ?
A. Yes.

COMPARATIVE COST OF BOXES AND BARRELS.

By Mr. Cochrane :

What is the difference in the price of boxes as compared with barrels?

A. That will vary with the district in which you are making the purchase. In Nova Scotia, for instance, they manufactured barrels last year for about 25 cents per barrel while their boxes cost them about 15 cents. Three boxes would cost 45 cents, holding a barrel, while a barrel would cost them 25 cents. In Ontario the conditions are almost reversed, the barrel last year costing the average packer about 40 cents, while he could get the three boxes for holding the same for about 36 cents.

Q. How much ?

A. Three boxes for 36 cents, or about 12 cents a box. They have been sold to dealers this year for 11½ cents in carload lots.

By Mr. Schell (Oxford):

Q. Do they not make them except for nailing the top on ?

A. Not for 11½ cents. They would cost then 12½ cents.

Q. It is far better to have them nailed ?

A. With the freight arrangements the box-makers now have, it is better to have them made up at the factory, if you have storage capacity, and in addition you get a much neater box.

By Mr. Finlay :

Q. Is dovetailing stronger than nailing ?

A. It is cheaper, but it is objectionable on account of the glue used and for other reasons. The dovetailed boxes break from the pressure within more frequently than the nailed boxes. The nailed boxes are preferred for strength, but the dovetailed box is slightly cheaper and perhaps neater.

By Mr. Schell (Oxford):

Q. I find it all right to use the dovetailed box and strengthen it with a nail or two.

A. That would help materially, but most packers will not take the trouble. Our fruit inspectors report that breakages in dovetailed boxes result in a very serious loss.

By Mr. MacLaren :

Q. How is the branding or stamping of the boxes done?

A. It is usually included in the price for a large order. If you do not give a large order you will be expected to pay for the steel die yourself. It will cost from $25 to $30 according to the design, but once having been purchased of course it is good for many years.

By Mr. Schell (Oxford):

Q. They will do it for the carload and will not charge any more.

A. I suppose they would for the carload. But another advantage in getting the boxes made in the factory is that they smooth the ends. You will notice that this box has had the ends smoothed nicely, so as to give it a neat appearance that could not be duplicated on the ordinary fruit farm.

By Mr. Armstrong :

Q. Just before leaving this subject would you give us an idea with reference to the farmer. You have told us that they can make their own boxes in the winter time. What kind of lumber would you suggest they should make the boxes out of ?

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A. To be perfectly candid, while it is possible for the farmer to make these boxes yet the only operation that could be economically done on the farm would be to nail the separate pieces together; as this only amounts to about one cent a box you will see that after all the amount of work the farmer can do upon the box is comparatively small.

By Mr. Kennedy :

Q. The freight is quite an item.

A. If the distance is great the freight on the made-up box is a very serious matter, in which case they would be purchased and shipped in the flat. The box I hold in my hand could be obtained from British Columbia at an advance of about two cents on Ontario prices, and some of our Ontario fruit growers prefer to pay the two cents and get these boxes made with each dimension in one piece. They prefer also this elastic British Columbia spruce to the material which we have in Ontario.

By Mr. Lennox :

Q. There is surely no difficulty in any province in Canada in getting a board 10 or 12 inches wide ?

A. The difficulty will be very apparent when you come to pay the bill. Ask a box-maker the price of a box made with all dimensions in one piece and ask them the price of a box with the top, bottom and sides of two pieces, and you will notice the difference.

Q. You mean that it is difficult to get wide lumber ?

A. Yes.

By Mr. Cochrane :

Q. What would be the difference ? Why would there be any objection to the sides of a box being in two pieces instead of one ? I understand why the ends should be in one piece.

A. The advantage to the fruit grower is that it makes a slightly stronger box to have each of the dimensions in one piece. The next advantage is that it has been found in actual practice that where you put apples in with some pressure the edge of each separate board will show itself in the row of apples under the edge. The unsightly mark is, of course, very objectionable in a fancy apple.

Q. Have you any experience with shipping apples in boxes to prove that it is successful financially compared with barrels ?

A. This is the ultimate test, and I would like to express an opinion on this point.

Q. Give us what is practical and what you know is a fact. We do not want opinions.

A. Unfortunately, time would fail to give you all the facts. I will give you enough, however, to enable you to conclude whether my opinion has any value, though it must be admitted that much will depend on the value you attach to individual facts.

The highest priced apples in the markets of the world are packed in boxes. The cheaper fruit is in barrels.

Q. Well, now, let us get at that before we go any further. Is not that because of the fact that they get the fruit to the market earlier in the season? But take in the fall of the year when the apples are going in barrels and boxes. At that time, do the apples in boxes demand a higher price than those in barrels ?

A. A fair comparison would be between the Oregon Spitzenberg and our Spy. They are not exactly alike, but they are so close that you can make a very fair comparosin. The Ontario Spy, any one will admit, that it is as good an apple as the Spitzenburg, yet the Spitzenburg in boxes shipped from California and Oregon will bring from $2.50 to $3.50, while Spys in barrels bring about $4 or $5 for three times the quantity of fruit.

Q. From the same place ?

A. No, but our Canadian Spys—I am talking of Canadian fruit.

Q. I do not think that would be a fair comparison.

A. There is not, of course, an identity of conditions in everything, but the packages, yet we can draw a general conclusion. My argument is that in the markets of the world high priced apples are packed in boxes, and I will not admit that there are any better apples in the world than those grown in Canada. The fact remains that the Ontario fruit as it goes over in boxes does not bring a great deal higher price than the fruit that goes over in barrels.

By Mr. Derbyshire :

Q. Is not that on account of the quantity being smaller ? The boxes contain less and people will buy a box who could not buy a barrel.

A. The brokers are said to dislike the smaller package as it makes more work for them for about the same money. An explanation of the anomalous condition of prices for boxed fruit lies in the conservative nature of the British dealers. They do not know the Canadian apple in boxes, and when a buyer goes out and finds Canadian apples in boxes——

By Mr. Cochrane :

Q. Well, when they are marked on the box surely they know that it is a Spy if it is marked so.

A. You would think so, but the package has a great deal to do with the sale of the fruit. The English buyer is suspicious when he finds Canadian apples in boxes. It is quite possible that the first time he sees them packed thus he would bid less for them than for inferior Canadian fruit in barrels. It is only after repeated trials that I would expect Canadian apples to bring more money in boxes.

By Mr. Blain :

Q. Have any apples been exported from Canada in barrels carefully packed the same as in boxes ?

A. Yes, they have sent apples packed as carefully as it is possible to pack a barrel. I wish Mr. Cochrane to mark this statement carefully.

By Mr. Cochrane :

Q. We want information. We do not want to catch you on anything.

A. I am sure of that, but Mr. Cochrane and Mr. Schell are experienced fruit shippers and their opinions will be of much value on this point. No first-class apple can ever be put into a barrel and packed properly for the foreign market, and come out a first-class apple, judged, of course, by the standard of dessert fruit.

By Mr. McIntyre :

Q. There has been too much pressure ?

A. Necessarily, to get the barrel tight. I do not care how carefully the apples are packed. I have opened hundreds of barrels that were well packed, as well packed as human skill can pack them, and I have yet to see a fairly mature apple taken out of a barrel without a bruise. These bruises are, for culinary purposes, no great injury to the apple, yet the most profiable class of foreign customers, when they come to use this fruit for dessert purposes, will object to the six or more blemishes on each fruit, the result of a barrel bruise. Take the same fruit packed properly in a box, and nearly all of it will come out without bruises. There is a certain amount of tension in all boxes, and it may be very difficult to box apples so that some of them will not have

some slight blemish, but the injuries are reduced to a minimum in the box. After a very careful examination of the evidence extending over a number of years in the matter of prices it would appear that with immediate shipments apples are not likely to bring much more in boxes than in barrels, and often less, but the tendency is towards having the finest fruit put in boxes, and getting a much higher price in boxes than in barrels. To show that the tendency is this way, I may refer to a letter received this morning from a gentleman well known to Mr. Kennedy, Mr. Sterling, of Kelowna, B.C. Mr. Sterling shipped a carload of boxes to Glasgow last fall. The fruit was examined by our Montreal inspectors, and I had the pleasure of showing similar fruit at Toronto and in Nova Scotia, New Brunswick and Prince Edward Island.

By Mr. Cochrane :

Q. Were they shipped on the Pacific or by cars or rail ?

A. No, they were in cars to the steamer at Montreal. These were excellent apples, most of them Northern Spies, but not better than the best Spies grown in Ontario, though they went better than the average Ontario Spies. They were simply good Spies. They went to Glasgow and the consignee there, Mr. Thomas Russell, said that he could sell all such Spies at an advance of 50 per cent upon the usual price of Canadian apples in barrels.

Q. The fact remains that the average Canadian apples are packed differently. These were selected apples and packed in a particular manner ?

A. Yes.

Mr. SCHELL.—Perhaps I might say a word in confirmation of what Mr. McNeil has said. He has, I think, summed up the situation clearly and to the point. I have been shipping apples both in barrels and boxes for a number of years, and I may say that this is the very conclusion that I have come to. The tendency is to use boxes for the finest class of fruit. The English people are so conservative with regard to boxes that it will take time to educate them from any system that they are following. Last fall we shipped some boxes to both Liverpool and Glasgow. The lot we sent to Glasgow we put up carefully, largely out of our own orchard. This particular lot commanded a much higher price than any which we sent in barrels. I may say that the same thing prevails in regard to the Hamburg market. Taking these two markets, the feeling is now, I think, that they will pay a little more for apples in boxes than in barrels for the same quality of fruit. Liverpool and London will not pay any more simply because they are not educated. The wholesale dealers who buy first hand seem determined to stick to the barrels, but I believe, as Mr. McNeill has said, that the tendency is to use boxes, and the apples put in boxes will command, I think, a trifle higher price. I believe that our best fruit can be landed in a trifle better condition, if packed in boxes, than if in barrels. I am not going to discuss the difficulty in connection with packing in boxes and the little expense in addition to that incurred by using barrels, but I believe the tendency is on the line of what Mr. McNeill has intimated, and the information that he is giving in regard to the packing of apples in boxes, I am sure must do a great deal of good in this country.

Mr. MACLAREN.—How do you find the fruit is taken care of when it arrives in the Old Country ?

Mr. SCHELL.—It is handled fairly well. I have been there and have seen it handled and I have also conversed with the different representatives who come out here.

Mr. MACLAREN.—Do they not leave it on the wharf ?

Mr. SCHELL.—No, unless it is held over.

By Mr. Cochrane :

Q. Do you not think there is something in connection with this apple question from the fact that in our section, and I suppose all over Ontario, they pick apples and put them in barrels and leave them out in the orchard for months, perhaps. They can-

not do that with boxes. Would that not be far more injurious for the apples in barrels than for those in boxes when they are taken in and taken care of ?

A. You are right, that is quite disastrous to the keeping quality of the apple.

Q. And when we take these things into consideration they lead to the conclusion that the conditions under which apples are kept in barrels and kept in boxes would affect the quality of the apples very materially.

A. Yes, and the price that is given for them.

IMPORTANCE OF GRADING WHEN BEING PACKED.

I would direct attention to the other point to which you referred, that there is a tendency to do better grading in boxes than there is in barrels. I would like to see boxes tried particularly, because we would get better care and better grading and consequently get better prices.

Q. I know myself that they keep my apples in the orchard and pack them and leave them there until after the frost comes.

A. That is a practice that we should denounce on every occasion.

As our time is limited, I will touch briefly on one or two more points. One of them is closely connected with this particular practice to which Mr. Cochrane has drawn attention, namely, the packing of apples in orchards. For the whole of south-western Ontario, where the orchards are comparatively small, and where there are only a few hundred barrels and sometimes only a few dozen barrels in each orchard, the only method whereby we can get financial results from an orchard is to pack the apples in a central packing house. Let me emphasize the fact that apples cannot be packed well in an orchard, nor can the grading be done properly. We are endeavouring to introduce a system whereby we can have central packing houses to which apples can be taken just as milk is taken in the natural condition to a cheese factory and manufactured into cheese. These small lots of milk can be made into cheese economically in a factory only. If the cheese were manufactured in small lots there would be as many grades almost as makers, so that it would necessarily sell at a low price. For the very same reason our apples will have to be taken to a central packing house and packed in large lots, so as to get a uniform grade. A standard grade is just as necessary in apples as it is in the making of cheese. We will never get the best results from apples until we get a system which will correspond very closely with the factory system of making cheese.

Q. And the same way of taking care of them after they are packed ?

A. Yes. We need proper storage.

By Mr. Blain :

Q. Would that not cause a great deal more handling and bruising of the apple ?

A. Not necessarily. I think it can be done, probably with less. They are doing it very nicely at Walkerton, at Chatham, at Forest, and to a less extent at St. Catharines. It will be done this year at Oakville, Ilderton and Thornbury. The apples are carried in spring wagons or on hay racks with a little straw to take the place of springs. They are using now a bushel crate that will pack nicely on their wagons and these crates are taken to the central packing house. An expert gang of packers grade and pack the apples, giving the farmer credit for the number of barrels of No. 1 fruit, No. 2 fruit and the culls that he has on his load. They charge a price per barrel for packing these apples to cover the cost. If there are many culls they charge a higher price. The tendency in that way is to induce the farmer to grow a better quality of fruit and to do more grading in the orchard so as to bring only the better class of fruit to the packing house and to make the grade more uniform.

Q. It is simply a question of packing, then, because if a farmer had an equipment for packing upon his farm, surely it would be better than to handle the apples so many times ?

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A. In theory this looks reasonable, but as a matter of fact the work can be done cheaper and better in a central packing house. All our successful co-operative associations at the beginning of their career allowed the farmers to do each his own packing. Nearly all have changed to the central packing house system. They cannot get a uniform grade in any other way.

By Mr. Wright (Renfrew):

Q. It is easy to get one good expert packer but not a dozen.

A. Yes, naturally, and people working on the same brand will pack just about the same. Bsides, these packers are removed from personal contact with the grower. They hardly know whose apples they are packing. They see apples only and consequently they have uniformity in grading.

By Mr. Bland :

Q. Up in Bruce county most of the growers sell their apples on the trees, and the packers pack them themselves.

A. Yes, that system is better, perhaps than no system at all. The difficulty is this, as Mr. Cochrane has pointed out. These buyers cannot afford to send their packers around more than once or twice a season at most, and some of the apples are picked and packed too soon—others too late.

Q. They generally make two trips, and take the Kings and some of the earlier ones first.

A. Yes. The members of the association at Walkerton formerly regarded their Colvert apples as of no value, but during the last three years they have been one of the most valuable apples they have, because they were picked and packed at the right time.

By Mr. Blain :

Q. Am I to understand that the farmers bring all the apples to the central point and leave them there to be packed ?

A. Yes, each patron's apples are packed separately, and, when the result is known and credit given, go into the general stock, so that the association has a large line of Baldwins of uniform grade, but coming from 20 or 30 different growers.

By Mr. Wright (Renfrew):

Q. Is there any brand put on these apples—the name of the district, for instance? Take the Stewart oranges that come from California, everybody knows them. Is there similar marking here which may become famous in England?

A. Yes, each association has its brand upon every barrel, with the name of the manager, who thus becomes responsible under the Fruit Marks Act.

IMPORTANCE OF PROPER STORAGE.

The last point I will call your attention to refers to storage. If the fruit has not certain conditions of temperature at the period of its maturity serious results may follow. In the southern portion of Ontario the apples mature so early that they never go into the general stock as winter shipping apples from ordinary storage. For the fruit grown in this section, representing about a million trees, the only possible storage is that used by the growers in New York and the northen States generally, namely, cold storage. For the apples grown north of Lake Ontario and upon the shores of the Georgian Bay, I do not think that cold storage is as necessary as it is in the southern counties. But it is possible that cold storage is valuable even there.

If I may be permitted, I would explain why it is so very necessary in the south-western district. The New Yorkers have adopted the mechanical system of cold storage almost exclusively, because their fruit matures earlier than that north of Lake Ontario. The period of ripening there corresponds very fairly with the period of ripening in southern Ontario, and for this large section, representing, as I said, the immense

number of about a million trees, cold storage would be exceedingly serviceable. It would be serviceable not only for stock intended for sale from January to March, but for holding winter apples over so as to compete with the Australian and Tasmanian apples from March till the end of May. I draw your attention to this because usually it is taken for granted that we cannot compete with the Tasmanians and Australians in the English market at this late season. Such is not the case. I have numerous reports showing that apples properly held in mechanical cold storage after February can be shipped in the latter part of March, April and May, and compete successfully with the Tasmanian and Australian apples in the English market. This year two shippers at least, succeeded admirably in holding their own in the British market with this cold storage stock. That could not be done with the fruit grown north of Lake Ontario and around the Georgian Bay with ordinary storage, because though they could be held in ordinary storage during the winter months quite successfully, March comes with weather so warm that immediately the apples begin to deteriorate. They can be retained in good condition later by artificial cold storage only.

By Mr. Schell (Oxford):

Q. Were these apples from the Grimsby district ?

A. Yes. They are not considered such good keeping apples as those grown further north, but as soon as they were picked they were put in cold storage in Montreal, the cheapest point at which they could be held in cold storage on the way. Then in the latter part of March they were shipped in refrigerator cars to Portland, and from there to the British market, in cold storage chambers. There is not the slightest reason why Canadian apples should not hold the market right from the end of July if the demand continues. Of course, when small fruits and early vegetables come on the British market in May and June there is less call for apples.

By Mr. Blain :

Q. At what temperature would you have cold storage for the shipping of apples ?

A. The nearer and the quicker you can get apples to 31 degrees the better. This can be done by artificial cold storage only in the summer months. Thirty-one degrees is the ideal temperature for apples.

By Mr. Armstrong :

Q. Would it be possible to send out samples of these boxes to the different co-operative stations ?

A. It might be done.

Q. I mean of the berry boxes and all ?

A. They will certainly have an opportunity to see them.

By Mr. Elson :

Q. Would not the real reason for the boxes being better, be because there are fewer apples in the bulk ?

A. That is one reason. There is less bulk to generate heat.

Q. And with that method there are fewer of them ?

A. Yes.

Q. Is it getting more troublesome to get wood for boxes—how about that feature?

A. There is still a large quantity of box and barrel material in sight, and coopers say there is no immediate shortage to be feared.

Q. The tendency will be that way ?

A. Yes, certainly.

Having read over the preceding transcript of my evidence, I find it correct.

A. McNEILL,

Chief of Fruit Division, Department of Agriculture.

DOMINION TIMBER LANDS AND FORESTRY

HOUSE OF COMMONS.
COMMITTEE ROOM 34,
April 7, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Greenway, chairman, presiding.

Mr. Elihu Stewart, Superintendent of Dominion Forestry, was present and addressed the Committee, as follows :—

Mr. Chairman and Gentlemen,—Having appeared before this Committee at different times before and reports of my remarks having been published, I shall endeavour not to traverse the same lines that I have gone over on previous occasions. Still it may be necessary on account perhaps of some of the members of this parliament, being such now for the session, and were not here at former meetings, to do so to a certain extent.

OFFICIAL DUTIES AS SUPERINTENDENT.

As you are perhaps aware my duties are more particularly with the preservation and propagation of forests.

By Mr. Wilson:

Q. Have you anything to do with the propagation of forests, I mean in the way of furnishing trees on your own recommendation?

A. Yes, I have statistics here showing the quantity that we have supplied to settlers in the North-west.

Q. Does it come under your department to furnish the trees, or do you simply make a recommendation to the Experimental Farms as to the wants of certain sections?

A. No. The Department of the Interior has undertaken the work of supplying trees to the settlers on the plains of Manitoba and the North-west Territories, that is, on the untimbered sections. I need not mention the importance of forests to the people of Canada.

EXPORT AND DOMESTIC VALUES OF FOREST PRODUCTS.

When we look over the exports for the last fiscal year ending June 30, 1904, we find the amount of money derived from agriculture was over 37 million dollars, from the mines 33 odd million dollars, and from the forests over 33 million dollars, manufactures 19 million dollars, and fisheries 10 million dollars.

This, of course, does not represent the whole value of the receipts from the forests of Canada for that year. We find by the census of 1901, as near as can be ascertained, the products of the forest amounted to over $51,000,000, some $17,000,000 being for home consumption. No doubt this home consumption is much larger than is given. The home consumption is something very difficult to get at when we consider the varied uses to which timber is applied by the settlers in the country.

There is another thing which is noteworthy, that is, that this export has been increasing very largely within comparatively recent years. Not only is the export increasing, but I venture to say that the home consumption also will increase relatively much larger in the future than it has in the past, owing to the settlement of the western prairies where all the wood for domestic consumption has to be brought in.

TIMBER LANDS OWNED BY THE DOMINION GOVERNMENT.

Without going any further into this matter, we might notice the area of timber lands that are under the special control of the Dominion government. It is well known that the older provinces have control of their own forests. It is the same with the province of British Columbia, with the exception of a certain portion of it which is owned and administered by the Dominion. This Dominion belt in British Columbia is a very valuable tract, consisting of about 20,000 square miles, or 12,800,000 acres, extending along the line of the Canadian Pacific Railway, twenty miles on each side of the track. It was given by the British Columbia government to the Dominion government as that province's contribution towards the building of the Canadian Pacific Railway through that province.

VARIETIES AND QUALITIES OF TIMBER.

By Mr. Wilson:

Q. Before you go on, will you tell us what kind of timber there is in the tract?
A. It varies.
Q. There must be some principal varieties?
A. The principal timber is the fir, the western fir, a very valuable timber.
Q. Is it very large?
A. Very large.

By Mr. Ross (British Columbia):

Q. The figures you mentioned do not give the area of the whole railway belt?
A. Yes, that is the area of the whole railway belt, 40 miles by 500 miles in round numbers from the summit of the Rocky Mountains to the neighbourhood of New Westminster, near the coast; in fact it does reach the coast at Burrard Inlet. It is about 12,800,000 acres.

The other timber is the western cedar, which many of you know. A great deal of it has come east in the shape of shingles. It is a very valuable timber, especially when free from knots. The wood of this timber is used in the west very largely for interior work; it makes a very fine finish.

Then there is another timber growing in British Columbia that has not come into general use yet but is coming into use very fast, that is, the western hemlock. The hemlock on the coast of British Columbia, and in fact on the western coast of the United States, is a much more valuable tree than the hemlock of the east. It is even, I believe, superior to the very excellent quality of hemlock grown in the State of Pennsylvania. This hemlock tree has been investigated very carefully by the Bureau of Forestry at Washington from which a report has been issued in pamphlet form, describing its qualities; this report can be easily obtained. I look upon the western hemlock, of which there is an enormous quantity in British Columbia, as the coming timber there for general use. It is easier to work up than the British Columbia fir, and is coming into very general favour with builders.

By Mr. Wilson:

Q. Is it of a slivery nature like our hemlock?
A. No, it seems not. It is of a better grain, a straighter grain. Our hemlock, of course, will warp and sliver up as you say, but the western hemlock seems to be a much better timber In fact it should not be called hemlock.

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By the Chairman:

Q. It is more of a spruce, is it not?

A. In value much the same as the spruce, though a different timber. It certainly is a tree that is coming into very general favour in the west.

Then there is the western white pine, although not in very large quantities, it is found in all parts from the Selkirk Mountains, west.

There is in southern British Columbia the larch (tamarack), which is being sawn into lumber, more particularly in the Kootenay district.

AREA OF TIMBER LANDS OWNED BY THE DOMINION GOVERNMENT.

I will pass on now to give the area of timber lands owned and controlled by the Dominion. I have mentioned that of British Columbia, which of course is but a very small part indeed of the territory that is owned and controlled by the Dominion government. The whole of the Territories and Manitoba, which of course is administered by the Government of Canada, is of the enormous area of 1,687,000,000 odd acres, whereas that of the provinces is only 629,000,000 acres.

Now it is so very well known, that it is hardly necessary to mention the fact, but the idea seems to prevail in the east that there is very little timber on the Dominion lands of the North-west. On account of the prairie lands of the North-west being so much in evidence along the railways, the opinion has become quite prevalent among those who have not looked into the question, that the greater part of the Dominion lands in the North-west Territories is prairie. Now that is a very erroneous idea. The bare prairie is only a belt of some 900 miles lying north of the 49th parallel, and extending perhaps 250 or 300 miles north, and it is somewhat in the form of a triangle. I have estimated roughly that we have about 160,000,000 acres of prairie lands in the North-west.

The barren lands of the far north at 640,000,000 acres, which would leave 899,000,000 acres including the 12,800,000 of the total area of timbered land under the control of the Dominion.

BOUNDARIES OF THE DOMINION TIMBER LANDS.

These timber lands extend from the northern limit of Quebec and Ontario and British Columbia, with all the intervening territory belonging to the Dominion, up to the limit of tree growth, but this timbered portion cannot be said to be timbered like many portions of older Canada. At the same time even in the province of Manitoba, there is perhaps one-half of the province which is more or less wooded. If you went up along the Dauphin road towards the north-western part of that province, you would find a very large lumber industry there, and even north-west of that district. Then north of the north Saskatchewan in the neighbourhood of Edmonton; the foothills of the Rocky Mountains up into the north country and even north, as I say, of Ontario and Quebec, we find vast timber areas.

There is one tree in that northern country that is coming into very general use, and that is the spruce. The spruce, as is well known, is the principal timber tree in all that country. The spruce extends from the Atlantic to the Pacific. There are different varieties of it, but the tree is always very valuable for the manufacture of pulp. This tree is valuable for its excellent qualities for the manufacture of pulp, but it has advantages in the localities in which it grows, from the water power afforded by the numerous streams which flow through that very rough and rugged northern country. Generally in that country where the spruce is grown you will find excellent water power. That makes the pulp very valuable indeed, and is being much sought after.

By Mr. Lewis:

Q. What size is it?
A. The spruce?
Q. Yes.
A. Well, take it on the western coast, there are large trees running up to 8 feet in diameter. There is a difference according to the different localities.
Q. But I mean in Central Canada?
A. In the north country, in the Dauphin country, it grows to 3 feet in diameter.

By Mr. Barr:

Q. How is it usually?
A. It grows to a considerable height, but the spruce used for pulp in the north country is generally not large.

By Mr. Wright (Muskoka):

Q. How is it in Manitoba?
A. It runs up to 3 feet in diameter.

By Mr. Elson:

Q. Is it the same as the Norway spruce we have heard of?
A. It is the white spruce and the black spruce in the north country. In some parts it is black spruce and in other parts it is white spruce. The white spruce is a better tree in some parts, but it is very difficult to speak in general terms of these subjects. Now in the maritime provinces, I believe the black spruce is the tree they make their lumber from. Then over on the south side of the line, in the Adirondacks, the red spruce is found. The varieties are very similar, but the white spruce in the west is generally the better tree for lumber.

MEANS ADOPTED FOR PROTECTION OF FOREST AGAINST FIRE.

Now, gentlemen, I want to get through to-day and I do not want to take up much time, but just to go on a little further. The idea which was uppermost in my mind when I undertook this work a few years ago, looking at the whole of this territory that was owned and controlled by the Dominion, and knowing as every person in Canada knows, the enormous destruction that has been caused to timber not only in the older provinces, but in the western country as well by fire, was to endeavour to work out some system of protection from fire. The system worked out was somewhat similar to that in Ontario and Quebec, but still the conditions being different there, I considered we would have to adopt somewhat different means. We have adopted a system of forest fire ranging for the Dominion territory which I will endeavour to explain. In the first place, we issue fire notices warning the people against the careless use of fire. These notices are 18 inches in length by 12 inches in width, and I have used every possible means in order to have them distributed throughout that country.

One agency that we were successful in enlisting to assist us in this work was the Hudson's Bay Company. It is well known that the Hudson's Bay Company have agents in all that northern region, and it occurred to me that if we could get their agents and employees post up and distribute fire notices and to explain the purport of them to those half breeds and Indians who were unable to read, it would be of great benefit to us. Mr. Chipman, the Commissioner, has been kind enough for the last three years to undertake this work. I send the notices to him, and he sends them out with their agents on their first trip in the season; they go all over that north country, and he asks them to post the notices up. When I went north a few years ago to the

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Peace river country, I found these notices at every portage, and at every Hudson's Bay post and moreover I found that the effect was very good and it was largely due no doubt to these notices that the travellers and the employees, not only of the Hudson's Bay Company but other traders as well, exercised great caution in putting out their camp fires when leaving them. This work of the Hudson's Bay Company I consider to be of very great value indeed to the country. I know these notices are posted up in all that northern country where these agents go, even up to the Arctic circle and beyond it.

Another means taken in order to get these notices posted was through the railways. I am now sending them out to be posted up along the lines of the Canadian Pacific, the Canadian Northern and the Galt Railway Company, and along all their branch lines. Every sectionman has a number of them supplied him, and they are posting them up every few miles along the track, warning people against the careless use of fire, and this is done not only in the timber country, but on the prairie as well. I have only mentioned these two methods.

By Mr. Cochrane:

Q. What good does that do, posting up these notices along the railway?

A. What good?

Q. Yes. Notices do not prevent fires, it is not the notices that prevent the fires.

A. Certainly not. But calling attention to the provisions of the Act undoubtedly has an effect in that direction. The Act is very stringent in its provisions; there are high fines imposed for parties using fire carelessly, and these are all summarized in these notices. I do not think that every person that allows a fire to get away does it wilfully, but a great many of them do it carelessly, and so when their attention is called to it, that is sufficient. We find in the mountains prospectors and tourists, who are acquainted with the dangers of allowing fires to run, only need to be warned to be more careful with their camp fires and fire generally.

SYSTEM OF FOREST FIRE RANGER.

I am coming now to the system of forest fire rangers. We have appointed about 40 men altogether in different parts of the country, who are employed during the dry season in the summer months. These men are under the supervision of some officer or person known to the department. For instance, in the railway belt of British Columbia, which is perhaps the most valuable single tract that we have, and which is very much exposed to fire on account of the lumber men travelling and operating through the country, and the railways running through the whole length of it, we have had last season nine forest rangers employed along that belt. Under the Crown timber agent at New Westminster we spent something like $8,000 last year in this 'fire guarding' in that part. I think if ever there was money well expended it was what was spent in that work last season.

OPINIONS FROM LUMBERMEN OF PROVISIONS AGAINST FOREST FIRES.

I am going to give you some correspondence to show what is the opinion regarding this work by British Columbia lumbermen who pay a portion of the cost of this fire guarding. I might say that the lumbermen pay one-half the cost of guarding their own limits. The last season in British Columbia was an exceedingly dry one, in fact from the beginning of the season up to quite late, there was no rain whatever. I asked Mr. Leamy, who is our agent there, to not hesitate even if it was necessary to call out additional men, which he did in one or two cases, there were perhaps 20 or 30 men called out to fight the fire for perhaps a week at one particular place. Of course it cost considerable money, but the result was we lost scarcely any timber

through the railway belt last year, not perhaps Mr. Leamy reports, over two millions of timber in the whole belt.

By Mr. Wright (Muskoka):

Q. That is in British Columbia?

A. Yes, in the whole railway belt. The only serious fire we had last year in the Dominion territory was one in the Crow's Nest Pass in Alberta. There were three fires started there on the limits owned by the Hon. Peter Maclaren, and considerable timber was lost, although every effort was made to confine it. It is no use trying, you cannot put out a fire when it gets going as that was. All you can do is to confine it, and this fire destroyed considerable timber,. In fact they had very great difficulty in saving their own mill. This was not, however, by any means the only fire in that part. Outside the railway belt in British Columbia, the province owns the timber, as I have said, and they have no system of fire ranging yet. The quantity of timber they lost last year, compared with the very small, the trifling quantity lost on the Dominion belt, has had the effect of stimulating the government of the province of British Columbia to establish a system of fire service similar to our own which they will have in operation next year I understand.

LICENSES TO TIMBER LIMITS.

Q. Is there much of the British Columbia belt under the control of this Dominion under license to the lumbermen?

A. Yes, I think there are over 400 licensees, but some of them have very small limits.

By Mr. Lewis:

Q. Does the Canadian Pacific Railway own any of these sections in the British Columbia timber belt?

A. No, they have no lands there, except what they have acquired the same as private parties have. They have a large tract in the Kootenay district, which they have received through a railway which received it from the British Columbia government, and they lost a large quantity of timber there last year.

Q. You have not spoken of 'red wood?'

A. We have none of what we call red wood, the same as they have in southern California there.

Q. Is there not some red wood on the coast of British Columbia?

A. I would not call it red wood. They have cedar there, but the red wood of southern California does not extend that far north.

THE SYSTEM OF FIRE RANGERS RECOMMENDED BY LUMBERMEN.

I have a letter here that was sent to the department, not to me, but it was sent by the department over to my office, regarding the work that has been done by the fire rangers there, and for the information of the committee I will take the liberty of reading it. It is from the Big Bend Lumber Company, Limited, and is as follows:—

'ARROWHEAD, B.C., September 28, 1904.

'JAMES LEAMY, Esq.,
'Dominion Crown Timber Agent,
'New Westminster, B.C.

'DEAR SIR,—With regard to the fire ranging done by you in our district in the Dominion timber belt, we desire to state that your system of fire ranging we believe to be of the greatest benefit in the preservation of timber from fire. We believe,

too, that you or the fire wardens under you should have full power to punish those known to have broken the law in starting out fires at times and places that are distinctly contrary to the law. We believe the Provincial Government should take speedy action in putting fire rangers through their timber belts, as the very fact of rangers being in the country makes the public at large much more careful in putting out fires.

'Very truly yours,
'BIG BEND LUMBER COMPANY, LTD.'

Here is another letter from the Kamloops Lumber Company, Ltd.:—

'ENDERBY, B.C., October 8, 1904.

'JAS. SMART, Esq.,
'Deputy Minister of the Interior,
'Ottawa, Ont.

'DEAR SIR,—We believe in the principle of giving credit where it is due, and in accordance with our avowed belief, we cannot let this opportunity pass without saying a few words about the way the fire guarding has been conducted in our berths and this vicinity the past season. We desire to give full credit to Mr. James Leamy for the way he has conducted the fire guarding operations during the particularly dry and arduous season, and we must congratulate the Department of the Interior on having such an efficient and zealous officer, and hope in the future the department will give him greater powers than he has at present in reference to fire guarding. We beg to remain,

'Yours truly,
'KAMLOOPS LUMBER CO., LTD.,
'per GEORGE MCCORMICK,
'*Managing Director.*'

Many of you probably know Mr. McCormick, who was a member of the House of Commons here in the last parliament.

Here is another letter from the Columbia River Lumber Company. That is in fact the Canadian Northern Railway, and are the largest owners of lumber by all odds in the railway belt. It is as follows:—

'GOLDEN, September 23, 1904.

'JAS. LEAMY, Esq.,
'Crown Timber Agent,
'New Westminster, B.C.

'DEAR SIR,—Now that we think the danger from bush fires in the railway belt is practically over for the season, we want to express our appreciation of the government fire ranging system, and of the great interest and trouble which you have taken in connection with it, and particularly of the instructions given all along the line, that when danger threatened, extra men were put on, and everything possible done to keep the fires under control.

We feel satisfied that without the fire ranging system and the extra work which was done in the last six weeks, practically all the timber tributary to Shuswap lake would have been destroyed, and as you know this amounts to a good many hundreds of millions of feet. There was also serious danger for some time in the Beaver and Columbia river valleys, but fortunately very little damage was done.

'We would like to see the number of fire rangers doubled another year, and as we have frequently stated, are quite willing to pay our share of the expense.

'When one realizes that we had over two months of the hottest, driest weather that has ever been experienced, no better argument in favour of continuing and extending the system of fire ranging that you have inaugurated can be found, than the fact that

in spite of these unfavourable circumstances, we came through with so little serious damage.

'Yours truly,

'THE COLUMBIA RIVER LUMBER CO.,

'F. W. JONES, *Secretary.*

In view of the building of the Grand Trunk Pacific and the Canadian Northern Railways through the timbered sections of the north during the next few years it perhaps would not be out of place for me to say that I think it would be the wisest possible thing if an increased grant were provided for this service, at least during the next few years. When any one travels along the Canadian Pacific Railway which runs right through the province and sees the enormous quantity of timber that was destroyed during the construction of that railway, he cannot but realize the necessity of taking every precaution now in the building of these new lines of railway through the timber country.

By Mr. Herron :

Q. How many men had you employed in the vicinity of the Crow's Nest Pass last year, do you remember ?

A. There were twelve men employed along the foothills of the Rockies altogether.

Q. Extending from where ?

A. From the north Saskatchewan down to the boundary there were 12 men employed.

Q. Were these men supposed to live in the vicinity of the country in which they worked ?

A. Yes, the system we have adopted is that each ranger should be acquainted with the locality in which he is working, and these men were appointed within the district which they are to guard as near as possible. I am quite aware within the Crow's Nest that there should have been perhaps more men called out at a time, but I believe that all the men in that vicinity were called out as soon as they thought the fire was serious. I understand that one of the rangers was at Blairmore, but the mill company did not think the fire sufficiently important to have their men start out to quell the fire until it had got so far that they had very great difficulty in even saving the mill.

Q. One of the difficulties was that the men employed in the first place as rangers were situated 20 miles from any timber and they lived there, and instead of attending to their duties they were canvassing over the prairie country until the fire got to such an extent that it was almost impossible to check it, and it never was checked until it became serious, until the fire got within the vicinity of the mills and the town.

A. I may say this, that Mr. McPhail, Hon. Peter McLaren's agent there, had a number of men himself who were called out and we paid one-half the expense.

By Mr. Cochrane :

Q. He could not call out these men who were wandering about the prairie ?

A. These men were working at the mills.

By Mr. Herron :

Q. How many men have you employed as fire guardians in the vicinity of the Pass ?

A. Only two along the Pass.

Q. Permanently employed during the summer ?

A. Yes.

Q. I do not think they did much fire ranging ?

A. I would be very glad to hear of any one not attending to his duties.

By Mr. Lewis:

Q. Would it be your opinion that a fire guardian should live in the vicinity ?

A. He should know the locality and be familiar with it. It is perhaps not necessary to live there in the timber, but he should know the country and the trails.

Q. Live there when he is on duty ?

A. Yes.

By Mr. Cochrane:

Q. I should think when you are paying him for his services he should be where his services are required ?

A. Yes.

By Mr. Herron:

Q. What pay does he get ?

A. $4 a day. He has a horse of his own and pays his own expenses.

Q. That includes payment for the horse ?

A. Yes.

Q. I think some of the men get $5 ?

A. Only one man got $5. He is a man who has charge of the whole district. He has charge of these 12 rangers the same as Mr. Leamy has in British Columbia. He instructs them when it is necessary to start out and when they should return. We found it necessary to have some one in that vicinity under whose instructions the men should act so that they might work when it was necessary and not work when it was not necessary.

Q. What is the name of the chief ranger ?

A. Mr. Joseph E. Stauffer.

Q. I think I know another man who received $5. I do not know whether it was for the whole season ?

A. I think you are mistaken.

By Mr. Lewis:

Q. How long were they employed ?

A. That is just where our system differs from the Ontario and Quebec system. The west, especially British Columbia, and I think I may say the Territories as well, for the last few years, have sometimes had very wet seasons, and at other times very dry ones, and we thought it unwise and useless if it was a wet season to have these men on duty—a few years ago we had a season that did not require any guarding at all. That is the idea of having a supervisor who has charge of the work to instruct the men when they are needed to work and when to quit and certify their payments. This man sends instructions to Mr. So and So to start out, and he starts when he is directed and is recalled also when the supervising officer sees fit. This supervising officer also certifies to the account before it is paid. Now, in the Edmonton district——

By Mr. Herron

Q. Who is the permanent man in the Crow's Nest Pass ?

A. Mr. C. B. Miller.

By Mr. Wright (Muskoka):

Q. Who suggests the men to be employed. Does the head man employ them ?

A. I have been through the country myself and I endeavoured to ascertain the names of men living in the vicinity who would undertake the work. We cannot always get men to live there, the very best men very often being employed at their summer work. If they are farmers they will require to work at their farms. We have endeavoured to get the best information we could, and if a man has done well the year before on the work he is engaged for the coming season.

By Mr. Lewis:

Q. For so many months?

A. Yes, months or days as the case may be.

Q. How long?

A. In British Columbia last year on account of its being a dry season they were employed from May to October.

Q. While there was any danger?

A. While there was danger, exactly. Ten were employed on the railway belt in British Columbia last year, twelve along the east slope of the Rocky Mountains, four in the Edmonton district—by that I mean in the country adjacent to Edmonton—three in the Prince Albert district, two in the Moose Mountain timber reserve, seven in the Riding Mountains timber reserve, one in the Turtle Mountain timber reserve, and one in the spruce woods timber reserve, making forty in all.

By Mr. Schaffner:

Q. You have control of the Turtle Mountain?

A. Yes, there is a forest ranger employed, but he is not in my branch.

Q. He is the fire protector in the summer and looks after the wood in the winter?

A. We utilize these men that are in the other branch for looking after the fires as well.

Q. I think I can say that so far as our man is concerned, his occupation is drawing his salary and electioneering. He is of very little use.

The CHAIRMAN.—What is his name?

Mr. SCHAFFNER.—Walkenshaw.

The CHAIRMAN.—Charles Walkenshaw?

Mr. SCHAFFNER.—Yes.

By the Chairman:

Q. Does he not occupy any position?

A. He is the forest ranger for the reserve, and I have asked him to look after the fires.

Q. Is the timber not pretty well out?

Mr. SCHAFFNER.—There is a lot of timber there yet.

WITNESS.—I am hoping to get these timber reserves, such as the Turtle Mountain, Riding Mountain, Moose Mountain and about eight others somewhat changed so that they will be entirely in the one branch, and we will have more supervision over them. At present the authority is divided.

By Mr. Cochrane:

Q. Is it just as important after the timber is taken off that a fire should not be allowed to run over the country?

A. Certainly very important indeed.

By the Chairman:

Q. It is more liable to run over the country after it is taken off?

A. The Turtle Mountain is very difficult to guard on account of the land being homesteaded just on the opposite side, on the American side, in the wooded country.

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The Turtle Mountain runs along the boundary for 18 miles, and as it is settled on the opposite side it is very difficult to guard our side of the line from those who are clearing up the lands on the American side.

PROVINCIAL CO-OPERATION NEEDED TO DEFEND AGAINST FIRES.

By Mr. Ross (Yale-Cariboo):

Q. Do you endeavour to make any arrangement with provincial governments for the mutual protection of timber? Take in British Columbia, for instance, where the provincial timber runs into the railway belt. Fires occur in the provincial timber and run into the Dominion timber lines, and I do not think they have any protection in the province as far as timber is concerned?

A. In 1902 there was a fierce fire in Washington and Oregon that destroyed enormous quantities. We had smaller fires occurring on our side in the neighbourhood of New Westminster, between there and Blain, in Washington. It was burning on our side in the brulé. A fire usually starts in the dry timber, it very seldom starts in the green timber, especially where there are so many ferns as there are there, but it does start where the land has been cut over or partially burned over before. This fire near the Washington boundary had started and was a fierce fire in the brule. I met Mr. Leamy at New Westminster and he suggested that I should 'Go to Victoria and see if we could get the British Columbia government to assist us.' I said, 'What can they do?' He said, 'Ask them to turn over their roadmen.' I went to Victoria and saw the Commissioner of Works, Mr. Wells, and I said, 'Your country is burning up. We are doing what we can.' He said, 'Next year I intend to have a system, and I would like to have you come out and help me to arrange it.' I said, 'I will be glad to do it,' and he said, 'What can we do now?' I said, 'You can wire your men to have them assist us in confining the fires.' He said he would start the wires that afternoon, and he did so. But so far they have not inaugurated any system of forest fire protection in the province. They not only need a service for their own timber, but not having it makes it hard for us to guard ours.

By Mr. Kennedy:

Q. They have a Forest Fires Act?

A. They have an Act.

Q. But no machinery for carrying it out?

A. No, I think I am correct in that.

Q. They have regulations laid down for settlers?

A. They have what is known as the Bush Fires Act, and we undertook a couple of years ago in the Canadian Forestry Association to recommend to the British Columbia government an amendment to that Act, and we pointed out what it was, and they passed that, but they have no machinery for carrying it out or any system of ranging. The experience has been, not only in Dominion Territory, but in other provinces where they have an organized system of forest fire service, fire rangers or guardians, that they have done an immense amount of good, and no amount of money could be better expended that on such service. The time and money that has been spent in clearing out fire lanes and that sort of thing in the forest is time and money largely thrown away. It is useless to attempt it. The work of the fire ranger is not only in putting out fires, but in travelling through the country and warning people against careless use of fire, following them up a trail and furnishing them with a notice that they will be responsible, and that the burden of proof will be on them. Under those circumstances a man is extremely careful. Then we have an arrangement in British Columbia with the Canadian Pacific Railway that if any of their

track men see the smoke of a fire, as soon as they come to a telegraph office they telegraph the fire ranger for that district, or to some one whom he instructs, that will employ men to go at once to the fire. The ranger may be away, but we have it arranged so that he will notify Mr. Leamy and also the fire ranger for the district as well, so that if the ranger is out Mr. Leamy will hear of it and will send some one to look after it.

CONSERVATION OF FORESTS TO MAINTAIN WATER SUPPLIES.

Now there is just one other thing. I spoke of the value of the forest, its commercial value. But in that western country, especially in the Territories and Manitoba, if ever there was a country that needed to conserve its forests it is there, for the conservation of water supplies. They are building irrigation works east of the foothills of the Rockies, and extending down to Medicine Hat at enormous cost, but if that timber which is at the source of supply of water for the Saskatchewan river is destroyed, their irrigation works will be perfectly useless. The water will run away in the spring in torrents and then later will be a drought just when the water is most needed.

needed. And the same thing applies in Manitoba. In the Riding Mountains we have something like 900,000 acres of forest lands. The Riding Mountains is the source of the water supply for a large portion of Manitoba, the Assiniboine river, the second river of importance in the province, derives most of its water from these mountains. These forest lands are of importance not simply for the value of the timber alone, but for the value of the younger growth that is coming up as well, anything that will hold the water back and serve as a natural reservoir for these streams which derive their supply from this timbered tract.

RESTORATION OF FORESTS BY TREE PLANTING.

By Mr. Wright (Muskoka):

Q. Have steps been taken with a view to reforestry by the government?

A. I will come to that immediately. I am going to speak of tree planting. I said at the start that I saw that the first duty of the forestry officer in this country was with reference to the protection of the existing timber on Dominion lands. The next thing was to endeavour to do something in the way of encouraging forest tree planting on the bare plains of Manitoba and the North-west Territory. Now it is well known that there have been various attempts made to encourage the growth of forest trees on the prairie lands both in Canada and the United States. The United States passed what was called 'The Timber Tree Culture Act.' by which 160 acres of land were given to any settler who would grow a certain number of trees. A similar Act was passed by the Dominion for Manitoba and the North-west Territories. Those were both failures, and they have both been repealed, and the reasons for doing so are not far to seek.

A man was trying to earn 160 acres of land. He could plant trees on it, and if they did not succeed he could very easily bring influence to bear and make representations to the authorities, to show that he had done his share, but that Providence had not been kind to him. The result was he would generally get his land, though the trees died. I do not think five per cent of the trees planted under that Act are now growing on either side of the line. Both Acts were repealed, and when I undertook this work after studying out the different systems of tree planting both in Europe and the United States I came to the conclusion that we would have to work out some system for ourselves.

Our conditions were different; of course the United States are approximately the nearest to us, but for us to adopt the systems of Europe, or even that of the United

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States, would be very unwise. Now in the United States with an enormous appropriation of something like $800,000 that they have now, all they do is to give advice, they send experts to make plans for planting trees and they do that work throughout the country, but that is as far as they go in assisting the prairie settler in the growing of a shelter belt of trees. I saw the first thing that was necessary was to have the ground in a thorough state of cultivation before we could expect the trees to grow on the plains.

The next was they had to be carefully attended to, not only in the planting, but after they were planted and until they grew up sufficiently to shade the ground so that they would not need further cultivation. So we worked out a system and it was something like this:—

GOVERNMENT ASSISTANCE TO REFORESTRY.

The system is this that the government furnishes a system of inspection. Any person wishing to avail himself of the co-operation of the government makes his application to the forestry branch here. Here is an application from a man at Estevan, from Mr. William Kinna, showing that he wants the inspector to visit his locality with a view to getting trees. In reply to his first letter we sent him a printed form of application to sign, his first application does not give us all the information that we need, it does not state the number of his lot or the quarter section on which he lived, so we send him the blank form upon which to make a formal application. This he returns to the department as follows:—

APPLICATION FOR GOVERNMENT CO-OPERATION IN FOREST TREE PLANTING.

ESTEVAN, March 4, 1903.

SIR,—I beg to make application for material to plant two acres of land on my farm situated on section 3, Township 3, Range 8, west of 2nd Meridian.

My nearest express office is Estevan, Assa.

My post office address is Estevan.

Soil (1) character. Breaking done last July, 1902. (2) How prepared.

If any preference state kind of trees desired and whether seeds, seedlings or cuttings.

Yellow Cottonwod trees; fuel or white willow trees; willow cuttings.

WILLIAM KINNA.

Superintendent of Forestry,
Ottawa, Ont.

All applications for planting in the spring of 1904 must be received at this office before March 1, 1903.

These applications are placed on file in the office and each is registered. When the inspector in starting out for the west he is furnished with a list, and he will go over that farmer's land and others probably in the neighbourhood and will make a careful examination to see what kind of trees are suited for that particular locailty. The inspector will make a little working plan for each farmer showing how he should plant his trees, how far from his building—60 yards is the usual distance, we keep the trees well away from the house. We find that most men want to get trees as close to the buildings as possible, but when that is done the snow comes in and banks up and makes it worse than if they had no trees at all. The land is examined that season, and then they enter into an agreement that they will keep the land in proper cultivation and maintain it as a permanent forest plantation.

Under the agreement which they are required to enter into with the department, they agree 'To maintain as a permanent forest plantation, wood lot, shelter belt or

wind break, a sufficient area of land to set out, according to the plans and instructions of the forestry branch, such seedling trees, cuttings or seed as they may have expressed a desire to obtain, and as may be furnished to them upon the recommendation of an Inspector of the Forestry Branch.

They further agree that the trees grown thereon shall not at any time in the future be cut off or removed in such a manner as to injure the plantation for the purpose intended, except with the advice and consent of the Forestry Branch; it is understood, however, that the wood and other products of such forest plantation, wood lot, shelter belt or wind break are the property of the owner of the land, provided, however, that the Forestry Branch shall have the right to take cuttings and seeds from the trees growing thereon if such are not required by him to extend his plantations.

He also agrees to properly prepare the soil before planting, plant and care for the trees after planting, and do all the actual work in connection with the establishment and maintenance of the plantation, shelter belt, wood lot or wind break in accordance with the directions furnished by the Forestry Branch. This includes the provision of suitable protection against stock, by fencing or otherwise, and against fire by fire guards or other effective means.' The applicant signs that, and I sign as Superintendent of Forestry, the following:—

'To the person signing the above agreement the Forestry Branch of the Department of the Interior will, upon the recommendation of its inspectors, or upon the receipt of information from other reliable sources, provide so far as the means at its disposal will permit, a sufficient number of forest trees, cuttings or seeds of the varieties recommended by the Inspector, to plant up the area of land specially prepared for the planting of these trees, and which has been reported to be in a suitable state of cultivation.

SYSTEM OF TREE PLANTING AND SELECTION OF TREES.

Under this agreement the Forestry Branch will provide all plant material and will render all inspection and instruction wholly without charge.

By Mr. Findlay:

Q. What kind of trees do you supply?

A. The trees we have planted so far have been the Manitoba Maple, the Green Ash, the Elm and the Cottonwood, and certain kinds of willows.

Q. What is meant by cuttings, just slips off, or are they rooted?

A. Slips just cut off.

By the Chairman:

Q. How do you find the Russian Poplar?

A. A few years ago it was considered in Minnesota to be an excellent tree, but there has been rust come on it.

Q. It is the Black Rot?

A. Yes.

By Mr. Cash:

Q. How close do you plant the trees?

A. For a shelter belt we plant them four feet apart.

Q. We have found when planting them four feet apart that very few trees live. We found at Indian Head they died out.

A. You have to get them sufficiently close so that they will shade the ground, and then you can thin them out afterwards, that is the intention, but at first they should be close enough together to shade the ground.

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Q. They certainly died out even where we cultivated the ground with a horse, so that in planting trees more recently we have set them eight feet apart, and then still more recently we have been planting them only in rows of eight feet apart, and four feet apart in the rows?

A. Is that for wood or for a shelter belt or a wind break?

Q. Oh, no, either wood or shelter belt?

A. The other object of inspection is to determine what particular kind of trees are best suited to a particular kind of locality, for instance, in certain cases we would not send a cottonwood at all, but would send the other kinds. The cottonwood, though, has done very well, and as you say, it may be advisable in certain cases to plant them wider, and thin them out afterwards. You can thin them out, or do you mean that they die early?

Q. Yes, they die quite early, although I have seen some exceptional cases where they have not?

A. There is a plantation two years after it was set out (photograph produced), that is cottonwood and maple planted together, that is in Assiniboia. Here is another photograph showing the growth of elms at the nursery stations (photograph produced), I will speak of that a little later. We grow these trees for distribution—we have been growing them at the experimental farms, but now we have taken a farm of our own for that purpose.

Q. Will that be the white elm?

A. That is the American elm.

By the Chairman:

Q. At Indian Head is your nursery station?

A. Yes, we have been using a portion of the farm at Indian Head to grow our trees.

By Mr. Lewis:

Q. Where have you your farm now?

A. It is at Indian Head also about a mile and a half south of the station. I was going to say that this work of growing stock for distribution is in advance of anything in the United States. They simply send their inspector to give expert advice. It was my opinion, and the Minister agreed, that if we stopped simply at giving advice it would be a failure. Having arrived at that conclusion the next question was where were we going to get the stock? There were no commercial nurseries in the country sufficient to supply the demand, and if they went to the woods it would cost a great deal, and get an inferior quality of trees, the root systems would be very poor, and probably when they did get them where they wanted to plant them they would be dead, or would be nearly so. So we were driven to the necessity of supplying this material ourselves in some way ,and the Agricultural Department was kind enough to place a certain portion of their land at the stations at Brandon and Indian Head at our service. Up to the present time, or within the last year, we have been growing these trees there, under our own supervision, of course, just using their land.

TREE NURSERY STATION ESTABLISHED,—MORE NEEDED.

This branch of our work has grown to such an extent that we thought it wise to have a station of our own, and we have one now established at Indian Head where we will hereafter grow the trees. With reference to the way in which the work has developed during the last few years I will just note here the number of trees which we have sent out. In 1901 we only sent out 58,800; in 1902 we sent out 468,900; in 1902 we sent out 920,000; in 1904 we sent out 1,800,000, and this year that is coming now, we are just distributing about 2,000,000 trees, that makes a total that we will

have distributed of 5,247,700. That would plant in the way we plant them 1,927 acres of solid forest with the trees standing 4 feet apart. The numbe settlers supplied with trees for planting in Manitoba and the North-west Terri was as follows ; In 1901, 44 ; in 1902, 415 ; in 1903, 616 ; in 1904, 1,027, and this y there will be about 1,120, making a total number of 3,222 settlers who have been p vided with trees. That perhaps should be qualified to this extent (I am speaking the total), that some have got trees more than once, and these were included. S have got trees the second time, and we have not as yet separated those from the t These plantations extend from east of the Red river, from the timber territory to the timbered territory near the foothills of the Rockies, and from the bo ary as far north till you come to the timber country. Of course, we do not send o to any farmer who has a natural wood growth on his place. It is not the intention to do that, but it is merely to supplement what nature has not done.

By Mr. Wright (Muskoka) :

Q. These trees are distributed free to the farmers ?

A. So far we have given them free. It was an experiment, we may not always be able to do that, but so far they have been given free. I look at this worl value of it, not so much as to what has actually been done, as from the standpoint of it being an education in tree growing. The question was, I think, asked at this committee on a former occasion : What are the experimental farms doing ? Do they not show the farmers how these belts can be grown, and I would say that the experimental farms have done a great work. No one is more free to admit it than I am, but there are only two experimental farms in that country, one in Manitoba and the other in the North-west Territories, and how few farmers scattered all over that vast country have an opportunity of in fact even seeing those farms. If they do see them they come perhaps on an excursion, spend an hour or two looking at the ground and everything else, they see the trees, but are they in a position to go home and plant trees, to know what particular kind of tree is suited to their soil, and what kind vation is required to produce the best results. But here we have these object scattered all over the North-west, and I hope that next year I will have a m showing where they are situated. They are scattered all over the prairie sect North-west and they furnish object lessons to farmers in every district, showin the proper way to grow forest trees, and for that reason I would like to point out that the work we are doing is of more value than simply furnishing them with the trees to plant.

Q. Is there any kind of evergreen that will grow on the plains ?

A. Yes: we have a considerable quantity growing now. If I had time, I could give you information on the number of each variety of trees that we have in the nurseries, there are over 3,000,000 trees now growing, and we have something over 1 ,000 evergreens.

By Mr. Herron:

Q. Does it not strike you that it would do more good to have these patches, nursery patches, up in the arid country to the west rather than at Indian Head ?

A. The fact is if we could afford it we would have more than one.

Q. I will agree with you, and if you are leading up to it by this one station I think it would be better. I think also it would be better if we had more farms, smaller farms in different places according to the climatic conditions and locations of that country ?

A. The main object of this farm at present is to grow trees for distribution, I have here the results that have been obtained. Last year I asked the inspectors certain question. It was all very well to say that we had sent out so many trees, sup-

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d so many trees to the farmers, and that so many applications had been received all that, but the question was how are the trees that we have sent out doing, how th[illegible]ny of them are living, and I asked the inspectors last year to ascertain what pro-m[illegible]ion of the trees sent out are now living. I got reports from all the inspectors, fe[illegible]ne not knowing what the other was going to report, and I made it up and found that 5 per cent of all the trees that we have sent out are now growing. It was about 87 er cent to be more exact, and I made it up very carefully. I have not the figures [illegible]e, but I remember them very well, and I was gratified to find that all of the trees bes[illegible] have sent out so far about 87 per cent were growing last season. I think that no[illegible]lt is very satisfactory indeed, considering the dry seasons we have had. In one ha[illegible] two cases the percentage of trees reported growing was very high. It was between [illegible]5 and 100, that is for a favourable year. Generally speaking most of the trees that died did so just after planting. There was so little moisture that it was very difficult for them to get a start.

By Mr. Lewis:

Q. Is there any difference in the second year, there seems to be in our part of old Ontario an impression that the second year is the hardest on young trees?

A. We have not found it so. It is getting them started that is the worst. The North-west is a pretty large country, and what may prevail in one part would not hold in another.

Q. Do you have them watered?

A. No, we have not. Of course in the irrigated district they would probably use water, but one of our inspectors found that in the irrigated district there was a disposition to trust too much to the irrigation and the farmers did very little cultivation, and the result was that the trees did not do as well.

Q. Not in the irrigated country?

A. The consequence was that the results shown were not as good in the irrigated [illegible]try as these which were produced where they did not depend on the water.

[illegible] Can you give me any idea as to what parts of the Territories those young [illegible]re sent to?

[illegible]. They were sent all over, nearly every district is represented on our register

By Mr. Wright (Muskoka):

Q. How many trees are given to each farmer?

A. The average is about 2,000 each year, and a farmer that does well with his trees gets another lot in a subsequent year if he wishes them. Our inspectors when they go around not only inspect for new applications, but they make a call at old locations after they have seen how the trees are being planted, &c., they also look over the old plantations to see whether the farmers are following out their agreement, and if a man is doing well with his trees and carefully following the directions, if he desires it he is allowed to get trees again. This (document produced) is a little plan that we have made to send out to the farmer to show him how to plant his trees, our system is worked out in that way.

By Mr. Lewis:

Q. Which is the best tree, in your opinion, to send out to Assiniboia?

A. It depends on the soil. If you are sending out trees to be planted in a light, sandy, gravelly soil the best kind probably is the Russian poplar and ash. If you are sending a tree for a heavy soil, cottonwood and maple will do well.

Q. For the neighbourhood of Moose Jaw?

A. We found the Manitoba maple does pretty well there for a wind break, and the elm has done very well too. We are growing the elm from seed, and some years are

very poor seed years, for instance, there was none at all the year before last so that we had not so many trees as we would like to send out.

By Mr. Cash:

Q. In this light, sandy soil, would not a tree like the ash do well?

A. It will do very well; we send out great quantities and it is a very valuable tree. We are sending out more ash this year than any other.

Q. Does the Russian mulberry do in the North-west?

A. I question whether it will grow under ordinary conditions. In fact all we are trying to do at present is not in the way of experiments, but to give the farmer a wind break, or shelter belt or plantation around the homestead. After that he can experiment and grow other sorts. The difficulty generally is to get a start.

By Mr. Bland:

Q. Did you ever experiment with the cedars?

A. No. In the Red river valley they will grow, but not farther west.

Q. Did you ever try the mountain ash?

A. I would not try it as a wind break, it might grow in some parts there, but it is scarcely a good shelter tree. I have endeavoured to avoid going over the same matter as I have on the previous occasion, but if there is any question any gentleman would like to ask I would be glad to answer.

By Mr. Herron:

Q. Do you not think it would be advisable to have additional farms up there in the North-west Territories for the purpose of ascertaining what is best suited for the different climatic conditions. Would it not be better to have more than one station for growing nursery stock for forest tree planting?

A. We can hardly undertake it with the appropriation that we have. We are just getting one station to start with. I think there is something probably in the supplementary vote in connection with this tree growing in the North-west country; I know it has been asked for, and I think it will be granted. I could therefore hardly ask for another supplementary vote this year.

Q. Do you not agree with what I say that the movement of plants from that cold country up at Indian Head to the milder climate in southern Alberta that they are not as likely to succeed as if they were raised under the same climatic conditions?

A. No, I think not, the chinook winds you have reference to, but I think it turns out in practice that when taking a tree from a colder climate to a warmer district it succeeds all right, but when you take it from a warmer to a colder district it is not apt to succeed.

By Mr. Wright (Muskoka):

Q. Does the local government in Manitoba do anything in the same line?

A. No.

Having examined the foregoing transcript of my evidence, I certify it correct.

E. STEWART,
Superintendent of Dominion Forestry.

THE EVIDENCE

PART II.

IMMIGRATION AND COLONIZATION

IMMIGRATION TO CANADA, 1904-5

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
TUESDAY, June 6, 1905.

The Select Standing Committee on Agriculture and Colonization met here this day at 10 o'clock a.m., Mr. Mackenzie (Bruce), acting chairman, presiding.

The CHAIRMAN.—We shall hear this morning from Mr. W. D. Scott, Superintendent of Immigration, and from Dr. P. H. Bryce, Medical Superintendent of Immigration.

Mr. SCOTT.—Mr. Wilson submitted a number of questions that he desired to have answered at this meeting. The first question is, 'How many immigrants, booked for the United States, via Canada, were stopped at the border by the United States officials during 1903-4? For what cause? What disposition has been made of those so stopped?'

A. None were stopped at the border. Immigrants booked for the United States, via Canada, are medically and civilly examined by the United States officials at the Canadian port of landing. Those passed, are free to proceed to the United States without further examination, and those detained are either deported or held until cured. At the ports during 1903-4 the United States authorities detained and dealt with 473 persons as follows:—

Cause of Detention.	No. Detained.	No. Deported.	No. Cured and Released.	Died.
Trachoma	408	92	313	
Acute conjunctivitis	11	1	10	
Favus	9	6	3	
Likely to become public charges	7	7		
Granular conjunctivitis	6		6	
Tubercolosis	3	3		
Senility and debility	2		2	
Insanity	1	1		
Tabes	1		1	
Poor physique	1	1		
Cataract	1		1	
Deaf and dumb	1	1		
Tachycardia	1		1	
Accompanying	23	5	18	
Totals	475	117	355	1

Immigration through Canadian ports to United States	16,463
Number of detentions	473
Percentage of detentions	29·10%
Number of deportations	117
Percentage of deportations	7·10%

By Mr. Wilson (Lennox):

Q. That is not what they say in their reports. They claim that they stopped at the border 2,928 persons?

A. The question asked was: How many immigrants booked for the United States via Canada were stopped at the border by United States officials?

Q. Yes.

A. There were none stopped at the border. Those booked for the United States via Canada are examined by United States officers at the port of landing.

Q. I suppose my question was not as carefully worded as it should have been. I wanted to know the number of immigrants that were stopped at the place where they would naturally be examined, because they would not be allowed to proceed any further?

A. That is not the question that was asked.

Q. Well, just make a note of it. I want an answer to that question. That is what I asked and that is what I want to know?

A. The number stopped at the United States border?

Q. I want to know how many were stopped when they landed in Canada at the place of landing?

A. That is what I am giving to you now, sir.

Q. Your figures do not agree with their report?

A. Well, these are our figures.

Q. How many do you say were stopped?

A. 473 persons.

Q. That is all?

A. That is all.

Q. That they rejected?

A. At the ports of landing, yes.

Q. In Canada?

A. They detained 475 persons during the year 1903-4. Of that number 117 were deported, 355 were either cured and released, and one died.

By Mr. Herron:

Q. By whom were they deported? By the United States?

A. No. They do not deport anybody from Canadian territory, but they object to the immigrants landing at Canadian ports, and if a man is diseased they call the attention of our medical officers to him in order to reinspect him and deport him.

Q. Is that at the cost of our country?

A. No.

By Mr. Wilson:

Q. Is or medical officer paid by the United States for re-examining a diseased immigrant?

A. He gets so much a year salary from the Canadian government.

Q. You will note that I wish to have the number of immigrants detained at ports of landing?

A. That is what I have given you. I presume what you wish is this: A great many people landing in Canada are ticketed only to Canadian points, ticketed we will say to Montreal, and afterwards desire to go to the United States.

Q. That is not what I have here in the United States report. It shows that there were rejected by a Board of Special Inquiry, 2,022. I suppose that would be part of what you say?

A. It is hard to say what their figures are.

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By Mr. Lennox:

Q. That would include immigrants in the old country before they left?
A. No.
Q. Do they ever inspect them over there?
A. Yes, they do that.
Q. You could probably explain this to us?
A. I did not read it.
Q. Well, you will please read it now?
A. I just glanced through it.
Q. According to this report the rejections at ocean ports on arrival were 262; rejected by Boards of Special Inquiry, 2,022; rejections at border stations where there are no boards of special inquiry, 644; making a total of 2,928. That shows they cull them out at any rate?
A. I notice they cull our immigration buildings and publish them in the report as their own. There must be very reliable information in that book.

By Mr. Wilson (Lennox):

Q. At pages 78, 80 and 84 are published photographs of buildings which they claim to be their own. Have they any immigration buildings at the ports in question?
A. No, none at all.
Q. At Quebec and St. John.
A. They show St. John, Halifax and Quebec, do they not?
Q. But they claim those as their own buildings?
A. They claim them as their buildings, judging from the photograph.
Q. It is merely where the examination takes place?
A. Yes, certainly.
Mr. WRIGHT (Renfrew).—What does it say under the photograph?
Mr. LENNOX.—The photograph at which I am looking says, 'United States Immigration (Landing) station, St. John, N.B., Canada.' It is a very nice picture. It shows the docks, the railway sidings and a steamer, and so on?
A. That is where they examine their immigrants. The photograph would lead you to suppose they belong to the United States government.

By Hon. Mr. Fisher:

Q. That is the report of the United States Department of Immigration?
A. Yes.

By Mr. Lake:

Q. Are they Canadian government buildings or American?
A. Canadian government buildings. There are portions of them rented.
Q. Portions rented to the United States officials?
A. We allow them to use portions of the buildings for their inspection.

By Mr. Lennox:

Q. They used these buildings, but they do not belong to them?
A. They are Canadian government buildings. The United States officials do their inspecting in them.

By Mr. Wilson (Lennox):

Q. Do they pay the Canadian government any rental?
A. No, the transportation companies furnish it at St. John, N.B. The large building is rented from the city of St. John. The Canadian government pay one-half of the rent, and the transportation companies the other half.

Q. Is it used for any other purpose, but simply for immigration?

A. No, upstairs. The lower portion is used for freight.

Q. You have nothing to do with that?

A. No. Mr. Wilson asked a question reading as follows: 'What are the special duties of George Bogue Smart, Inspector of Immigrant Children?'

By Mr. Wilson:

Q. There is one question before that: 'How many immigrants booked for Canada were stopped by Canadian officials during the fiscal year 1903-04? For what causes? What disposition was made of them?' I do not need the causes, I think you furnished me that before. I would like to know the number stopped in 1903-04 by our own officers. I do not know, but that I have an answer to that which was given in the House. Is this right? This is an answer given in the House. Did you prepare it?

A. I do not know, but I have the answer here. The question was: 'How many immigrants booked for Canada were stopped by Canadian officials during the fiscal year 1903-4? For what causes? What disposition was made of them?' The Canadian authorities dealt with 1,464 persons as follows:—

Causes of Detention.	No. Detained.	No. Deported.	No. Cured and Released.	No. Escaped.	No. Died.
Trachoma	1,358	143	1,195	20	
Pneumonia	10		10		
Acute conjunctivitis	8		8		
Favus	6	3	3		
Insanity	6	6			
Likely to become public charges	2				2
Senility and debility	2	2			
Gland fever	1		1		
Erysipelas	1		1		
Tonsilitis	1		1		
Tabes	1		1		
Blindness	1	1			
Gout and debility	1	1			
General debility	1	1			
Accompanying	65		65		
Total	1,464	157	1,285	20	2

The immigration to Canada through ocean ports amounted to 85,160. The number of detentions was 1,464, and the percentage of detentions, 1⅞. The number of deportations was 157, and the percentage of deportations ⅔ per cent. There were 1,285 persons cured and released and 2 died.

Q. The next question is the one which relates to Mr. Smart?

A. Mr. George Bogue Smart is chief inspector of British immigrant children in receiving homes. His duties require him to have general supervision of all children emigrating from the British Isles to Canada under the auspices of charitable institutions, recognized by the local government board in England, and also of receiving homes maintained by societies in this country. He does a large share personally of the work of periodically inspecting these homes, and also visiting the children in the homes of their employers or foster parents, seeing that the institutions are well kept and that the children are placed to the best advantage; that they are of a good class, and that their employers, or foster parents treat them properly. He receives a salary of $1,600 per annum. He peforms no other duties and he has two assistants, one for Manitoba, the North-west Territories and British Columbia and one for

eastern Canada. Each of these receives $100 per month salary and travelling expenses, and undertakes his share of inspections reporting to Mr. Smart.

Q. How many are there of these children?

A. The total number of children to be inspected this year?

Q. Last year, the last report. I have it here in your report?

A. The figures given me, I suppose they are for the last year, are 11,422.

Q. Your figures in the report are different. This is your report, perhaps you can explain it better.

A. These figures, I suppose, are for this year.

Q. I asked for last year I think, yes, 1903-4. He has two assistants to help him do that work?

A. Yes.

Q. What are they paid?

A. A hundred dollars a month and travelling expenses.

Q. All the year round?

A. Yes.

Q. And what is his salary, do you say?

A. $1,600.

Q. And expenses?

A. And expenses. Practically all of that is paid by the local government board of Great Britain.

Q. The whole of it?

A. Practically the whole of it, according to the age of the children. They pay a certain sum for each inspection. For a child between 14 and 15 they pay $6, and between 4 and 5 they pay $52.25. This is the highest amount they pay for each inspection.

Q. I did not think it would require so many officials. What are the names of Mr Smart's two assistants?

A. Mr. Hilliard and Mr. Cory.

Q. They both get the same salary?

A. They both get the same salary. At the present time there are 1,142 children under inspection, there are thirteen receiving homes.

Q. How many of these are in homes?

A. In homes?

Q. Or in other institutions?

A. I cannot tell you that.

Q. He does not have to inspect them at those homes?

A. He sometimes does.

Q. These children are put into homes?

A. Yes, with farmers, they are scattered all over the country.

Q. But he inspects them at those homes?

A. At their homes wherever they are working.

Q. He reports once a year?

A. He reports to the British government once a year.

Q. Does he report to you oftener than that?

A. He reports every time he comes in.

By Mr. Cochrane:

Q. Are those children at Belleville under inspection, in the same way?

A. Yes.

Q. The children in the the home there are inspected by women?

A. All the children in the homes are inspected by him.

Q. Are all these children inspected by him?

A. They are inspected by him, yes.

Q. It is a lady up in our section of the country that goes around and looks after the children, at Peterboro and in their homes.

By Mr. Barr:

Q. That lady is not in connection with your department?
A. No, that is in connection with the Toronto Neglected Children's Society.

By Mr. Wilson:

Q. Now then, you are come to Mr. Preston's salary, and other things in connection with that?
A. The next question is, 'What is the salary of Mr. W. T. Preston?' and the answer is, 'Mr. Preston receives a salary of $3,000 per annum.'
Q. And some expenses?
A. A certain amount, yes, in travelling.
Q. I suppose the Auditor General's Report shows what he receives. How is his department financed?
A. He receives letters of credit which are issued in favour of the High Commissioner, Lord Strathcona, and Mr. Preston, against which cheques are issued, and a statement of the payments is sent monthly to Ottawa. The vouchers in support of the payment are checked and transmitted to the Auditor General.
Q. In this information you gave me in reference to Mr. Preston, you gave me a report only up to February 28. Why was that?
A. Well, he reports monthly, but sometimes they are a little slow in getting here.

By Mr. Lennox:

Q. Theoretically it is monthly, but practically it is something else?

By Mr. Wilson (Lennox):

Q. That is several months late, he reports directly to the department, and does not report to Lord Strathcona?
A. He reports to Lord Strathcona now.
Q. And then Lord Strathcona reports to the department?
A. He sends a statement out with his vouchers.

By Mr. Barr:

Q. He does not report to the department at all?
A. He is not supposed to.
Q. But does he?
A. We get many letters from him, yes.
Q. Yes, but no report.
A. The monthly report comes through Lord Strathcona.

By Mr. Wilson (Lennox):

Q. What check have you upon the expenditure of the money, from whom does he take instruction?
A. From Lord Strathcona.
Q. As to what he shall do all the time?
A. Yes.
Q. How long has he been doing this?
A. For two or three months.
Q. Why was the change made?
A. I cannot say, I am sure.

APPENDIX No. 2

Q. You know he used to have full control prior to that?
A. He did have full control.
Q. For how long?
A. I cannot say.
Q. He had full control when you came into office?
A. Yes.
Q. How long have you been here?
A. Since January, 1902.
Q. And he had full control to do as he wished until about three months ago?
A. Not full control, he was under the Minister and the Deputy Minister.
Q. I know, but he did not have to report through Lord Strathcona, but to you?
A. Yes.
Q. The agents in the old country reported to him?
A. Yes.
Q. Whom do they report to now?
A. To him.
Q. Whom does their report come through now?
A. From him, through Lord Strathcona.
Q. You have no check other than what Lord Strathcona may have on him?
A. In what way?
Q. As to what he shall do with the money?
A. He estimates for it monthly.
Q. He makes a statement of what they will require?
A. He makes a statement of what he will require, and what it is for.
Q. And he reports what has been done with it?
A. He reports afterwards what is done with it. If the Minister does not think the money should be spent he will cut it off out of Mr. Preston's estimate.
Q. Does he make the estimate far enough ahead to have it checked over here?
A. He is supposed to be doing so.
Q. That is another thing, what he is supposed to do?
A. He does it.

By Mr. Lennox:

Q. He is supposed to estimate monthly?
A. Yes.
Q. But sometimes his estimates do not come in promptly?
A. Sometimes they are delayed.

By Mr. Barr:

Q. What is the latest report you have received?
A. I think we received one this or last week.
Q. Up to what date would that be?
A. I am not certain about that.

By Mr. Wilson (Lennox):

Q. Can you tell us how late you have received reports of his department, up to what date?
A. I cannot tell you that from memory.
Q. Perhaps you might make a memo of that and give it to us later, because I was struck with the fact that when you gave me this statement it was only up to February 28?
A. These accounts take a long time to check over, and that report up to February 28 would be the account after it got to the accountant's branch.

Q. If they were sent in monthly, how long would it take to check?
A. By the clerk?
Q. Yes.
A. Sometimes it will take a long time, it is quite a tedious matter.
Q. How long?
A. Perhaps a month.
Q. To check the monthly report of expenses?
A. To check the statement, yes.

By Mr. Lennox:

Q. It takes as long to go over and check the report as it takes to spend the money?
A. Sometimes it takes longer—what was it you wanted, Mr. Wilson?

Mr. Wilson (Lennox):

Q. I wanted the last report of expenditure, what it was, and for the year, up to that date. What I want is, the date of his latest report, and an account of the money spent up to that date since the first of July last, and of course the purposes for which it was spent? Now you have the questions there, in reference to the appropriations for 1904-5. The amount, as you know, is $972,426.04. How much of this sum will be expended on the continent of Europe, and in what countries?
A. There was one question before that, I think.
Q. Was there?
A. Yes. There was a question under whose supervision are the immigrants from European countries inspected before embarkation.
Q. Did you answer that one, as to how many immigrants had been stopped by Canadian officials?
A. Yes. The next question you asked was, 'Under whose supervision are the immigrants from European countries inspected before embarkation?' and the answer is, 'They are inspected under the supervision of the Board of Medical Officers and the medical officers of the steamship company.
Q. Are those officers paid by the steamship company?
A. I suppose so, they are not paid by us.
Q. They are not paid by the government.
A. Not by the Dominion government anyway.
Q. Do you not think it would be wise for us to have officials at the port of embarkation to get rid of the offscourings of civilization who sometimes cross?
A. I do not know about the 'offscouring' class of immigrants, we are getting a fine class of people.
Q. They are better than they were, I believe?
A. If we do not consider them suitable, we will send them back.
Q. Would it not be better to stop them before they come over?
A. That is a matter for the steamship companies, if they are willing to carry them over and take them back free, it is their lookout.
Q. I think it would be better for the steamship companies as well as for the Canadian government to stop them there, however that is a matter for the steamship companies you say?
A. There are no people landing in Canada that are not submitted to medical and civil inspection, every one of them is subject to a medical inspection and to a civil inspection.

By Mr. Herron:

Q. Did I understand you to say that there were 2,900 rejected at the boundary who were going to the United States?

A. I do not say so, no.
Q. I thought it was stated here.

By Mr. Wilson (Lennox):

Q. It was stated, but it is in the American report, it was not stated by Mr. Scott.

By Mr. Herron:

Q. Is that anywhere near correct, is there anywhere near that number?
A. Dr. Bryce will take up that subject when he comes before you later.
Q. Supposing you are 50 per cent within the mark, if half of that number had been stopped when going into the United States, and they have come direct from Europe, and then applied to the United States to cross the border, it is a matter for attention?
A. We have the same thing, people coming by the American ports were stopped when they arrived at Montreal.

By Mr. Lennox:

Q. Did they pass the American inspection?
A. They were all inspected at the port of entry, yes.
Q. And the same thing happens with men going through Canada to the United States?
A. They are stopped also. It is impossible for them to pass inspection and get into Canada unless they are all right.
Q. How do you say it is impossible for men to pass inspection and get into Canada unless they are all right?
A. Because they are not allowed in if they are not.
Q. There are some allowed into Canada that are not ultimately allowed into the United States?
A. It is a matter of medical opinion.
Q. But that does not look well?
A. It is matter of medical opinion.

By Mr. Wilson (Lennox):

Q. Do you know that during the last winter there was also a large number depending upon charity for a livelihood, if you can believe the official reports of the charitable institutions and the statements in the newspapers. I met a man on the train yesterday who said that no later than on Sunday last, he had three immigrants come to his place wanting something to eat; that was in Toronto. Of course that might happen anywhere, but it shows no matter how careful you are some may get in.
A. Certainly.
Q. Secondly, it shows if we had two inspections, one before they embark and the other after they landed, it would aid to check the trouble?
A. They are inspected on shipboard.

By Mr. Wright (Muskoka):

Q. Are they inspected with regard to their financial position on landing in Canada?
A. Yes.
Q. How much money must they have?
A. No stated sum.
Q. Mr. Wilson has just told us of three immigrants who were without money.
Mr. WILSON (Lennox).—It was without food they were.

Mr. WRIGHT (Muskoka).—They may have had money and still asked for food.

Mr. LENNOX.—There is no guarantee how long they will keep their money even if they have some when they come in.

By Mr. Herron:

Q. There were a number of European immigrants who missed their train at the Chaudière station a month ago, and they were found destitute without money, and many of them were poorly clothed, and they were fed by the citizens of Ottawa.

A. No, they were not. The department took care of them, and they got work the same day they landed here. There was no trouble about getting them work.

Q. These were the men who by chance missed their train and were found, the whole of them, without a dollar or a cent in the whole party. You will not take that to be a fair representative crowd of the whole immigration?

A. We do not believe everything we see in the papers. We never see immigrants go without a meal if they are hungry.

By Mr. Derbyshire:

Q. A large number of them beg even when they have money in their pocket?

A. Certainly.

By Mr. Wilson (Lennox):

Q. Well, now, taking the financial part. Do you see the amount that we are to spend this year is $972,426?

A. Yes.

Q. I want to know how much of that sum will be expended on the continent of Europe and in what countries; how much in Great Britain and Ireland, and how much in the United States, and how much in Canada, and for what purposes?

A. The estimated expenditure on the continent of Europe, comprising Germany, Austria, Hungary, Russia, Holland, Denmark, Luxemburg, Norway, Sweden, Finland and Switzerland is $90,786.

Q. That is more than there was last year?

A. The estimated expenditure for Iceland is $7,500; for France and Belgium, $35,500; for Great Britain and Ireland $239,000, and for the United States, $318,000.

Q. That is an increase of more than $100,000?

A. The estimated expenditure for Canada is $282,150.

Q. Now, then, tell us what these expenditures are for, these different expenditures, especially in Canada, $282,150. What do you do with that?

A. Contingencies, $17,000.

Q. What does that cover?

A. We take care of the immigrants when they land, for instance, travelling from here to Winnipeg, taking care of them, seeing that the trains are properly run and kept clean and lighted.

Q. Have they anything to do with locating them when they get there?

A. No, they turn them over to our representatives at Winnipeg.

Q. How much do you spend on that?

A. Seventeen thousand dollars. Then there is an item for the King's Printer, $5,000.

Q. What portion does he print?

A. Very little. That amount is for stationery, forms, and so on. Telegrams, freight and express charges paid at Ottawa, $4,000. Salaries of extra clerks at Ottawa, $9,500.

Q. That is the total amount for clerks?

A. That is the total amount.

Q. Does that include those permanently in the office ?
A. No.
Q. These are extra clerks ?
A. Yes.
Q. Nine thousand dollars for extra clerks ?
A. Yes.
Q. Is that for many more than you had last year ?
A. I cannot say. That is the estimated expenditure for this year.
Q. You do not remember what is was last year ?
A. I do not remember.

By Mr. Lake :

Q. Are these men who accompany the immigrants on the trains permanent officials?
A. No. They are paid $4 a day for every day they work.

By Mr. Wilson (Lennox):

Q. And expenses ?
A. Travelling expenses.

By Mr. Lake :

Q. One is sent up on every train ?
A. Where there are fifty or more immigrants.

By Mr. Wilson (Lennox):

Q. If there are more than that do you send more than one man ?
A. No.
Q. How many will a train carry ?
A. I have seen 17 coaches on a train and as high as 22 cars.
Q. That would mean 1,000 people ?
A. More than that. They would average 50 to a car.
Q. You would have more than one man to that train ?
A. No.
Q. You had better have them all large trains, then, it would be cheaper ?
A. We would not like to have them all that size.
Q. Well ?
A. Contingencies at seaport agencies, that is, like Halifax, St. John, Quebec, Montreal, Vancouver and Victoria, $12,000.
Q. Is that for extra help ?
A. No, that is what we propose to spend.
Q. In what way ?
A. Different expenditures that are incurred there.
Q. You must have some kind of outline of what it is for ?
A. These buildings have to be kept clean and it is simply based on the expenditure of the year before for that work, except that we have new agencies now at Vancouver and Victoria.

By Mr. Wright (Renfrew):

Q. What kind of immigrants come in from Vancouver and Victoria—from the United States?
A. Quite a number from the United States, and quite a few from Australia—a nice class of people.

By Mr. Wilson (Lennox):

Q. Those are the fellows they paid the passages over there for?

A. I should not wonder. Then there is an item for medical services and expenses, including salaries and expenses, of Doctors Howe, Potvin, Stewart, Hawkins, Milne, McAlpine and temporary quarantines, nurses, &c., in west, $15,000.

Q. I suppose you have all those salaries in detail?

A. No.

Q. That is a matter of very little difference, it is only a bagatelle the way we spend money?

A. Detention hospitals, Halifax, St. John, Quebec and Montreal, equipment, &c., $16,000. Allowances to hospitals in Manitoba and North-west Territories for treatment of immigrants, $5,000.

Q. Where are those located?

A. At Brandon, Dauphin, Regina, Medicine Hat, Calgary, Edmonton.

Q. I thought the Winnipeg hospital was the only one that gets a grant?

A. I did not mention Winnipeg.

Q. You give a grant to it, though?

A. That is given by the Agriculture Department.

Q. I suppose the money comes out of the public chest. You give these hospitals this $5,000 in consequence of their having to take care of immigrants, I suppose?

A. Yes, we pay the difference between the Territorial grant and $1 per day where the immigrant is unable to pay it.

Q. In addition to that $5,000 we give the Winnipeg hospital $4,000?

A. Winnipeg and St. Boniface. It is divided pro rata according to the number of days of treatment.

By Mr. Herron:

Q. Do our immigrants from the lower provinces, say Ontario and Quebec, have the privileges there?

A. We do not look upon people going from one part of Canada to another as immigrants.

By Mr. Lake:

Q. I had a great deal of difficulty a year or two ago at Grenfell. Some immigrants arrived there with an infectious disease, I think measles, and they were isolated and put into a building, which was rented I think, as an immigration building. And then the difficulty was to provide these people with provisions. I think the policemen took charge of the quarantine. The provisions were supplied, because the immigrants could not be allowed to starve, but there was a conflict of opinion between the Police Department and the Immigration Department as to who should pay for the provisions. I was writing on behalf of those who held the accounts for a couple of years?

A. Trouble of that kind arises where stuff is ordered before they get authority to do so.

By Mr. Derbyshire:

Q. The stuff would be required at once if the people were not to starve?

A. Yes.

By Mr. Wright (Renfrew):

Q. Is there any better arrangement now for such a case as that?

A. No case of that kind has arisen since I have been in the department. Then there is an item for uniforms for seaport and western agencies, $4,000.

APPENDIX No. 2

By Mr. Wilson (Lennox):

Q. How many uniforms do you give them in a year?
A. Two, a summer and a winter uniform.
Q. Sometimes more?
A. No.
Q. The Auditor General says so, that is all I know. There may have been overlapping?
A. No, summer and winter.
Q. You sometimes find more ?
A. Then there are grants to societies, the Ottawa Valley Immigration Aid Society, $1,500; Immigration Aid Society of Ottawa, $375; New Ontario Colonization Society, $100; Women's Protective Immigration Society, $1,500; Girls' Home of Welcome, $1,500, and proportion of grants to Quebec and Lake St. John Repatriation and Colonization Society and La Société de Repatriation de Colonization, Quebec, $4,000.
Q. What railway is that grant given to ?
A. In the Lake St. John Railway region they give free transportation over the railways to immigrants going in.
Q. That is like a bonus ?
A. No.

By Mr. Wright (Renfrew):

Q. Repatriation—doesn't that mean people who have gone to the United States and are coming back?
A. Yes.

By Mr. Wilson (Lennox):

Q. Why a railway should get anything is what I do not understand, because, personally, I do not believe in any kind of bonus to get immigrants. We have got about the only country that is worth coming to that will give free grants of land, and that is strong enough inducement without giving any bonus to anybody.
A. Yes.

By Mr. Barr :

Q. Where does this road run to ?
A. From Quebec to Lake St. John.
Q. Do they give free passes on it ?
A. No.

By Mr. Maclennan :

Q. These people coming from the United States would have a right to be treated as immigrants ?
A. Yes, people coming from the United States are immigrants.

By Mr. Lennox :

Q. That is free transportation in Canada—I understand you to say that it applies not only to those who come in from outside but to others as well.
A. Yes, they give reduced rates to the people going from one part of the country to another.

By Mr. Wilson (Lennox):

Q. How much is that grant to that railway ?
A. Eight thousand dollars.

Q. You have been giving that for a good while ?
A. I cannot tell you that. They are getting it when I came to the department.

By Mr. Lake :

Q. It is given to the railway to get settlers there ?
A. It is a pretty rough country, it is all timbered land.

Mr. Wilson (Lennox):

Q. What I object to is that you treat one part of the country different from another. We ought to have one system for every part of the country, and I am opposed to anything like a bonus to immigrants.
A. Of course, the Canadian Pacific Railway and the Canadian Northern really give a bonus, in this way: they give a reduced rate to settlers coming from the United States.

By Mr. Barr :

Q. Up there, there is really no agricultural lands given.
A. No. Then, there is an item for tents for settlers, $18,900.

By Mr. Wilson (Lennox):

Q. What did they cost apiece?
A. I cannot tell you that now.
Q. What have you been paying for tents ?
A. We did not get any last year.
Q. I think we had it up in the House the other day.
A. Yes.
Q. Twenty-five dollars for second-hand tents, I venture to say you did not buy them.
A. No.

By Mr. Barr:

Q. What is done with those old ones?
A. They are sold to settlers coming in.

By Mr. Wilson (Lennox):

Q. They are kept?
A. We put them out with land guides sometimes. A tent in that western country won't last very long. There is also a grant for construction of Metapedia immigration building, $1,500; miscellaneous expenses, $10,000; Commissioner Smith's expenditure for land guides, interpreters, temporary agents, clerks, travelling expenses, mattresses, provisions for halls and all expenses in connection with locating immigrants on the lands, $130,000.
Q. You have no details—only in bulk you are giving it?
A. I have no details, no.

By Mr. Lake:

Q. I think you should give the general scheme pursued in locating immigrants. I notice a change in the names of some of the immigration officials up there, so I presume there has been some reorganization?
A. What are they? I would be pleased to give any information.
Q. I would like to know what happens an immigrant from the time he arrives until he is located?

APPENDIX No. 2

A. If a man desires to take up a homestead the country is explained to him and he selects a certain district where he would like to go.

By Mr. Wilson (Lennox):

Q. Always reserving the Hudson Bay and School lands?

A. They are never settled on except by squatters. When the immigrant arrives at the district he wants to settle in we have land guides, and he is put in charge of one of them. We have also buildings at different points, like Regina, Davidson, Craik, Saskatoon, Lloydminster—all these points, we have immigration buildings. If the man has no farm experience——

Q. Do they have to provide their own provisions, or do you furnish them?

A. Occasionally we have to provide them with provisions.

Q. Even people who are able to buy?

A. No, not if they are able to pay for them.

Q. They would not be going out to settle on homesteads?

A. Possibly. There are some people who from lack of experience or money we advise not to go on homesteads. They are put out with farmers. We advertise in all the papers in the west for farmers to send their names for farm help, and in that way these men can get some experience and improve their financial condition.

By Mr. Wright (Muskoka):

Q. Have you buildings at Davidson except what the Saskatchewan Valley Land Company have?

A. We have a building of our own there. I do not know what the Saskatchewan Valley Land Company has.

By Mr. Lake:

Q. As soon as the settler arrives at the point which he has selected, how long do you keep him under your control after that?

A. We can get him located on the land as soon as possible. If a man has no money and cannot go to the hotel he is put in the immigrant building.

Q. Supposing he came up there to look around, and he cannot get a job, what do you do with him ?

A. According to our regulations we shelter him for seven days.

Q. And do these land guides of yours hire teams and take immigrants out through the country to select their land ?

A. No, the immigrant has to hire the team, most of the land guides own their own teams; the immigrant pays for the team, and we pay the land guide $2 a day for his work.

Q. What does the immigrant have to pay for the team on the average?

A. The price has gone up pretty high lately. They used to be able to get a team for $4 per day but now they are asked from $6 to $7.

By Mr. Lake :

Q. If they pay $6 or $7 per day for a team the land guide does pretty well.

A. Of course there are generally a number of men go out together to locate.

Q. I think if you made an effort you could get teams for less than that.

A. I do not know, I know the liverymen, and that is what they charge. Mr. Wilson can tell you what they charge, I think he had experience out there.

Mr. WILSON.—I did not have very much experience, I did not use them much.

By Mr. McIntyre :

Q. What is the rule with regard to a man going out there from Ontario or Quebec ? Does he get the same treatment as an immigrant coming from abroad in regard to assistance in locating his land ?

A. The Quebec or Ontario man has the same attention paid to him there as the foreigner has.

By Mr. Herron :

Q. I have heard the land agents state differently, that they have authority to drive out immigrants only, and that they had no authority to do that with men from our own provinces.

A. That is not right, every one is treated alike so far as the department is concerned.

By Mr. Wilson :

Q. I suppose there is no difference either in regard to the inspection of immigrants, whether they come from Great Britain or anywhere else.

A. Except that foreigners are probably more closely inspected.

By Mr. Herron :

Q. There is a great difference in the kind of people we get sometimes. I notice that in regard to one particular class here, one is rejected in every four, or less than one in four.

By Mr. Lake :

Q. I want to know whether any immigrant who arrives in that country has a right to be driven out to see the land upon which he desires to settle ?

A. Certainly, but he has to pay for the team.

Q. Then if you have a body of foreign immigrants arrive there, and you tell them there is land in a certain district, and if they do not choose to pay for the team they simply walk out there and take up their land ?

A. Yes, sometimes they walk hundreds of miles to select their land and they are allowed to settle on it unless we find that they are undesirable, in which case, at any time within the year, we deport them. Or if they are taken sick and have no means of being taken care of we take care of them, that is if they are sick within the year. But after they have been in the country for a year they are free from the Immigration Department. But with regard to the land grant, if they are dissatisfied with it, they are, under certain conditions, allowed to make a re-entry, but we have nothing to do with that.

Q. The Immigration Department has absolutely nothing to do with the re-entry for the land?

A. No.

Q. And they should have nothing to do with the re-entry?

A. Nothing. The only thing they have to do in the matter is to handle the immigrants and get them on the land.

By Mr. Wilson:

Q. I asked how many immigrants had arrived up to May 25?

A. Well, there is another item I can give you first with reference to the cost of printing. There is an item——

Q. There is an item about the cost of printing that was done?

A. Yes, I have it here, the cost of printing.

Q. Will you give us the number of immigrants up to date, whatever date you may have taxed it up to, the total number of arrivals?

APPENDIX No. 2

A. There is just this one more question on this financial matter that I would like to give the answer to.

Q. What is that?

A. Something about the printing.

Q. Yes, I have asked for the cost of printing in detail, that means for each document?

A. The estimated expenditure for advertising, maps, pamphlets, &c., including $11,000 worth of maps, atlases, geographies, &c., supplied on orders from members of parliament was $25,000, making a total estimated expenditure in Canada of $282,150.

Q. But that is not answering the question, I had asked the cost in each case for each of these documents?

A. That is a different question.

Q. Well, all right. You have a detailed statement there, have you, of each publication?

A. Yes, there is only one——

Q. You might have put that in, I do not suppose it is worth while spending the time of the Committee to read it?

A. There is only one book we have not been able to give the price of, that is the souvenir book of Canada. (Sample produced).

Q. You will surely give one of each of those to the members of the committee?

A. The matter of fixing the price of that book is in the hands of the King's Printer to be adjusted——

Q. Are they all covered like this sample?

A. I cannot say that; the department felt that there are many visitors coming to Canada from foreign countries, and we had need of something like this to give them; we never had anything like this before.

Q. Well, this is up to date, how many can you furnish us?

A. The members can have as many as they want, I suppose.

Q. Well, I want a thousand.

A. I suppose each member will have a copy.

Q. I understand then that each member will be entitled to a copy?

A. The price of this has not been fixed, and in the statement I have handed in there, there is a blank.

Statement handed in by Mr. Scott, as follows:—

CANADA.

Contingencies in Canada generally, including salaries and expenses of Messrs. Hillyard, Kehoe, Johnston, Charlebois, James White, Ross, Ward; expenses of Messrs. Speers, Scott, Robinson, &c.	$17,000
King's Printer's and other accounts, for stationery, forms printings, &c.	5,000
Telegrams, freight and express charges paid at Ottawa	4,000
Salaries of extra clerks at Ottawa	9,500
Contingencies, seaport agencies	12,000
Medical services and expenses including salaries and expenses of Drs. Howe, Potvin, Stewart, Hawkins, Milne, McAlpine and temporary quarantines, nurses, &c., in the west	15,000
Detention hospitals, Halifax, St. John, Quebec and Montreal, equipment, &c.	16,000
Allowances to hospitals in Manitoba and Northwest Territories for treatment of immigrants	5,000
Uniforms for seaport and western agencies	4,000

Grants to Societies—Ottawa Valley Immigration Aid Society, $1,500; Immigration Aid Society of Ottawa, $375; Colonization and Repatriation Society of Ontario, $375; New Ontario Colonization Society, $100; Women's Protective Immigration Society, $1,500; Girls' Home of Welcome, $1,500, and proportion of grants to Quebec and Lake St. John Railway; Quebec and Lake St. John Repatriation and Colonization Society and La Société de Repatriation de Colonization, Quebec, $4,000	9,250
Tents for settlers	18,900
Grant for construction of Metapedia immigration building.	1,500
Miscellaneous expenses	10,000
Commissioner Smith's expenditure for land guides, interpreters, temporary agents, clerks, travelling expenses, mattresses, provisions for halls and all expenses in connection with locating immigrants on lands	130,000
Advertising, maps, pamphlets, &c., including $11,000 worth of maps, atlases, geographies, &c., supplied on orders from members of parliament	25,000
Total	$282,150

Name of Publication.			$ cts.
Geography, English	225,000	6·44c. each	14,490 00
" Bound	1,000	24·44c. "	244 40
" French	100,000	5c. "	5,000 00
Atlas, English	160,000	5½c. "	8,800 00
" Folder	300,000	5c. "	15,000 00
" French	15,000	5c. "	750 00
" German	60,000	5c. "	3,000 00
" Dutch	25,000	6·44c. "	1,610 00
" Norwegian	15,000	7c. "	1,050 00
Observations on Canada Great West (Iddings)	5,000		136 67
Cartoon Book	300,000	$35 per M.	10,500 10
Prosperity Follows Settlement	52,250	4c. each	2,090 00
Edmonton Bulletin	1,400	5c. "	70 00
Selkirk Board of Trade	1,600	6c. "	96 00
Souvenir Book			
Canada in Harvest Time	500	$1 each	500 00
Story of a Manitoba Farmer	10,000	$3.00 per M.	30 00
Wheat Growing in Canada	2,000	$17.50 "	35 00
Report of Saginaw Delegates	3,000	$3.90 "	11 70
Post Cards	50,000	$6.50 "	325 00
Le Nouvel Ontario (Ribout)	5,000	6c. each	300 00
British Columbia, pamplet, French	5,000	7c. "	350 00
L'Ancien et le Nouvel-Ontario	10,000	6⅔c. "	640 00
Terres Données Gratuitement	10,000	2¾c. "	275 00
Saskatchewan et l'Ouest Canadien	10,000	3 7/10c. "	370 00
Conseils aux Colons	11,000	2⅕c. "	242 00
Lac St. John pamphlet	30,000	5c. "	1,500 00
Folder Maps.			
Where and How, English	304,520	$14.20 per M.	4,324 18
" " English	725,000	$10.85 "	7,866 25
" " Swedish	60,000	$10.85 "	651 00
" " Norwegian	45,000	$10.85 "	488 25
" " German	50,000	$10.85 "	542 50
Lloydminster Folder	30,000	$15.00 "	450 00
Information for Intending Settlers	20,900	$15.00 "	313 50
Maps.			
Comparative Area Maps	15,000	$5.00 per M.	75 00
Reversible School Map	10,000	0·56c. each	5,600 00
	3,218,170		

APPENDIX No. 2

Q. I suppose if you have no further information to give the Committee——
A. There are these figures in reference to the immigration now.

By Mr. Herron :

Q. Mr. Scott told us that all these agents who travel on the trains get $4 a day.
A. That is only for the days they work, they do very little in the winter time.
Q. Do they get travelling expenses besides ?
A. Of course they get travelling expenses.

By Mr. Lake :

Q. What do the permanent officers in the Northwest do in the winter time ?
A. In winter time—you take the ocean ports, for instance, Quebec is only open six months a year.

By Mr. Wilson :.

Q. Still you have quite a number of permanent officials there, how many are there?
A. About fifteen, I think.
Q. At Quebec, Montreal and St. John ?
A. Yes.
Q. What is the total number of immigrants you have coming in from all sources ?
A. I have here the immigration by months, comparing the fiscal year for 1903-4 with 1904-5—of course the number for May and June in the present fiscal year is estimated. The total immigration last year, that is, for 1903-4, was 130,331, and estimating May of the present year at 29,088 and June at 19,396, we estimate that the number for the present fiscal year will be 148,261.

THE COMPARISON BY MONTHS IS AS FOLLOWS:—

	1903-4.	1904-5.
July	12,088	12,153
August	10,333	11,163
September	9,067	10,321
October	8,961	8,564
November	6,841	7,623
December	4,349	4,762
January	3,007	4,053
February	4,152	4,601
March	12,157	12,897
April	19,351	23,640
May	23,916	29,088*
June	16,109	19,396*
Totals	130,331	148,261

Q. Have you not the figures for May up to pretty nearly the end of it, I should think you would have them by this time.
A. I think we have the figures here in the Department, but it is difficult to get them, we only get the reports in once a month, but I know I did ask for them to be sent by wire.
Q. Hon. Mr. Oliver gave us in the House that same estimate, but I thought may be you would have something later as far as May was concerned—I thought you would have the actual figures
A. No.

* May and June of present fiscal year estimated.

Q. Because I notice the increase in expenditure is somewhat large.

A. We had not the figures.

By Mr. Lake:

Q. Isn't it possible that these immigration officials in the Northwest should get up the statistical work, I think it would be better than having a number of them working about one-half the year.

A. A number of them are only paid for the time they do work, but wherever we have buildings we must have permanent officials there to take care of them; they would not be there if we did not.

Q. How many officials are there at Regina ?

A. We have an agent, Mr. Schliff, and an interpreter, and we have an assistant general colonization agent who makes his headquarters there, Mr. Bredt.

Q. And Mr. Porter is also there ?

A. Yes, but he has nothing to do with my branch

Q. Then there is some mistake in an answer to a question of mine the other day.

A. We have only three officers there.

Q. Mr. Porter is not an immigration agent there ?

A. No, he is not.

Mr. SCOTT.—I beg to submit the following statements om immigration and expenditure .—

IMMIGRATION TO CANADA AS PER ANNUAL REPORT OF 1903-04.

Page 147.	Total immigrants to Canada (not including Pacific Coast)..	104,119	
	Total immigrants via Canada with destination stated to be United States..	16,463	
	Actual applicants for entrance to United States at sea-board and border ports	30,374	
Page 166.	Total deportations on arrival at seaports..	270	
Page 169.	Total deportations of all nationalities after admission (within one year).. ..	85	
	Total British immigrants. ..	50,374	
Page 169.	Total British immigrants deported on arrival at seaports..		8
	Total British immigrants deported after admission (within one year)..		66
	Ratio of deportations to total immigrants to Canada.		1 in 293
	Ratio of British deportations to total British immigrants to Canada..		1 in 680
	Ratio of Non-British deportations to total Non-British immigrants to Canada..		1 in 191

STATEMENT OF EXPENDITURE by Mr. W. T. R. Preston, from 1st July, 1904, to 28th February, 1905.

Service.	Amount.	Service.	Amount.
Salaries, agents in England, viz.: A. F. Jury, Liverpool, $1,332.32 ; G. H. Mitchell, Birmingham, $933.26 ; Thos. Duncan, 6 mos., $899.98 ; C. A. Jones, 5 mos., $500..	$3,666 56	Brought forward..	
Salaries, agents in Scotland, viz. : J. B. Walker, Glasgow, $1,199.97, and John Edgar with exhibition wagon, $1,215..	2,414 97	Salaries and general expenses, Mr. Preston's office, including salaries, Mr. Preston, $2,000.04 ; C. F. Just, $818.82 ; C. A. Allen, $624.90, and temporary clerks, office rent, travelling expenses, furniture, stationery, &c..	12,993 13
Salaries, agents in Ireland, viz. : E. O'Kelly, Belfast, $1,333.32, and J. Webster, Dublin, $1,199.96..	2,533 28	Contingencies and general expenses, agents on continent as above.. ..	4,648 83
Salary, agent in Wales, viz. : H. M. Murray..	999 92	Printing, advertising, &c., G.B., and Ireland..	26,853 87
Salaries, agents on continent, viz. : P. Wiallard, Paris, $1,666.66, and D. T. de Cœli, Belgium, $800.. ..	2,466 66	Printing, advertising, &c., continent.	1,487 54
Contingencies and general expenses of agencies in—		Telegrams, freight and express charges, Mr. Preston's office..	754 61
England as above..	4,388 47	British bonuses..	201 00
Scotland as above..	2,289 19	Icelandic bonuses, &c..	1,107 17
Ireland as above..	2,029 72	Lecturers' expenses, &c..	319 21
Wales as above..	592 21	Miscellaneous expenses farm delegates, passages, distressed Canadians, &c..	1,615 51
Carried forward..		Total..	$71,361 85

Q. Did you have an interview with Rider Haggard when he was here ?
A. I did.
Q. Have you anything that you can give the Committee as to what his views were?
A. Not from the conversation I had with him.

Mr. Wilson asked for figures with regard to the immigration into Canada for the period up to the 1st of July.

Mr. Wright (Muskoka):

Q. What is the general policy of the Department of Immigration with regard to the direction of immigrants coming into the country ? Is there any provision made for directing them up to New Ontario, we have a large stretch of country, splendid land up there, and what I want to know is whether any effort at all is being made by the Dominion officials to direct them to that district ?

A. Not particularly to New Ontario, but we do direct as many as we can to the farmers in New Ontario, that is farmers and agricultural labourers.

Q. I think there should be some effort made in that direction.

A. The Ontario government officials tell me that they use their endeavours to keep the newly-arrived immigrants out of New Ontario because they are unsuitable for that country. They would sooner have them go into old Ontario and gain some experience before they go into that new country.

By Mr Lake :

Q. Can you give us a map showing the location of the different colonies of European immigrants established in the Northwest ?

A. I can prepare you one.

Q. I should like very much to get one.

By Mr. Wright (Muskoka):

Q. I see you bonus a railway in Quebec to take settlers up into that section of Quebec that bears about the same relation to that province that New Ontario does to old Ontario, and it would appear that the settlement of that northern part of Quebec is a matter that engages the attention of the Dominion Immigration Department, and I wanted to know if there is any effort to settle up the Temiscaming part of New Ontario?

A. No, the Ontario government owns their lands and we have only one agent there, at Nipissing.

By Mr. Lake:

Q. Don't the Quebec goverment own their land?
A. They own their lands, too.

By Mr. Barr:

Q. Then there is that difference, here, you are bonusing a railway to take in settlers?
A. And they own the railway, too.

By Mr. Wright (Muskoka):

Q. The Ontario government have a railway running up there. It is not the general policy of the government?

A. I can only give you the figures. As I said, we have one agent devoting his attention to New Ontario at Nipissing, Mr. Ribault.

Q. What salary does he get?
A. I think it is $100 a month.

By Mr. Wilson (Lennox):

Q. Is that all you have to give us?
A. That is all the questions.
Q. Have you any information to volunteer us?
A. I think that is everything. Dr Bryce will speak of what the medical inspector has done.

By Mr. Maclennan:

Q. Who gives the instructions to these immigration agents as to the class of people that they should invite to Canada as immigrants?
A. The agents work in the field. They are instructed to bring——
Q. They are instructed—who gives the instructions, the department?
A. Originally, the minister instructs them. He names the classes of people we want in Canada, agriculturists, agricultural labourers and domestic servants, and we advertise for these people.
Q. I read in the newspapers that one agent, I think a lady in some part of England, declared she would have no Roman Catholics come to Canada. She was canvassing Protestants to come to this company. Were such instructions issued?
A. No, I cannot bring the correspondence in relation to that. The statements made in the newspapers were not correct. She was not in the employ of the department. She was working on commission. That is Mrs. Sanford that was mentioned. She belongs to some association in Winnipeg. We pay her $3 commission on every servant girl she sends out. She pays her own transportation and expenses, and brings them out. She advertises in the western papers that he is going over, and asks the people who want girls to advance the fare and they correspond with her. She, of course, asks references from them that they are fit persons to keep a servant girl, and she also gets references from each girl she brings out from her mistress. She brings out whatever class of girl the people ask for. If they ask for a girl of Roman Catholic religion she brings one out, or if they ask for a girl who is a Methodist she brings a Methodist.
Q. The statement was that they did not want Roman Catholics?
A. The statement is not correct from our reports.

By Mr. Wilson (Lennox):

Q. I met a man on the train one day last week, a Scotchman, who said if they could do as well for the Scotchman as they have been doing for the Doukhobor he would be quite satisfied?
A. We treat them all just the same.
Q. You were not here when the Doukhobors were brought out?
A. No.
Q. We gave them $5 a head, we give the other people nothing. We give it to the steamboat agents.
A. They don't pay as much for the Scotchman——
Q. As for the Doukhobor?
A. No.

By Mr. Herron:

Q. Have you much to do with the colonization of these foreigners in colonies. How does it come that they will all get together in the North-west?
A. We try to scatter them as much as possible into small colonies. It is reasonable to suppose that a foreigner coming out should want to get with his own people. I suppose if we were going to Germany ourselves, and did not understand the German

language, we would want to go where English was spoken. It is the same with the foreigners who come here. They want to get where their own language is spoken.

Q. The immigration policy in the North-west is to put the foreigners together?

A. We try to scatter them as much as possible. It is the same with the United States. There are sections where you never hear a word of English spoken, but their children are being taught English in the schools.

Q. It takes about four times as long to change them as it would if they were spread all over the country?

(No answer).

By Mr. Lake:

Q. As long as the colonies are kept as small as possible——

A. Take the Mennonites who went into Manitoba in 1869 and 1870. They all speak English now, except the old ones who would never learn it.

By Mr. Herron:

Q. It is the policy of the government then to locate them——

A. In as small colonies as possible.

Q. To scatter them all over the country?

A. Yes. Of course, we put these foreigners on land that you could not put English-speaking settlers on.

By Mr. Barr:

Q. You put them on the best land?

A. On the poorest land.

Q. My experience has been that they are on the best land?

A. That was several years ago.

By Mr. Herron:

Q. This has reference to a small portion of the immigration from Europe?

A. We endeavour to scatter them in as small colonies as possible and to scatter them, and we put them on land that English-speaking people would not look at.

By Mr. Wilson (Lennox):

Q. Have you anything to show the number of people in the west from each country?

A. I could prepare a map for the committee showing where each of the colonies is.

Mr. Wilson.—I do not think it is worth while.

Witness discharged.

Having read over the preceding transcript of my evidence, I find it correct.

W. D. SCOTT,
Superintendent of Immigration.

Dr. P. H. BRYCE, Medical Superintendent of Immigration, was present by request of the Committee and was examined, as follows:—

Mr. Chairman and Gentlemen, I would like to draw your attention to a rather interesting comparison between the number of immigrants coming into Canada who have been medically inspected and treated, compared with those who came into the United States and were medically inspected and treated.

By Mr. Wilson:

Q. That would be very interesting?

A. I had noticed like everyone else had, that a great deal had been said about the relative degree of strictness with which the Americans had treated immigrants——

Q. Particularly their officers in their annual reports?

A. Yes, and I thought that a comparison taken from last year's report of the United States Department, and of our own, would be of interest. I have prepared a few copies of this comparison, which I shall hand to the members of the Committee in order that they may be able to follow me. On page 2 of this comparison, you will find a reference to the page in the American annual report for the last year, and to the total immigrants who arrived in the country. It is on page 35 of the American report that you will find the table of the totals. The total number of immigrants entering the United States was 937,371, and of this total there were 27,136 Asiatics and 17,134 Phillipines, Australians, &c., leaving the total immigration from Europe, 893,101.

By Mr. Wright (Muskoka)

Q. I would like to ask whether we have corresponding officers at New York and other American ports for immigrants booked through for Canada?

A. I might just state, with regard to the port of New York, which is the chief American port, that we are making arrangements for a medical officer there to do the work as they do it at our ports. It has been under arrangement since February. The total number of immigrants from the United States to Canada, according to their report——

By Mr. Wilson:

Q. Before you go on with that, I understand that there will be very little use stationing a gentleman there at the American ports, because they stop every immigrant, no matter what his destination, if he does not comply with their laws.

A. That is one of the difficulties we are trying to arrange with them.

The total number of immigrants to the United States, whether via United States ports, or Canadian ports, debarred from entering the United States, owing to disease, as recorded on page 7 of the American annual report, was 1,560—that is, from loathsome or contagious diseases. The total number of immigrants from Europe, whether via the United States or Canadian ports, debarred owing to disease, was 1,318, that is, the Japs are taken out of the 1,560. The total number of immigrants from Europe who were debarred at the ports of the United States was 544. You will find the figures there, I get them by subtracting those debarred in Canada from the total number from Europe debarred from entering the United States. There were only 544 debarred on account of disease at Boston, New York and Baltimore, the total number of Japs debarred on account of disease was 242.

APPENDIX No. 2

By Mr. Lake :

Q. Might I ask whether the immigrants destined for Canada coming via United States ports are inspected the same as though destined for United States ports ?

A. Yes, just the same.

Q. By the American officials ?

A. Just the same, their law does not permit them, as they say, to give any consideration to the fact that immigrants are bound for Canada, but we are hoping that we shall have that matter arranged with them.

By Mr. Wilson:

Q. How many did you say were detained at their ports?

A. 544 on account of disease were debarred at American ports.

Q. Those who were debarred on account of loathsome diseases were 1,560?

A. If you will examine page 84 you will find that of this 1,560, 774 were debarred en route to the United States through Canada.

By Mr. Lake:

Q. On account of coming through Canada?

A. On page 84 of the United States report the total immigrants via Canada to the United States, there especially debarred on account of disease was 774.

Q. Would they be added to the 544 at American ports?

A. Add both, please, to the Japs excluded and you will get the 1,560.

By Mr. Scott:

Q. That is, there were more debarred at the Canadian boundary than at the American ports?

A. It is rather interesting to note that of the 30,374 immigrants from Europe who tried to enter the United States through Canada, 774 were debarred, whereas of the 893,101 immigrants from Europe to the United States, via United States, only 544 were debarred on account of loathsome disease, showing the difference in the relative inspection, or else in the relative quality of the immigrants.

By Mr. Wilson:

Q. They say here, there were 7,994 debarred?

A. You see they were debarred for different reasons. I am referring in this comparison only to those in which I am interested, namely, those who were debarred on account of disease. All the comparisons I make are with reference to those debarred by disease only.

Q. I think I had better just let you give us your report?

A. It was stated that it was on account of disease that these immigrants were trying to get in through Canada, and I wish to make the comparison.

The total British immigrants to the United States, and this is rather an interesting comparison also I think, via the United States ports and Canada, was 88,947; that is, there were nearly 90,000 British people who entered the United States or tried to enter.

By Mr. Wright (Muskoka):

Q. In one year?

A. Yes, in one year. Of those British immigrants who entered the United States via United States ports and Canada, as you will see on page 7 of the United States Immigration report, there were only 33 debarred, that is, out of 90,000 roughly speaking, only 33 British were debarred, so you can readily see that they find our British immigrants are very good.

By Mr. Wilson:

Q. They all think that?

A. Yes. The total number that were debarred was 33, and out of this 33, 24 were trying to enter the United States through Canadian ports, in other words, at the port of New York out of 88,000 British immigrants only 9 were debarred.

Q. Does that not prove another thing, that the inspection of these immigrants before boarding the ships was done better in their case than in ours?

A. It is the same class of inspection, the doctors of the shipping companies, and at the same ports, medical men examine them.

By Mr. Barr:

Q. Is there not a lot of cases of trachoma coming to the port of Montreal?

A. I am coming to that in a little while.

By Mr. Wilson:

Q. Is it not a fact that the steamship companies take those who they think will be able to land in the United States direct, and those they think would not get through so easy, do they not take them through Canada?

Mr. W. D. Scott.—One of the first questions they ask an immigrant when he lands, at a Canadian port is: 'Why do you not come by an American port, why do you come by a Canadian port?'

A. The total number of British debarred from the United States ports was nine and the total number debarred at the Canadian ports was 24. The ratio of Europeans via the United States ports and Canada who were debarred entry into the United States on account of disease, was one immigrant in every 677.

By Mr. Wright (Muskoka):

Q. Does that mean non-British?

A. That means all. The ratio of Europeans via United States ports and Canada who were non-British, and were debarred was one in every 626. The ratio of British immigrants via United States ports and Canada, who were debarred, was only one in every 2,685 immigrants.

By Mr. Wilson (Lennox):

Q. You debarred one in every 1,100?

A. More than that. The ratio of Asiatics via United States ports and Canada who were debarred, was one in every 112. The ratio of Europeans, via Canada to the United States who were debarred, was one in 39 as compared with one in 677.

Q. That is, of all Europeans?

A. Yes, more than one-half the total of the Europeans who were debarred from the United States were debarred on entering the United States via Canada, 774 as to 544, debarred on account of disease.

Q. That might be taken to prove the other thing?

A. When we go into the details I will give you some very interesting figures bearing upon the work of inspection at various United States entry ports. For instance, 12 immigrants were debarred on account of trachoma at the port of Detroit, while at Montreal, where there were ten times as many who tried to enter, applied for entry to the United States, there was not a single Canadian debarred.

By Mr. Barr:

Q. Is not trachoma catching?

A. The only point, doctor, in your experience and mine is that we are aware that trachoma is not now a disease prevalent in Canada—in upper Canada, at any rate.

You see, whether it is right or wrong, I am bringing attention to the fact that of the hundreds at Montreal, not one was debarred for trachoma. If you look at the report you will find extracts from our own report, to state that the total immigrants entering Canada, not including those from the Pacific coast, amounted to 104,119, entering at Quebec, Montreal, Halifax and St. John. Of those, there were 16,463 whose destination was stated to be the United States.

Q. Sixteen thousand out of how many ?

A. Out of 104,000, who arrived at Canadian ports. The actual applicants for entrance to the United States at seaboard and border ports such as Montreal, was 30,374, who asked to get into the United States as immigrants. Our total deportations on arrival at the seaboard, of those 104,119, because in our deportations are included those detained and turned over to us by the Americans, was 270. That number likewise is included in the American report, amongst those debarred.

Q. They claim to have debarred a good many more?

A. I know, and it is quite correct. These 270 include those returned by the United States who were debarred at the seaboard. The total deportations of all nationalities within one year after admission to Canada, was, according to the table in the annual report, 85.

Q. What table is that?

A. The table on page 169 in the annual report. The total number of British immigrants—and this is the interesting part, because we are going to make a comparison with the American deportations—the total number of British immigrants arriving in Canada, via our four ports was 50,374, or nearly half of all the immigrants entering Canada, I mean to say entering Canada via ocean ports, 50,000 out of 104,000. You will have noticed how few British were deported by the Americans, so presumably you would expect the ratio of deportation to be on a parallel, and our deportations would not be the same because the British immigration into Canada is as one to one foreigner, while the British immigration into the United States is as one to ten foreigners, that is the difference.

Q. Half our immigration comes from Great Britain?

A. Yes, and this year rather more.

By Mr. Lake:

Q. You are not counting the American immigration?

A. I am counting all that came in at Halifax, St. John, Quebec and Montreal, 104,000, nearly one-half of whom are British, viz., 50,000. Of those that enter New York, as you will see by looking at the statement, there were 88,947 British immigrants entering the United States, as compared with 937,000 of all classes. Less than one-tenth of those entering the United States are of British origin.

By Mr. Wright (Muskoka):

Q. Have you found it necessary to make any inspection of American immigrants entering the west?

A. We have not touched them medically as yet, only at Portal recently instructions were given the agents to pick out any undesirable characters that may try to get in. The total British immigration into Canada was 50,000, and of those there were eight deported upon arrival at seaports, and 66 deported within one year after admission. The ratio of deportations to total immigrants to Canada was one in every 293 who came in. The ratio of deportation from the United States was one immigrant deported for every 677 immigrants arrived. Yet we had 50 per cent British, and they had only one British for every nine foreigners, and they deported only 33 British in all, on account of disease. So necessarily the proportion of foreigners that we deported and even of British that we deported is three times greater. The following

extract from the last annual report of the United States upon the immigration to that country demonstrates what I have just stated:—

Page 35.	Total immigrants to the United States..	937,371	Page 35.	Total British to United States via United States ports and Canada..	88,614
	Total Asiatics..	27,136	Page 7.	Total British to United States ports and Canada debarred..	33
	Total Philippinos, Australians, &c..	17,134	Page 84.	Total British debarred at United States seaports..	9
	Total immigrants from Europe..	893,101		Total British to United States , via Canada, debarred..	24
Page 78.	Total immigrants to the United States via Canada..	30,374		Ratio of Europeans via United States ports and Canada, debarred..	1 in 677
Page 7.	Total immigrants, whether via United States or Canadian ports, debarred owing to disease..	1,560		Ratio of Europeans via United States ports and Canada, Non-British debarred..	1 in 626
	Total immigrants from Europe, whether via United States or Canadian ports debarred owing to disease..	1,318		Ratio of British via United States ports and Canada debarred..	1 in 2,685
	Total immigrants from Europe, at United States ports, debarred..	544		Ratio of Asiatics via United States ports and Canada debarred..	1 in 112
	Total Japanese, &c., to United States ports debarred..	242		Ratio of Europeans via Canada debarred..	1 in 39
Page 84.	Total immigrants via Canadian to the United States from Europe debarred on account of disease (Favus and Trachoma 505)..	774		or more than one-half the total of Europeans debarred from the United, States, i.e., 774..	544
	Total Japanese, &c, (by Canada)	0		Ratio of Europeans debarred at United States ports..	1 in 1,584

By Mr. Wilson (Lennox):

Q. Were there many of those British brought into the United States as contract labourers?

A. I am speaking only of those who were diseased. I am not dealing with the contract labour question at all.

By Mr. Lake:

Q. These 66 who were debarred within one year were all debarred on account of disease?

A. Yes, you will find it on page 169 of the report. That shows those that arrived at Winnipeg, or Brandon, or Regina, or Montreal. A few of them were insane.

Q. They were suffering from disease at the time they came in?

A. No, very few of them, indeed.

Q. They took the disease after arriving within one year?

A. If an immigrant wants to go home and has not any money he is not much use to us, and the department says he may go home.

By Mr. Wilson (Lennox):

Q. Could you give any of us a trip on those terms?

A. I could not promise, but they are generally allowed their passage home on the steamer within the one year. The ratio of British deportations to total British immigrants into Canada instead of being as it is in the States one deportation for every 2,685, was actully last year one in every 680.

By Mr. Wilson (Lennox):

Q. How do you account for the much larger ratio of diseased people taking the Canadian route?

A. I am sure there is not a larger proportion.

Q. Your figures seem to show that?

A. No, there are two ways of looking at it. I will illustrate it. This spring, we never imagined we would have as many people arrive at Montreal after passing New York that would require medical attention, yet since the middle of April to the end of May we have actually detained and treated in Montreal hospital 136 people for trachoma or other disease after having passed New York.

By Mr. Wilson (Lennox):

Q. They might have developed it later on?

A. No, it is only twelve hours from New York to Montreal. We have to note the actual situation, namely, that the Americans were too busy with 6,000 or 8,000 immigrants a day, to look after them thoroughly. There were so many, that many of them probably were indifferently examined, whether they were British or otherwise. The ratio of non-British deportations, that is, of those coming into Canada who are not British, that is this 54,000, of whom we sent back one in every 191, as compared with deportations of foreigners from the United States of one in every 626. It appears to me, Mr. Chairman, that whether we do the work well or ill, the figures seem to show that we, at any rate, are equally strict, or more than as strict, as the American officers at their own ports.

By Mr. Wilson:

Q. You can take two views of that, even from your own figures?

A. Exactly.

Q. It seems an anomaly that the Americans should be extra strict on immigrants that come from Canada and careless as regards those coming to their own ports?

A. I am not prepared to give an explanation altogether, but there are several explanations as you suggest. In the first place their officers have very little to do at the Canadian ports. You see they had spread out over the whole of the last year at many border points the inspection of 16,000 immigrants who went in parties. At each of those ports there is probably a staff of ten to twelve officers at each port, at Quebec, Halifax and St. John. I think at Montreal, that is their headquarters, that there is a staff of 20 people to examine those who come from abroad, plus those who want to enter from Canada proper, that is those who are already in the country. Thus, you will understand, that they have time to do their work very, very thoroughly, some would say too thoroughly, but whether that is true or not, that is one part of the explanation. It also happens that at Montreal, where they have a very large staff, they have an extremely active medical officer who is a Canadian. Personally, I felt perhaps that I could not always agree with his views as to what trachoma was in particular cases under his observation, but that is a matter of opinion. At the same time leaving that out, the work is done thoroughly, because there are only a few off each ship, and they spend more time in the examination of the individual immigrant, and may find more reason for holding people back, while we have to inspect two or three thousand people in a day. Another reason is that I am quite certain they do not wish to especially encourage the use of Canadian steamship lines in the business of bringing immigrants destined for the United States via Canada. It is not reasonable to suppose they do, and probably it is not reasonable for us to make any objections to their view. But at the same time it is a matter for remark that 744 out of the 30,000 that wanted to enter the United States last year via Canada were debarred, as compared with 544 out of more than 800,000 who entered via Boston, New York and Baltimore on American ships. I cannot say any more on that point, except that these are the facts. When we point out the further fact that nearly one half entering Canada are British, and that practically they debarred no British immigrants on account of disease, only 33 being debarred out of 88,000, it is not proper to say there has not been a relative discrimination.

By Mr. Lake :

Q. You accept their judgment, and if they reject a man going into the United States on account of disease, you, as a matter of course, send that man back ?

A. Well, during this last year, I might say, there has been a considerable alteration in the method of procedure, since the government has definitely taken charge of the immigrant hospitals at the seaports. It used to be that when a trachoma case came into Quebec and was debarred by the United States people, we had no hospital and the case was sent out of the country.

By Mr. Wilson :

Q. It is not long since we began to deport them ?

A. Within three years. Last year the companies said to the American officers: 'Are you willing to allow this patient to go into the hospital for treatment, and will you review your decision if, after several weeks' treatment they recover ?' They thought they could, under the reading of their Act, because it was not an American port. The result was that last year a very considerable number of those held in the hospitals for treatment were those who were debarred by the American officers and a large number of them were, after treatment, allowed to go into the United States.

By Mr. Wright (Muskoka):

Q. In regard to the arrangement for the inspection of these people at the border, apparently if I gather correctly what you say about it, there is a great carelessness about people going into the United States, and apparently a large number of diseased people managed to get through when they come in through the port of New York, and other American ports. I should imagine that a great many of these people who thus find entrance into the United States, would eventually find their way into Canada.

A. I do not know, I think not. I think that all those who are coming into Canada in the west so far are old United States settlers, many of whom have sold their farms, and want to go north with their money in order to get the cheaper and better lands in Canada. But the cases that we are specially anxious about and those that our American friends are specially anxious about, are those foreigners from southern Europe. These are the people that are mostly diseased, and these are the persons that give us the most trouble, and I have not heard of that class of people going on the land either in Canada or the United States.

Q. If I understand correctly, we are spending a good deal of money to bring these immigrants in from southern Europe, and the United States are doing nothing in the way of encouraging that immigration at all ?

A. I think that is a mistake, as far as I understand the work, if it is not, Mr. Scott can tell you better, there is rather discouragement on the part of the government, of all immigration from southern Europe, at any rate it is not paid for.

Mr. Scott.—We discourage, as far as possible, southern European immigration, we find it is not suitable.

By Mr. Wilson :

Q. Since Mr. Preston went there he has made great efforts to get it.

Mr. W. D. Scott.—There is no commission paid on Italians or anything of that kind.

By Mr. Wilson :

Q. Do you give them a bonus, or anything of that kind, when they come ?

A. We do not.

Q. You do not think the Americans spend any of the people's money, at all, on immigration, do you ?

A. They do in assisting the immigrants to locate on their lands in the west, and the United States make large grants for immigration purposes in the west.

Q. They charge $2 a head for immigrants that come into the country?

A. I am aware of that.

By Mr. Herron :

Q. Do you not think it is a bad proposition for our government to give the steamship companies a bonus of $5 a head to bring immigrants from southern Europe ?

Mr. W. D. Scott.—We do not, now.

Q. You did at one time ?

Mr. W. D. Scott.—We do not, now.

Q. Has that ceased entirely ?

Mr. W. D. Scott.—It has ceased absolutely. We only pay $5 per head on farmers and agriculturists.

By Mr. Wilson :

Q. Do you not think it is time to stop that too ?

Mr. W. D. Scott.—We have lots of land to fill up yet.

By Mr. Wilson:

Q. We have an advertisement in our good crops for many years that has given us a permanent place in the world, and it is a question whether it is desirable to spend large sums on immigration in the future.

Mr. W. D. Scott.—In the United States the opposition to immigration is very strong. You know, the railway companies, banks and big land companies strongly oppose emigration from the United States to Canada.

By Mr. Herron :

Q. We are getting a very good class of their settlers.

A. Yes.

Q. If they were paupers such as we are getting from Europe, in some instances they would be glad to get rid of them, but it is their best settlers that we are getting.

Dr. Bryce.—'I was going to say one thing, that I am convinced, after seeing the immigrants at New York and Boston and at our own ports, that there is no question at all in my mind, and I think not in the minds of the American officials themselves, that the present immigration to Canada is of a very much superior character to that to the United States, owing to its being largely British.

By Mr. Wilson (Lennox):

Q. Of course that is more particularly of those coming in during the last few years.

A. I cannot say. I am only speaking of what I have seen.

Mr. Scott.—I saw a boat land her passengers at Quebec the other day, the *Victorian,* from Glasgow. There could not be anywhere in the world a finer lot of men and women.

Dr. Bryce.—I saw 1,100 British come in at Halifax in March, not a single one of whom was detained. I might add that during the year, now nearly closing, the de-

portations amounted to even more than double what they did last year, or some 550. The strictness in examination seems to continue rather than decrease. It illustrates the fact that in spite of the fact that Americans had been supposed to be doing such good work, still such undesirable classes of immigrants do come in through the United States.

Having read over the preceding transcript of my evidence, I find it correct.

P. H. BRYCE,
Dominion Medical Superintendent of Immigration.

APPENDIX

TO THE

PRECEDING REPORT

RESOLUTIONS ADOPTED BY THE COMMITTEE.

The following resolutions were adopted by the Committee as recommendations for the promotion of the agricultural and industrial interests of the Dominion:—

No. 1.—NOMINATION OF A CHAIRMAN.

Moved by Mr. Ethier,

Seconded by Mr. Logan—That the Hon. Mr. Greenway be Chairman of the Committee for the current session of parliament.—Motion adopted.

COMMITTEE ROOM 34,
FRIDAY, January 27, 1905.

No. 2.—TO TAKE DOWN EVIDENCE.

Moved by Mr. Findlay,

Seconded by Mr. Brown—That the Committee ask leave of the House to employ a shorthand writer to take down such evidence as they may deem proper.—Motion adopted.

COMMITTEE ROOM 34,
THURSDAY, February 16, 1905.

No. 3.—THE REVISION OF DR. M'LENNAN'S EVIDENCE OF 1904.

Moved by Mr. Wright (Renfrew),

Seconded by Mr. Wilson (Lennox)—That objection having been made to the printing and publication of the evidence of Professor McLennan on the Metric system, it is hereby resolved that the said evidence be not further printed and published, and that Professor McLennan be requested to have his lecture re-written to be inserted in the official report and distributed according to the instruction given by this Committee last year, and that the King's Printer be furnished with a copy of this resolution.'—Motion adopted.

COMMITTEE ROOM,
THURSDAY, February 16, 1905.

No. 4.—SELECTION OF SUB-COMMITTEE ON RAILWAY RATES.

Moved by Mr. Wilson (Lennox and Addington),

Seconded by Mr. McKenzie (Bruce)—That the Chairman select a sub-committee of five members to investigate the question of discrimination by railway companies in the rates charged by them upon agricultural products, and to report at the next meeting what action they recommend the Committee to adopt in this matter.—Motion adopted.

COMMITTEE ROOM 34,
THURSDAY, February 16, 1905.

No. 5.—TO REPORT TO THE HOUSE, REPORT OF SUB-COMMITTEE ON RAILWAY RATES.

Moved by Mr. Gordon,

Seconded by Mr. MacLaren—That the sub-committee's report on railway discriminating freight rates, be received and reported to the House with the request that the attention of the Railway Commission be called to the material discrimination existing in freight rates on farm products and be asked to consider the same at their earliest opportunity.—Motion adopted.

COMMITTEE ROOM 34,
FRIDAY, March 24, 1905.

No. 6.—RECOMMENDING ADVERTISEMENT OF MATTER FREE FROM POSTAL CHARGES.

Moved by Mr. Lewis,

Seconded by Mr. Martin (Wellington)—That the Committee recommend that Dr. W. Saunders be asked to insert a notice in all the weekly local papers of Canada, to farmers, informing them of the fact that posted communications are free in correspondence with any member of the official staff of the Central Experimental Farm. —Motion adopted.

COMMITTEE ROOM 34,
FRIDAY, March 24, 1905.

No. 7.—PRINTING OF EVIDENCE.

Moved by Mr. Wilson (Lennox and Addington),

Seconded by Mr. Wright (Renfrew)—That the following evidence taken before this Committee in the current session of parliament, be reported to the House with a recommendation that the same may be printed forthwith in pamphlet form.

1. That 20,000 copies of the evidence of Mr. J. A. Ruddick, Dominion Dairy Commissioner, taken by this Committee in the current session of parliament, be printed forthwith in pamphlet form, in the usual proportions of English and French, as advance sheets of the Committee's final report, and allotted as follows: 16,900 to members of parliament, 3,000 to the Department of Agriculture for distribution, and 50 copies to the use of the Committee.

2. That 20,000 copies of the evidence of Dr. W. Saunders, Director, before this Committee in the current session of parliament, be printed forthwith, in pamphlet form, in the usual proportions of English and French; and that 20,000 copies of the evidence of each member of the official staff at the experimental farm be printed forthwith, as above, and that the distribution thereof be in the same proportion as authorized by the House in the session of 1904. Motion adopted.

COMMITTEE ROOM 34,
TUESDAY, April 4, 1905.

No. 8.—SPECIAL MEETING IN REFERENCE TO CATTLE EMBARGO.

Moved by Mr. McKenzie (Bruce),

Seconded by Mr. Christie—That on a near future day the Committee devote a sitting to the consideration of the embargo enforced by Great Britain against the sale of Canadian cattle in the home market of that country.—Motion adopted.

COMMITTEE ROOM 34.
FRIDAY, April 14, 1905.

APPENDIX No. 2

No. 9.—RECOMMENDING EXTENSION OF EXPERIMENTAL POULTRY RAISING.

Moved by Mr. Blain,

Seconded by Mr. Ingram—That this Committee is of the opinion that the Department of Agriculture should commence raising turkeys, geese and ducks at the experimental farm, Ottawa, for experimental purposes, so the results may be made known to the farmers, through the printed reports issued by order of this Committee.—Motion adopted.

COMMITTEE ROOM 34,
WEDNESDAY, May 10, 1905.

No. 10.—PRINTING OF EVIDENCE AND SEED CONTROL ACT.

Moved by the Hon. Mr. Fisher,

Seconded by Mr. Blain—That the Committee report to the House and recommend that the evidence of Mr. Clark, seed commissioner, be printed in pamphlet form forthwith to the number of 20,000 copies and that the 'Seed Control Act' be annexed thereto as an addendum.—Motion adopted.

COMMITTEE ROOM 34,
TUESDAY, May 16, 1905.

No. 11.—APPOINTMENT OF A SUB-COMMITTEE ON CATTLE EMBARGO.

Moved by Mr. Derbyshire,

Seconded by Mr. Wright (Renfrew)—That the Hon. Mr. Greenway, chairman of this Committee, Messrs. Wilson (Lennox and Addington) McKenzie (Bruce), Christie, and the mover, be a sub-committee to prepare a suitable resolution to the case of the embargo upon Canadian cattle entering the ports of the United Kingdom, and report to the Committee at its next meeting.—Motion adopted.

COMMITTEE ROOM 34,
TUESDAY, May 30, 1905.

REPORT OF SUB-COMMITTEE UPON CATTLE EMBARGO.

HOUSE OF COMMONS,
COMMITTEE ROOM 34,
TUESDAY, June 20, 1905.

The Select Standing Committee on Agriculture and Colonization convened here this day. Mr. McKenzie (Bruce), acting chairman, presiding, and the sub-committee appointed on May 30 last, presented the following report:—

The Sub-committee having had under consideration the question of the embargo on cattle from Canada entering the ports of the United Kingdom, and after a careful review of all the circumstances connected with the subject, past and present, the Committee are unanimously confirmed in the opinion that the said embargo is most unfair and unjust, as it is a publication to the world at large that the Board of Agriculture considers it unsafe to permit Canadian cattle to come in contact with the herds in the United Kingdom; whereas, it is a well known fact that in no other country than Canada can herds be found so free from disease.

That the scheduling of Canada by the Imperial government is considered, from a financial point of view, a serious loss to the Canadian cattle trade, the farmers and the stock raisers of the Dominion.

That the action of the Imperial government is not justified by the facts of the case, it having been clearly proved that the disease of pleuro-pneumonia has never existed in Canadian herds.

That in view of such conditions the removal of Canada from the schedule would be but an act of justice and should be strenuously pressed.

That as the Dominion is a stock-raising country and capable of producing a large and constant supply of beef cattle, it is considered important to the empire that no obstructions or difficulties should be placed in the way of Canadian cattle breeders which would tend to decrease the food supply within the empire.

No. 12.—EMBARGO ON CANADIAN CATTLE BY THE UNITED KINGDOM.

Moved by Mr. Armstrong,

Seconded by Mr. Wright (Renfrew)—That this Committee realize an injustice is being done to the people of Canada through the British embargo on our cattle being maintained, and believe that it would be in the best interests of the farming industry of the Dominion to have a deputation consisting of the Minister of Agriculture of each province of the Dominion to act in conjunction with the Dominion Minister of Agriculture to wait upon the chairman of the Board of Agriculture of England, giving as much publicity to their proceedings as possible, and laying before the said department the justice of our requests, to have the Act authorizing the said embargo repealed.—Motion adopted.

COMMITTEE ROOM 34,
TUESDAY, June 20, 1905.

No. 13.—REPORT TO THE HOUSE ON CATTLE EMBARGO.

Moved by Mr. Derbyshire,

Seconded by Mr. Brown—That the Committee report to the House the report of the sub-committee, with the addition thereto of Mr. Armstrong's resolution.—Motion adopted, and the report as amended concurred in.

No. 14.—PRINTING EVIDENCE.

Moved by Mr. Mackenzie (Bruce),

Seconded by Mr. J. E. Armstrong—That 20,000 copies each of the evidence of Messrs. A. McNeil, chief of the Fruit Division and the evidence of Elihu Stewart, superintendent of Dominion Forestry, be printed, respectively, in pamphlet form, and distributed each on the same basis as that authorized by the House, for distribution of the evidence of the Dairy Commissioner, as adance sheets of the Committee's final report.

Motion adopted.

The preceding resolutions are correct extracts as recorded in the approved minutes of meetings of the Select Standing Committee on Agriculture and Colonization, on the respective dates specified.

J. H. MACLEOD,
Secretary to Committee.

APPENDIX No. 2

INTERIM REPORTS.

FIRST REPORT.

The Select Standing Committee on Agriculture and Colonization present their first report, as follows:—

The Committee recommends that the House grant them authority to employ a shorthand writer to take down such evidence as they may deem proper.

THOMAS GREENWAY,
Chairman.

HOUSE OF COMMONS,
February 16, 1905.

Report concurred in by the House, February 16, 1905.

SECOND REPORT.

The Select Standing Committee on Agriculture and Colonization present their second report, as follows:—

1. The Committee recommend that 20,000 copies of the evidence of Mr. J. A. Ruddick, Dominion Dairy Commissioner, taken by the Committee in the current session of parliament, be printed in pamphlet form forthwith, in the usual numerical proportions of English and French, as advance sheets of the Committee's final report for distribution as follows: 16,900 copies to members of parliament, 3,000 copies to the Department of Agriculture for distribution, and 50 copies to the use of the Committee.

2. That 20,000 copies of the evidence of Dr. William Saunders, Director of Dominion Experimental Farms, taken by the Committee, in the current session of parliament, be printed in pamphlet form forthwith in the usual numerical proportions of English and French and distributed precisely as above directed in section 1 of this report.

3. That 20,000 copies of the evidence of each member of the official staff at the Central Experimental Farm who testify before this Committee in the current session of parliament, be printed forthwith, in pamphlet form, in the usual relative numbers in English and French, as advance sheets of the Committee's final report, and distributed as follows: 19,400 of each to members of parliament; that 550 copies of his own evidence be allotted to each member of the said official staff; and 50 copies of each to the use of the Committee.

4. The Committee recommend that each and all of the aforesaid enumerated evidence form a part of their final report.

THOMAS GREENWAY,
Chairman.

HOUSE OF COMMONS,
April 5, 1905.

Concurred in by the House, April 7.

THIRD REPORT.

The Select Standing Committee on Agriculture and Colonization present their third report, as follows:—

The Committee have had urgent and repeated complaints laid before them to the effect that farmers in Ontario were handicapped in the export of their products, and their profits correspondingly reduced, by discriminating rates charged by Canadian railways as between competing and non-competing points within Canada; and also by discrimination by these same railways running through territory in the United States. by their giving farmers of the latter much more favourable freight rates than they give to the farmers of Canada for similar and comparative distances, to market points.

The Committee deemed it advisable to appoint a sub-committee to investigate these complaints, with authority to procure such evidence as deemed by them pertinent to charges preferred; the Committee having in view, if substantial evidence of the said charges were procured, to recommend a reference of the case to the Railway Commission of Canada.

The sub-committee having made report to the Committee, substantiated by the evidence contained in the several schedules hereto annexed as an essential part of this report, and the Committee having taken the said report and evidence therewith into consideration, have adopted it as their own report, and as such, submit it with the schedules annexed to the consideration of the House, as follows:—

Live Stock.

Live stock shipments via G.T.R. from United States points.

Tariff L.C.C. No. A 708 shows rates charged on cattle, sheep and hogs from Bancroft, Belsay, Duffield and other points to New York, Boston and Montreal.

Live stock shipments via G.T.R. in Ontario.

Tariff E 54 shows rates charged from points in Ontario, namely, Sarnia, Windsor, Ridgetown, Thamesville, Stratford, Lucknow, Bothwell, London, Listowell and other points to New York, Boston and Montreal.

Tariff (G.T.R.) I.C.C. No. A. 748, shows the local rates charged on horses, cattle, sheep and hogs in the United States.

The standard mileage tariff (C.A.R.) on live stock, C.R.C. No. 1 shows local rates charged on similar shipments in Canada.

Tariff (M.C.R.R.) C.R.C. No. 409 shows rates on live stock from the United States to the sea-board.

Tariff (G.T.R.) C.R.C. No. W. 8, shows rates on live stock from the United States to the sea-board.

Tariff (G.T.R.) C.R.C. No. 54, shows the same. Comparison of the above tariffs will show the material difference in favour of the United States farmer.

The above tariffs will show the rates charged out of the United States territory from points under the exclusive control of the G.T.R. to be very much lower than from points on their line in Canadian territory. This applies to shipments for both local and export, for instance, the rate from Chesterfield, Mt. Clements, Lennox, New Haven, &c., on cattle for export is 22 cents, whereas from Windsor, Sarnia, London, &c., the rate is 25 cents per 100 lbs. On shipments between local points the difference is very much greater.

Grain and Grain Products.

Tariff (G.T.R.) No. B 12 shows rates on grain and grain products to New York, Boston and Philadelphia and Montreal.

Tariff supplement to C.R.C. No. 81 Tariff G.B.J. No. 16, Tariff G.B.J. No. 17 shows rates charged on local shipments in Canada.

Tariff C.R.C. No. W. 48, rates on grain products to the seaboard points for local and export shipments, G.F.D. shows local rates on grain and grain products in the United States.

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On grain and grain products the rates from United States points are very low when compared with the rates from Canadian points, more particularly when for local use or for shipment via United States points for export.

The rate from Chesterfield, Lennox, Mt. Clements, New Haven, &c., in the United States for export on grain is 25 cents, and on grain products 11 cents. For local shipment the rate would be 13½ cents to New York and 15½ cents to Montreal, the shorter distance. From Canadian territory the rates would be: for export from Windsor, Sarnia and east 500 miles, 13½ cents and over, while for local shipments to Montreal from Windsor and other intermediate points the rate would be 19 cents, or 5½ cents above New York rate.

Butter, Eggs and Cheese.

Tariff (G.T.R.) G.D. No. 57 shows the rates charged on shipments in Canada for export only.

Tariff R.R.G.B. No. 12 rates on general merchandise in Canada to the sea-board for export show rates from the United States points to the sea-board.

Tariff C.R.C. No. W. 17 show rates from the United States points to the sea-board as class rates.

Tariffs C.R.C. No. E. 196 the same.

Tariff C.J. No. 20 shows the prevailing rates charged on butter, eggs and cheese from various points in Ontario to the sea-board.

By comparing the above it will be seen that for local consumption in the United States cheese is carried a distance of 382 miles for 23½ cents, while for 400 miles in Canada at the rate of 36 cents per 100 lbs., or 12½ cents in favour of the United States producers. It will also be seen that 7 cents per 100 lbs. more is charged from Lucknow, Listowell, Palmerston and other points in that vicinity than from London, Ingersoll and Woodstock to Montreal. The rates are not only very high, but no allowance is made for carload shipments, notwithstanding the enormous proportions to which the trade is developing.

General Merchandise.

Tariff C.R.C. No. W. 17 shows rates on general merchandise in effect from United States territory to the sea-board, and also from points in Canada. Distances are not considered.

Beans.

We also desire to call the attention of the Committee to the fact that beans are shipped in class rates instead of being hauled at commodity rates the same as grain products; their weight is the same, they are shipped in the same manner and their value as a rule is about that of wheat.

Tariff G.D. No. 57 shows rates on packing house products to be very high and distance not considered.

Tan Bark.

Tariff (Ottawa, Arnprior and Parry Sound) shows rates on tan bark. Very high for services rendered.

We also desire to call the attention of the Committee to the fact that the rates on imports are from 50 to 60 per cent less in Canada than the rates on commodities exported, whereas in the United States both the exports and imports as a rule are equal. We might enlarge indefinitely, but the purpose in view will be served by pointing out a number of instances which illustrate the differences in rates given

to Americans, as compared to these given to Canadians. It does not appear fair to favour those who have contributed nothing to the building of out national highways, but on the contrary they not only have lower rates accorded to their products, but in addition tax their railways heavily as well.

The Committee recommend that this report, with the schedules annexed thereto, be referred to the Railway Commission of Canada for the Commission's consideration and decision forthwith.

P. H. McKENZIE,
Acting Chairman.

HOUSE OF COMMONS,
April 12, 1905.

Concurred in by the House, April 27.

FOURTH REPORT.

The Select Standing Committee on Agriculture and Colonization present their fourth report, as follows:—

1. The Committee recommend that 20,000 copies of the evidence of Mr. G. H. Clark, Seed Commissioner, taken by the Committee in the current session of parliament, be printed in pamphlet form forthwith, in the usual numerical proportions of English and French, as advance sheets of the Committee's final report for distribution as follows: 16,900 to members of parliament; 3,000 copies to the Department of Agriculture and 100 copies to the use of the Committee.

2. That 20,000 copies of the Seed Control Act be also printed and included under the same cover as the above mentioned evidence, as an addendum thereto for the information of Farmers' and Seedsmen's Associations.

3. The Committee recommend that the aforesaid evidence and Act thereto annexed form a part of their final report.

THOMAS GREENWAY,
Chairman.

HOUSE OF COMMONS,
May 18, 1905.

Concurred in by the House, May 22.

FIFTH REPORT.

The Select Standing Committee on Agriculture and Colonization present their fifth report, as follows:—

The Committee report herewith, for the information of the House, the evidence taken by them, thus far in the current session of parliament, upon immigration and colonization, including all matters connected therewith which have come under the investigation of the Committee.

P. H. McKENZIE,
Acting Chairman.

HOUSE OF COMMONS,
June 15, 1905.

SIXTH REPORT.

The Select Standing Committee on Agriculture and Colonization present their sixth report, as follows:—

The Committee having had under consideration the question of the embargo on cattle from Canada entering the ports of the United Kingdom, and after a careful review of all the circumstances connected with the subject, past and present, the Committee are unanimously confirmed in the opinion that the said embargo is most unfair and unjust, as it is a publication to the world at large, that the Board of

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Agriculture considers it unsafe to permit Canadian cattle to come in contact with the herds in the United Kingdom; whereas it is a well known fact that in no other country than Canada can herds be found so free from disease.

That the scheduling of Canada by the Imperial government is considered, from a financial point of view, a serious loss to the Canadian cattle trade, the farmers and the stock raisers of the Dominion.

That the action of the Imperial government is not justified by the facts of the case, it having been clearly proved that the disease of pleuro-pneumonia has never existed in Canadian herds.

That in view of such conditions the removal of Canada from the schedule would be but an act of justice and should be strenuously pressed.

That as the Dominion is a stock-raising country and capable of producing a large and constant supply of beef cattle, it is considered important to the empire, that no obstructions or difficulties should be placed in the way of Canadian cattle breeders which would tend to decrease the food supply within the empire.

The Committee realize that an injustice is being done to the people of Canada through the British embargo on Canadian cattle being maintained, and believe that it would be in the best interests of the farming industry of the Dominion to have a deputation consisting of the Minister of Agriculture of the Dominion, and the Minister of Agriculture of each province in the dominion wait upon His Majesty's government of the United Kingdom, giving as much publicity to their proceedings as possible, to lay before said government the equity of the request to have the Imperial Act authorizing the said embargo repealed.

And the Committee further recommend that the government of the different provinces be invited to co-operate by sending the Ministers of Agriculture for their several provinces to act in conjunction with the Minister of Agriculture from the Dominion, in presenting the case, in behalf of Canada, and that action be taken in the premises at the earliest possible date.

P. H. McKENZIE,
Acting Chairman.

HOUSE OF COMMONS,
June 26, 1905.

Concurred in by the House, July 7.

HOUSE OF COMMONS,
COMMITTEE ROOM No. 32,
THURSDAY, July 13, 1905.

The Select Standing Committee on Public Accounts beg leave to present the following as their

SEVENTH REPORT.

Your committee have had under consideration the accounts, vouchers and other documents relating to the payment of $585.98 to Dr. C. T. Purdy, as set out under the heading of 'Hospital, New Brunswick,' at page 104, in the report of the Auditor General for the years 1903-04, and in connection therewith have examined witnesses under oath, and for the information of the House report herewith the evidence given by such witnesses, and your committee recommend that the said evidence be printed.

All which is respectfully submitted.

C. F. McISAAC,
Chairman.

HOUSE OF COMMONS,
COMMITTEE ROOM No. 32,
FRIDAY, July 7, 1905.

The Select Standing Committee on Public Accounts met here this day at 11 o'clock a.m., Mr. Colin McIsaac, chairman, presiding.

The committee proceeded to the consideration of the following accounts, as set out at page 104, of the report of the Auditor General for 1903-04 :—

'Moncton, Dr. C. T. Purdy, attendance and medicine.. ..$ 585 98'

Mr. A. W. OWEN was called and sworn and examined.

By Mr Foster:

Q. Mr. Owen, you are a clerk in the Marine and Fisheries Department ?
A. Yes, sir.
Q. You have charge of the administration of the Sick Mariners' Fund ?
A. Yes, sir.
Q. What vessels under the law pay dues ?
A. Vessels of over 100 tons burthen pay $3 a year when they arrive at Canadian ports.
Q. Over 100 tons ?
A. Over 100 tons burthen, yes. Vessels under that pay once a year.
Q. Vessels of over 100 tons burthen pay how often ?
A. Three times a year, a fishing vessel pays once each year. They pay at the port of outfit.
Q. Vessels of less than 100 tons pay three times a year too ?
A. No, under 100 tons once a year.
Q. And fishing vessels ?
A. Pay once a year at the port of outfit.
Q. The others pay at what port ?
A. The port at which they arrive.
Q. The port of call ?
A. The port of call
Q. Where they arrive at the time they have sickness on board ?
A. Yes.
Q. What amount is paid by vessels of 100 tons and over it ?
A. Two cents a ton.
Q. Two cents per ton ?
A. Yes.
Q. Three times per year ?
A. Yes.
Q. Am I right in that ?
A. I beg your pardon.
Q. Three times per year.
A. Three times per year for vessels over a hundred tons.
Q. That makes six cents per year ?
A. Yes.

Q. And less than 100 tons ?

A. Once every year.

Q. Two cents per ton ?

A. Two cents per ton.

Q. And the fishing vessels ?

A. Two cents per ton for vessels under 100 tons once in the year.

Q. Is there any minimum limit of tonnage ?

A. There is no minimum limit of tonnage, all registered vessels.

Q. They must be registered of course ?

A. Yes.

Q. But what privileges has one of these vessels—you will take one of them—as to attendance and service ?

A. Well, if a vessel arrives in port and has a sick seaman on board, or more, the captain applies to the Collector of Customs, and if the vessel has complied with the law.

Q. That is as to payment ?

A. As to payment of dues, and shows his receipt that he has paid his dues, the Collector of Customs is bound by a law to give that seaman surgical or medical treatment and board if necessary.

Q. How is this done where there is no hospital ?

A. The law provides where there is no hospital to board the seamen at the nearest public house and the collector makes the best arrangement in his power.

Q. Yes if there is——

A. A hospital, the seaman must go to the hospital because we have arranged to place the seamen in hospitals in the different cities.

Q. Who is to judge as to whether medical service, and board, and the like of that should be given ?

A. Well the captain applies to the Collector of Customs and says he has sick seamen on board. He gives an order to the doctor of the port to give the seamen the necessary attendance, and the doctor is the person to judge whether the seaman requires treatment.

Q. The authority then is with the Collector of Customs ?

A. With the Collector of Customs.

Q. Of the port ? He has to give an authorization to the doctor to visit them ?

A. Yes.

Q. And attend them ?

A. And then the doctor—we have a form of account—and the doctor has to send this account and make a declaration before a justice of the peace that the service is rendered, and then that is signed by the Collector of Customs.

Q. That is the authority in the first place, the Collector of Customs ?

A. Yes.

Q. Who authorizes the doctor to be in attendance ?

A. Yes.

Q. And then the doctor examines the patient and prescribes for him and attends him ?

A. Yes.

Q. Is there any supervision at all over the number of visits the doctor may make?

A. Well that depends altogether on the seriousness of the case. If the doctor thinks the case is serious it is left in his hands to make the visits.

Q. He is the judge ?

A. He is the judge.

Q. Of the number of attendances ?

A. Yes.

Q. And the medicines ?

A. But he has to swear to his account.

Q. He has to swear to the number of visits ?

A. Yes.

Q. And to the amount expended for medicines ?

A. Yes.

Q. He swears to that and then the collector does what ?

A. He signs the account and forwards it to the department.

Q. Has the collector any supervisory power over the doctor's account ?

A. No, he has not, but we have in the department.

Q. You have in the department ?

A. Yes.

Q. Does the collector send you a report if he thinks there is anything abnormal in the charges or in the attendance ?

A. Sometimes they do.

Q. Is it his duty to do that ?

A. It is not his duty to do that, but we ask him to do so.

Q. You ask him to do so ?

A. Yes.

Q. This is about the only check.

A. If we find any charge which we think is an overcharge we write to the Collector of Customs for an explanation.

Q. Is there any scale of physicians' fees ?

A. Yes.

Q. What is it ?

A. There is a scale of fees which we have had for the last twenty years. I have got it here. When the distance does not exceed a mile each way a dollar is allowed.

Q. A distance of one mile each way ?

A. Yes, a dollar is allowed.

Q. That will be two miles of a trip ?

A. Two miles of a trip. For a mile and not exceeding two miles, $1.60; two miles and not exceeding three, $2, and so on down to 35 miles.

Q. What is that ?

A. We have it down to 35 miles in country places where there are no railway facilities and where there is no doctor, at an outport where a vessel would call with a sick seaman.

Q. There is no supervision as to the diseases for which treatment shall be given ? That is left, as I understand it, entirely with the doctor ?

A. With the doctor. But then we always allow what we consider a proper fee and make a reduction in the country where we think there is an overcharge.

Q. Well, now, suppose it happened that a vessel were in port, and there were three sick seamen on that vessel and the distance was one mile ?

A. Yes.

Q. And the doctors visited them all at the same hour ?

A. Yes.

Q. What would be his fee ?

A. One dollar.

Q. For each one ?

A. No, no.

Q. One dollar for each visit ?

A. One dollar for each visit. We allow a dollar for the treatment of sick seamen, one visit, a dollar is the payment for attending the seaman, if there are three seamen—but perhaps I am wrong—he would be allowed $3 for the three seamen, but if he went five miles we would only allow him the fee for the five miles and the treatment, a dollar for the seaman.

Q. I want to know that distinctly. Your first answer was $1 for the three seamen.

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A. Oh, no, that is if he only travelled one mile. But if he travelled two miles he would only get the travelling fee for two miles and $1 for any other seamen that had to be treated.

Q. That is, when it is for a mile there is a fee for travelling and a fee for attending ?

A. Yes.

Q. If it is a mile and under, there is just a fee for attendance.

A. Yes, a fee for attendance.

Q. Are you careful when accounts come in to scan them and see if there seems to have been or not too consecutive and too lengthy an attendance upon a seaman ?

A. We always do that and always ask the collector for an explanation if there is any overcharge at that time.

Q. What does a 'port' include ? What does the port of Moncton include, for instance—anything outside of Moncton itself ?

A. Not outside of Moncton itself.

Q. And has been that way ?

A. Has been that way.

Q. There has been no change in that respect ?

A. No, I do not know of any change.

Q. Anyway, you don't know that the port of Moncton has been enlarged, say, since 1897 ?

A. I do not think so.

Q. Well, taking these accounts, if these are the ones (documents produced) have you revised these accounts ?

A. Yes.

Q. Of Dr. Purdy at Moncton ?

A. Yes.

Q. And have you found anything that called for any adjustment or any explanations from them ?

A. Well, we take the certificate of the Collector of Customs, Mr. Binney, we find him a very reliable man. He would not attach his signature to an account if he did not think it was correct. That is the way we take it.

Q. As I understand you, the collector at the port has really no supervision over the number of visits or charges ?

A. No, not as to charges.

Q. So you cannot hold him responsible ?

A. No, but he has to certify as to the services being performed.

Q. Yes, according to the doctor's statement ?

A. According to the doctor's statement.

Q. He takes the statement of the doctor ?

A. And the doctor has to go and make a declaration before a justice of the peace that the account is correct and the service has been performed.

Q. If you are familiar with these accounts for services at Moncton I think you will find, if you make inquiry that it looks something like this, that in 1891 nothing was paid in the port for attendance upon sick seamen.

A. Yes.

Q. In 1892 nothing was paid; in 1893, $26.05 was paid; in 1894, $31.90 was paid ; in 1895 nothing was paid ; in 1896, $130 was paid. Now, in 1897, $206.17 was paid; in 1898, $167.50 ; in 1899, $73.50 ; in 1900, $265.80 ; in 1901, $569.65; in 1902, $419 ; in 1903, $172.27 ; in 1904, $585.98. Look over those accounts ? That is about the way the statement appears to me.

A. And for this year, 1905, there is $237.

Q. Yes ; are the figures practically correct that I have given ?

A. I have not got the figures; I do not go back so far.

Q. But for a number of years past they are practically correct ?

A. Yes, but for this year his account for treating twenty-three seamen was $237.20.

Q. Well, now, has the shipping and the number of seamen increased or decreased in the port at Moncton for that period that I have mentioned ?

A. It appears to have increased.

Q. Can you give the figures as to that ? The statement that I have named, shows a decrease in the number of vessels and a decrease in the number of seamen—a very large decrease in each.

A. We do not have a list of vessels that arrive in Moncton and clear. We only have the vessels that have sick seamen that are treated.

Q. What I wanted to get at was this: whether in going over the accounts and seeing that great extension, enlargement of them, you do not move to look into the matter as to whether there was an increase in vessels and in seamen.

A. Yes.

Q. My statement makes it about like this: that for 1891 ninety-two vessels entered and cleared, with 415 seamen; in 1892, ninety-eight vessels and 415 seamen; in 1893, ninety-four vessels and 411 seamen; in 1894, 74 vessels and 294 seamen; in 1895, 76 vessels and 331 seamen; in 1896, 91 vessels and 359 seamen. Then, coming to 1898 it drops to 52 vessels with 184 seamen; in 1899 54 vessels and 169 seamen; in 1900, 45 vessels and 129 seamen; in 1901, 54 vessels with 157 seamen; in 1902, 43 vessels and 143 seamen; in 1903, 46 vessels and 145 seamen.

A. Yes.

Q. If that be correct ?

A. What is it in 1904 ?

Q. 1904 ? I have not the figures, have you ?

A. No, I have not the figures, but there were 51 seamen treated in 1904.

Q. The seamen treated? I am not arguing as to that now. Does your correspondence prove that they came in ? What I am asking is this, simply : there must be a very large increase, but from the figures there has been a decrease both in the number of vessels and in the men entered. Well, there must be something wrong, or else there has been a great increase in diseases from some epidemic or something of that kind, or a series of unfortunate accidents, one or the other. These figures will be before you. You can look into them and if they are correct probably it would be a reason for inquiring into this thing ?

A. Yes. There was one account that I refused last year, because it was not certified by the Collector of Customs.

Q. Of course you could not pay it if it was not certified by the Collector of Customs. Take the 'Economist' of Digby. I find that in 1902—it is a ship of 13 tons—she would pay two cents a ton.

A. Yes.

Q. Which would be 26 cents ?

A. Twenty-six cents.

Q. That would be her contribution. And a vessel of 13 tons would have necessarily a very small force ?

A. It depends whether she is a fishing vessel. They might stow away a lot of fishermen upon a vessel of that kind.

Q. I find you paid $30 during the year 1902 for attendance upon seamen for that vessel ?

A. Yes.

Q. There were 1, 2, 3,—3 persons on board that vessel who were treated ?

A. Yes.

Q. That must have been pretty nearly all that were manning that vessel ?

A. Well it all depends. There are sometimes eight on a fishing vessel.

Q. This was a trading vessel ?

A. Fishing vessels sometimes have ten to twelve men on board.

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Q. It was a trading vessel because it would not be at Moncton for fishing. She would not be there for fishing, but to dispose of her fishing, something of that kind. Now on the 'Economist' there were Captain Parker and Fred Parker, both seemed to be sick at about the same time and the visits were made at the same time, but there was a dollar a visit charged for each one. That you think is correct ?

A. That I think is correct.

Q. There were three consecutive visits to Capt. Parker, the trouble was with the throat—and there were three consecutive visits to both of them on account of reducing the dislocation in the wrist of Fred. Parker ?

A. Yes.

Q. Now it would be a matter I suppose of opinion as to whether there should be three daily visits, one directly following the other, in the matter of throat trouble ?

A. Yes. Unless it is a very serious case we never allow the doctor more than one visit a day.

Q. Yes, of course, he has not given more than one day, but he has very religiously kept up the visits in consecutive order ?

A. Yes.

Q. It is not very striking in the case of the 'Economist,' but when you come to the 'Grega,' of Dorchester, a vessel of 146 tons, we find that A. C. Ball was sick with neuralgia and had an abscess in his head. The visits commecned on the 9th November and they continued until the 28th, and there was no days intermission at all. Now what struck me in looking it over was that neuralgia and abscess in the head is not the kind of trouble that would necessitate a consecutive visiting of the doctor for twenty days, one directly after the other.

A. Well, an abscess in the head may be a very serious case, you see.

Q. It may be. But it is a fair supposition that a visit a little less frequently than once per day and for twenty consecutive days would be all that would be necessary in order to watch an abscess in the head connected with enuralgia. Well then, we will take another. Mr. James Murphy had an injury to the chest and side and there were nineteen consecutive visits, on exactly the same days that the visits were made to A. C. Ball. It seemed to me that for an injury to the chest and side it was not encessary to make nineteen consecutive visits one directly after the other. At the same time there was a Mr. Thurgood, who had bronchitis and kidneys, and there were 15 consecutive visits made to him during the same dates ?

A. Yes.

Q. Then there was Capt. Buck who had gastritis and kidneys.

A. Yes.

Q. There were fourteen consecutive visits made to him at the same time. There are one, two, three, four men that certainly had not very dangerous or very pressing diseases, but the doctor visited every man of them every consecutive day for from twenty to fifteen days in succession. Now on May 23rd, 1903, the same vessel was in port, and Capt. Buck was still there and this time he had an abscess on the neck and an injury to his hand and there were eight consecutive visits made to him. At the same time Charles Goodwin was on board and he had lumbago and nasal catarrh, and his sickness required seven consecutive visits day after day during the same dates.

Q. You accept this, Mr. Owen ?

A. Yes.

Q. It would look as though this was somewhat of a nursing of a job ?

A. We are always very careful in examining these medical accounts.

Q. The job is a little more prominent than the condition of the patient called for and if the whole of the fund is administered in that way——

A. Well it is not.

Q. It would seem as if there would be a large expenditure unnecessary and that the department ought to be very careful about it.

A. Well I was brought up in the school of the late Mr. William Smith who was a great man in dissecting the medical accounts, and I have followed out his rule pretty well these last two years, and we always endeavoured to cut them down as much as possible. When we think that the accounts are very excessive, we make the doctor an offer. We tell them we will give them so much for their attention.

Q. I want to call your attention to the case of the 'Susie Prescott' of Moncton, a vessel of 146 tons. In 1902, Capt. Daley was laid up with what is called acute eczema. That is a skin disease ?

A. Yes a skin disease.

Q. Well he had seven consecutive visits. At the same time Charles Wilson was suffering from a fistula?

A. Yes.

Q. In his seat ?

A. Yes, that is a very bad thing.

Q. And that required during the same date seven visits as well ?

A. I was going down in a car with a gentleman who had one and he was very uncomfortable.

Q. As a rule these men did not require a doctor to come every day ?

A. No.

Q. Then at the same time William Daley was on board that same vessel and he had tonsilitis and he received seven consecutive visits. Thus there were three men, one with eczema, another with a fistula, and a third with tonsillitis. They required seven visits each on seven consecutive days. That seems also to be giving more importance to the profession than to the disease. Now, in 1902, the 'Nellie Watters,' of St. oJhn, 96 tons, was there and from September 27 to October 12, Ronald Thuber has what is called nasal polypus. That is something the matter with the nose. Now the doctor thought it necessary to make fifteen consecutive visits, one day after the other, to Ronald Thurber to see how that matter in his nose was going on. Then there was a man by the name of James Perry who suffered from indigestion during the same dates and he required sixteen consecutive visits, one day after the other at a dollar a day, in order to see his stomach. Now I suffer sometimes from indigestion myself and I think a good many of us do ?

A. I do too.

Q. But it does seem to me that in the conduct of one's own business he would hardly have a doctor to come every day for that sort of thing. Well there is thirty-one visits ?

A. Yes.

Q. Consecutively for those two diseases which are certainly not deadly diseases by any means. Well now the 'Florence,' of St. John, a vessel of 15 tons, which would put 30 cents into the treasury had Mr. Stilwell who suffered from rheumatism. A charge is made for four consecutive visits for rheumatism. Evidently the vessel went out a little too soon or the account might have been larger but every day that the vessel seemed to be there, there was a visit to look after this man's rheumatism. Now, in 1902, that same vessel of 15 tons was in and John Gates had diarrhoea and seven visits consecutively were paid to him, to see how his disease was going on.

A. He must have had it bad.

Q. Now, this same vessel, the 'Florence' gets back in 1902 and Captain Daley and a Mr. Fales were there and a Mr. McStreathen, and there was trouble, one having diabetes and the other cystitis, and the other cystitis gastritis, and all of these took consecutive visits, that is, one day after the other, Captain Daley, six visits, Mr. Fales five visits and the other five visits. The 'Luta Price,' of St. John, of 121 tons, came in in 1902, and Mr. Chapman had an injury to the side and pleurisy. That necessitated nine visits, day after day. During the same time Captain Cole was there and he had catarrh of the stomach. That made necessary nine visits. Mr. Gillis had la grippe and bronchitis. That made necessary eight visits. Mr. Mc-

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Fadden had an injury, and that made eight visits necessary. All these men were on the vessel at the same time having all these very serious diseases, but a daily visit was made there on the days that I have given to look after these diseases. The 'Vesta,' of Moncton, 22 tons, was in in 1902. Mr. Beaument had an injury to the head and neck. Three visits were paid to him consecutively, one each day. When she was in in 1903, Captain Martin had cholera and cramps. Three visits were paid to him, three days in succession. Captain Priddle had tonsilitis and quinsy, seven visits day after day. Eben Thomas had been scalded with hot lime, seven days consecutively, day after day, and also on September 7 and 8 he had two consecutive visits. There were consecutive visits made from the 7th to the 13th for a class of disease which it would seem a doctor might have attended by occasionally looking in and doing all that was necessary by advise and care. Now, I want to take the case of the 'Hartney W.,' of Parrsboro'——

Mr. BELCOURT objects to form of question.

By Mr. Foster:

Q. The 'Harteny W.' of Parrsboro', 270 tons came in in 1903. Mr. George W. Marris had malaria chills and neuralgia and received nine visits day after day. Captain Masson had diarrhœa and cramps, nine visits day after day. Arthur Masson had accute bronchitis, malaria and chills and injury to arm, and received ten visits day after day. Edwin Durant had gastritis and cramps and received ten visits day after day. Charles Rector had hemhorrage of the bowels and cough and received ten consecutive visits. John Rector had cystitis—what that is I do not know—but it necessitated ten visits day after day during the same time. Therefore, we have six persons ill of these diseases and they received consecutive visits daily, nine to ten visits. The 'Thistle' of St. John, 123 tons, came in in 1903. Capt. I. M. Steeves was ill with neuralgia and nasal catarrh. He received six consecutive visits. The boat 'Foster Rice' of Annapolis, 179 tons, was in in 1903 from May 2nd to May 6th. Capt Brimtone had an injury to the hand and arm, five visits were made day after day. The 'Marjorie J. Sumner' of Maitland, 354 tons, was in in 1903. Capt. Reid had malaria chills and neuralgia. Twelve consecutive visits are paid,—by consecutive I mean day after day. At the same time, Arthur E. Stiles had hydrocele and acute bronchitis and received twelve visits, day after day. Melbourne Hegan had throat trouble and inflammation of the ear, and ten visits are given to him, and later from July 12th to July 21st, he received nine other visits day after day. Capt. Reid had malaria and neuralgia and received nine consecutive visits. Arthur Stiles had bronchitis and received nine consecutive visits, so that, there were seven persons ill with these diseases and daily visits were paid to them. The 'Urania' of Lunenburg, 100 tons, was in in 1903. John Hogan had fracture of ribs and injury to chest, five visits daily one after another. Capt. Butt had diarrohoea and cramps, five visits day after day. Wm. Buffet had sciatica, 5 visits day after day. Philip shielrs had cytitis, five visits day after day. These four men were sick at the same time with that class of disease and daily visits were given to them. The 'Annie Pearl' of Moncton, 40 tons, was in from December 5th to 24th, 1903, nineteen days. Howard Priddle had an injury and erysipelas in the foot, for which he received fifteen visits paid to him one day after the other. At the same time Capt. Edward Priddle had four visits for diarrhœa and cramps.

By Mr. Johnston :

Q. What are the charges for the various visits ?
A. One dollar.

By Mr. Foster :

Q. Now, Mr. Owen, you have heard this statement which I have gathered from the accounts. I have been very careful to put it in so as to be correct, and the ques-

tions that I asked you were all in reference to services and your rules, and to the supervision you have over it, the responsibility of the collector ?

A. Yes.

Q. And the responsibility of the department here ?

A. Yes.

Q. And to all of these questions I got satisfactory answers ?

A. Yes.

Q. Now, I do not want you to commit yourself, but the question I want to put to you, was, had you any idea up to the present time that for the payments made during fiscal year in this case that the classes of the diseases were what I have named and the consecutive visits such as I have gone over ? Had you looked into the matter so as to satisfy yourself that this was the state of things existing with reference to this account ?

A. I looked into this account very carefully and I considered that the doctor made the visits that he charged for——

Q. Yes ?

A. ——and that the collector would not have certified the account unless he thought it was correct.

Q. But the collector—you will remember your answer—has only to certify to what the doctor says in his affidavit ?

A. But the collector will not certify it if he thinks there is an overcharge.

Q. There is no overcharge because the fee was $1.

A. No, but the collectors have notified the department in different instances that they considered there was an overcharge—over visits.

Q. But this collector did not ?

A. No.

Q. And you, looking over this account and seeing the classes of disease and the frequency of the visits didn't think it necessary to call the attention of the doctor to the matter ?

A. I have several times called the attention of the doctor to this.

Q. With reference to this particular one ?

A. Not with reference to that particular one.

Q. You did not call his attention to it ?

A. We called attention of the doctor to the case of Edward Priddle you spoke of just now.

Q. Yes.

A. And he gave an answer which we thought was satisfactory and we let the account go.

Q. You did not do that in the case of the others ?

A. Because we found everything in perfect order.

Q. The fee charged was the regulation fee of $1 per visit ?

A. Yes, and he made a declaration before a justice of the peace that he made those visits and that they were necessary.

Q. I do not doubt that he made the visits, that is not the point I want to make. The point is as to whether there is proper supervision by the department to prevent any unnecessary visits being made.

A. Yes, we do that and we sometimes cut them off.

Q. You did not cut off any of these visits ?

A. We did not cut off any of these.

Q. You thought they were——

A. I thought they were correct.

Q. And so the accounts were passed ?

A. The accounts were passed.

Q. On that basis ?

A. On that basis.

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By Mr. Emmerson:

Q. There is a fund known as the Sick Mariner's Fund, is there not ?

A. Yes, sir.

Q. That is contributed to by all the coasting vessels as well as the foreign going vessels ?

A. Yes.

Q. And the crew of any vessel which cotnributes to this fund are entitled when they reach port to the services of a physician ?

A. Except the coasting vessels trading from one port to another in the same province. They are not eligible, they do not come under the law.

Q. But from the different provinces ?

A. From any outside province.

Q. From one province to the other ?

A. Yes.

Q. And Moncton is a port where the coasting trade is largely between Moncton and a port in the United States ?

A. Ports in the United States.

Q. Or ports in Nova Scotia ?

A. Yes.

Q. There is very little coastwise trade between St. John and other New Brunswick ports, and that port ?

A. No.

Q. You say that the accounts have to be certified to by the Collector of Customs ?

A. Yes, sir.

Q. In a port of the size of Moncton the Collector of Customs would naturally have a pretty good——

A. A pretty good idea.

Q. A pretty clear knowledge of the vessels and of the crews and of the doctor—in fact of all the details connected with the transaction arising out of these vessels coming to that port—would he not ?

A. Certainly, and he would not give instructions to a doctor where seamen required treatment unless they complied with the law ?

Q. It is not so large a port—that is to say it is a small port—and therefore the Collector of Customs would have more of a personal supervision and a personal knowledge than would be the ca e if he were the collector at the port of St. John or some other large port ?

A. Well I suppose he would have the same at the port of St. John. The port of Moncton is a smaller port than St. John of course.

Q. And there are a very much smaller number of vessels entering ?

A. A very much smaller number of vessels.

Q. But the smaller the port the greater the personal knowledge——

A. The collector would have.

Q. The Collector of Customs would have as to the vessels and the captains and crews ?

A. Naturally so.

Q. And the details of their arriving at port ?

A. Yes.

Q. In all these accounts which have come in from the port physician the collector lector of Customs is required to certify is he not ?

A. He is required. In the first instance the captain reports to him that he has a sick seaman that requires treatment and the collector has to give an order to the doctor before he can——

Q. TheCollector of Customs at Moncton is Collector Binnie, is he not ?

A. Collector Binnie.

Q. How long has he been Collector of Customs ?

A. He has been there for a number of years, as long as I remember.

Q. Well he has been there since——

A. He has been there a great many years.

Q. Since 1880 anyway ?

A. He has been there a number of years, I cannot exactly recall the date.

Q. Mr. Robertson was Collector of Customs before him ?

A. He has been there a number of years, Mr. Binnie.

Q. And Mr. Binnie is recognized as a very efficient collector is he not ?

A. I have always understood so.

Q. Universally ?

A. Yes, he is a man who is very highly respected.

Q. He is a man of standing in the community ?

A. I do not think Mr. Binnie would certify to an account unless he thought that it was perfectly correct and that the service had been performed.

Q. Would Mr. Binnie not be a very honest man ? Do you know anything about his reputation for honesty ?

A. No, but he has always brought it to our attention when he thought there was an overcharge and we have always had it rectified. He is always very particular about that.

Q. Do you know anything about his methods ? Is he a very systematic man, a very rigid man in the conduct of his office ?

A. I should think so. He does not come under the department except in connection with the treatment of sick seamen, you know.

Q. Do you know the port physician ? He is one of the leading physicians in Moncton ?

A. I have heard so.

Q. Do you know he is a man with a large practice, in fact a very large practice, speaking relatively as to the size of the place ?

A. I have heard he has a very large practice. I do not know the gentleman.

Q. The one person of course who would have a knowledge as to the diseases——

A. Would be the doctor.

Q. Would be the doctor ?

A. Would be the doctor.

Q. And you must necessarily rely upon the doctor as to the necessity——

A. Of making frequent visits.

Q. Yes. Well now do you know whether it is not true that pretty universally the seamen on these coasting vessels when they arrive at port if anything is wrong with them are apt to call in the services of a physician knowing that their vessel has contributed to the Sick Mariners' Fund and knowing that it is a charge against the country ?

A. A charge against the fund.

Q. A charge against the fund, and that it will not be borne either by themselves or the vessel—the vessel must pay into the fund. Do you not know that seamen are rather inclined, universally, to call in the service of a physician ?

A. But the seamen are not allowed to call in the service of a physician themselves.

Q. No, but are they not in the habit of making application ?

A. They make application to the captain and the captain makes application for them.

Q. Certainly, but it is pretty true for a port.

A. For a port it is true.

By Mr. Fielding:

Q. Mr. Owen, you stated that the account of the doctor is supported by a declaration ?

A. Yes, sir.

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Q. And that it is also supported by a certificate from the Collector of Customs ? Would you read those two certificates for the benefit of the committee ?

A. The declaration of the doctor ?

Q. The declaration of the doctor.

A. (Reads) I do solemnly declare that the attendance and medicine charged for the above account was really necessary, and that the charges are usual and customary; and that the number of visits specified and distance travelled are correct ; and I make this solemn declaration conscientiously believing the same to be true and by virtue of the Act passed in the 37th year of Her Majesty's reign, entitled 'An Act for the suppression of voluntary and extra judical oaths.' There is a doctor's signature and then the statement : 'Declared before me' so and so, 'as justice of the peace for the country of "so and so," at Moncton, on so and so. It gives the signature of the justice of the peace.

Q. And that declaration in every case signed in that way according to the Canada Evidence Act is attached to every account ?

A. To every account.

Q. Well now will you read the form of certificate ?

A. Of the Collector of Customs ?

(Reads) 'I do hereby certify that the expenditures incurred were by my orders and that the charges are moderate and reasonable and that the doctor employed was the nearest doctor.' It is signed by the Collector of Customs.

Q. On the question of finances. In many cases of course the services rendered to a sick crew would be in excess of the contribution of that vessel to the fund ?

A. Yes, sir.

Q. But in the aggregate my recollection is that the fund more than pays the services ?

A. More than pays the services.

Q. And that for the whole service the taxation levied on the vessels fully pays for the service and generally leaves a balance ?

A. Always leaves a balance.

By Mr. Barker:

Q. As I understand you do consider and criticise the reasonableness of a number of attendances ?

A. We do, yes.

Q. You do that personally ?

A. Yes.

Q. Well, where a physician was attending a patient on a ship and at the same time was attending another person on the ship for indigestion, do you think it was reasonable to charge for sixteen daily visits in succession to the man suffering from indigestion ?

A. Well, the man may have a complication of diseases. The doctor has to visit when he thinks—he swears it is necessary.

Q. There is no complication here, it is simply indigestion ?

A. Yes.

Q. Wherever there is a complication it is very carefully noted with all the technical terms ?

A. Yes.

Q. And this is simply indigestion, sixteen visits to James Daley, day after day, charged for that alone ?

A. Yes.

Q. Was that reasonable ?

A. It may be. I cannot tell that, I cannot judge that.

By Mr. Belcourt :

Q. Is it not a fact that in reality the department does not criticise the propriety of the number of visits which are made by the medical attendant ?

A. We do.

Q. How can you know—the department is 2,000 miles away—whether the doctor properly attended the patient where he went five, ten, or twenty times? How can you know that ?

A. Every visit he makes, he puts in his account.

Q. Precisely, but you have to depend upon the word and the oath of the medical man as to the propriety or the necessity of the visits that he pays ?

A. Yes.

Q. So that you really do not criticise the propriety of the number of visits ?

A. Sometimes we think there is an overcharge of visits and we inform them so and make them an offer.

Q. It is only as to the number of visits which the physician pays. You take his statement. But if there is anything manifestly wrong you ask for explanations ?

A. Yes.

Q. And you tell me you did this in the case of Capt. Pringle ?

A. Yes.

Q. But as a rule, you accept the doctor's oath as to the propriety of the number of his visits.

A. That is correct.

By Mr. McKenzie (Cape Breton):

Q. You cannot tell what kind of indigestion he had ?

A. No.

Q. Or diarrhœa ?

A. No.

By Mr. Sinclair :

Q. Can you tell us how much was collected for this fund last year ?

A. You mean for——

Q. The Sick Mariners' Fund ?

A. I think about $60,000.

Q. $60,000 ?

A. I think so, if I remember rightly.

Q. How much was spent ?

A. Last year of course we spent a larger sum than usual. We made a lot of repairs to hospitals through the country which required repairs, such as Victoria, in British Columbia, and Louisburg, and repairs to the hospital in Lunenburg and Digby and such places. I think our expenditure last year was about $60,000.

Q. You spent most of it last year ?

A. Yes.

Q. Do you build hospitals out of this fund ?

A. At times we build hospitals.

Q. You do build hospitals out of this fund ?

A. Yes, and repair hospitals.

By Mr. Foster:

Q. I think hospitals are not built out of this fund. You manage them out of the fund ?

A. Yes.

By Mr. Sinclair:

Q. You manage hospitals and make repairs——

By Mr. Foster:

Q. I think the building is all done in the Public Works Department ?

A. We make repairs.

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By Mr. Sinclair:

Q. I want you to bring to the notice of the Finance Minister a visit you made to Canso last year in connection with this Sick Mariners' Fund ?
A. Yes.
Q. For the purpose of investigating the necessity of a new hospital at that point.
A. Yes.
Q. What did you find there ? What condition did you find the business in then?

Mr. FOSTER objected to the question as a matter that the committee could not go into, and the chairman ruled to sustain the objection.

By Mr. Sinclair:

Q. You have salaried officers at many places in Canada ?
A. Yes.
Q. And at those points these accounts do not apply at all ?
A. No, but the salaried officers have to give an account of all the work they do.
Q. Have to attend all the sick seamen that come ?
A. Yes.
Q. It is only in a few out of the way places that you have local officers ?
A. Yes.

By Mr. Foster:

Q. Mr. Owen, just one question. You say that you do exercise a supervising power in the department ?
A. Yes.
Q. And in what respect is that done ? Just tell us clearly ?
A. Well, we go over the accounts and sometimes when we get what we consider is an excessive account——
Q. What do you mean by an excessive account ?
A. When he charges for ten or fifteen or twenty visits——
Q. Yes.
A. And going a long distance to attend seamen.
Q. Yes.
A. We inquire if those seamen were not as near to a marine hospital, and when the collector would think there was going to be a long and tedious illness he should send the seamen to the hospital instead of having them locally treated.
Q. Do you exercise any supervision at all over what seems to be an unnecessary number of visits ?
A. Yes.
Q. You do ?
A. Yes.
Q. That is the question I want an answer to ?
A. Yes.
Q. You do not abrogate your right to check the doctor's account and go over it ?
A. No.
Q. And do you object to the number of visits if it appears to you that the visits have been unnecessary ?
A. Yes.
Q. But in this case you did not raise that objection ?
A. If you go through the file I think you will find I did raise objection.
Q. I have not seen that in the correspondence ?
A. Yes.
Q. It may be in the correspondence but not in the account ?
A. Yes.

Q. You would not consider that because the fund sustained itself or more than sustained itself, that that would allow you to do away with supervising the accounts fairly ?

A. No, sir, we consider ourselves to be very strict in the examination of medical accounts.

Witness discharged.

House of Commons,
Committee Room No. 32,
Thursday, July 13, 1905.

The Select Standing Committee on Public Accounts beg leave to present the following as their

NINTH REPORT.

Your committee have had under consideration the accounts, vouchers and other papers relating to the payment of $5,127.87 to Woods, Limited, as set out at Q—41 under heading of 'Clothing and Necessaries,' and $92,987.75 as set out at Q—113 under heading 'Purchase of Arms, Reserve Stores, &c.,' Report of Auditor General for 1903-4, and in connection therewith have examined witnesses under oath, and for the information of the House report herewith the evidence given by such witnesses ; and your committee recommend that the said evidence be printed.

All of which is respectfully submitted.

C. F. McISAAC,
Chairman.

HOUSE OF COMMONS,
COMMITTEE ROOM No. 32,
FRIDAY, July 7, 1905.

The Select Standing Committee on Public Accounts met this day at 11 o'clock, a.m., Mr. Colin McIsaac, chairman, presiding.

The committee proceeded to the consideration of the following accounts of Woods, Limited, as set out at Q—41 and Q—113 of the Report of the Auditor General for the year 1903-4 :

Woods, Ltd.: bell tents, 3,449 at $25, circular tents, 620 at $25 ; cotton sheets, 309 at 65c.; sod. cloth, 512 yds. at 23c.; overalls, 691 at $1.14 ; hospital rugs, 214 at $1.55 ; bolsters, 497 at 25c.; 2,000 tent buttons, $7.50 ; hooks and eyes, 5 gross at $6 ; small rope, 994 lb. at 19c.; tent webbing, 1,058 yds. at 1¾c.; tent pins, 1,000 at 3¾c., 5,000 at 2½c.; small mallets, 200 at 25c.; hospital shirts, 201 at 60c.; less paid in 1904-5, $10,875.53 . . . . . $92,989 75

Woods, Limited, Ottawa : mufflers, 500 at 67c.; overalls, 2,369 prs. at $1.14; bell tents, 33 at $25 ; Tam O'Shanters, 1 doz. at $8.50, ⅔ doz. at $6.50 ; tartan shirts, 144 at $1.59; small mallets, 330 at 25c.; pin bags, 85 at $1.75 ; small pins, 3,825 at 1½c.; small rope, 1,002½ lb. at 19c.; large rope, 1,109½ lb. at 19c.; tarpaulin for tent, $18 ; large runners for tents, 1,004 at 1c.; small runners for tents, 1,002 at ¾c.; tent buttons, 2,015 at $3.75 per M.; large signals, 100 at 35c.; small signals, 350 at 23c.; Union Jacks, 1 at $3.60, 6 at $2 ; sundry flags, 1 at $6, 12 at $3.75, 1 at $3.60, 1 at $2.60, 67 at $1.50, 6 at 60c . . . . . $ 5,127 87

Mr. H. W. BROWN called and sworn and examined:

By Mr. Foster:

Q. What is your name ?
A. H. W. Brown.
Q. Are you an officer of the Militia Department ?
A. Yes, sir.
Q. What duties do you perform ?
A. I am director of contracts.
Q. You have had cognizance of these two accounts which appear in the Auditor General's Report, one of $5,127.87, and the other of $103,805.28 ?
A. Well in the sense that I have had personally to do with them. I have not had cognizance of them to any considerable extent, because most of those transactions took place before my appointment.
Q. When were you appointed ?
A. First July, 1904.
Q. July, 1904 ?
A. Yes, sir.
Q. Who had charge of that same work before that time ?
A. Major Benoit.

APPENDIX No. 3f

Q. Was it under Major Benoit that these purchases were made ?

A. Yes, sir.

Q. Then I should think Major Beniot ought to be called to explain them.

A. Unfortunately he has been superannuated and is in Quebec. He is very ill.

Q. Then you shoulder his responsibility I suppose ?

A. My knowledge of the papers is that I prepared them for the committee.

Q. Now with reference to these items, for what purpose were these purchases made? Take the tents for instance.

A. For militia purposes generally.

Q. For what purposes, do you say, these purchases were made ?

A. Well, I am not in a position to tell you that. I do not think Major Benoit could, for the reason that the person who has asked, the officer who has asked for these supplies, is the Quartermaster General, who is charged with the control of the stores and the issuing of the stores to the militia for militia purposes. When he wants supplies of that kind he makes a requisition, without stating specifically what the supplies are for. The only thing the director of contracts has to do is to give the order to the contractor, whoever it may be, and consequently the director of contracts may not necessarily know what the supplies are for.

Q. Quite so. I see. Then the way the requisition comes is this: The Quartermaster General makes a requisition ?

A. On the Deputy Minister.

Q. On the Deputy Minister, we will say, for a number of tents ?

A. Yes.

Q. He does not necessarily state for what purpose these tents are needed ?

A. No, not usually.

Q. Then, what is the next step ?

A. The Deputy Minister issues the requisition and passes it on to the director of contracts. That is usually the case.

Q. And then the director of contracts has to do what ?

A. He has to give the order.

Q. He has to give the order ?

A. Yes.

Q. Well, now is there not a contract called for with reference to these tents ? We will keep to the tents for the time being.

A. I think there are a number of items there for the supply of tents.

Q. Yes, the prices are here and the number of tents, but what I want to know is whether these were asked for by tender and by contract or not ?

A. Well the reason——

Q. Were tenders asked for, that is what I mean ?

A. Well, I could not say that, because it is before my time in some cases, that is cases of rush orders, that is where supplies are required at once, and where there has been a contract entered into some time before. I think the previous form of tender supplied by the department requires that any supplies not called for by that particular tender, supplies of the same kind, shall be furnished by the contractor at the contract price.

Q. Which was it in this particular case ?

A. Well, I think there is a form of tender amongst those papers, although, as I say, I only had to do with collecting them and I really do not know.

Q. I do not find any form of contract.

A. I thought there was a tender there, possibly I am mistaken.

Q. Well, were these by tender, and a contract based upon tender, or was it simply an order issued by the department to have Mr. Woods supply these tents ?

A. Well, as I say, sir, I am not in a position to say because it was done before my time.

Q. Then you do not know with reference to that ?

A. No, sir.

Q. Have you the papers of the department with reference to this ? Have you brought them or have you looked them up ?

A. I collected all the papers with regard to those two items and sent them to the committee at the time, at least what I supposed to be all the papers.

Q. Well, those will be the papers (handing a file of documents to the witness) perhaps the information could be got out of those. The question I want an answer to is, whether those particular tents paid for in this account were supplied on tenders having been asked and a contract based upon answers received.

A. Well judging from these papers, I should not say they were.

Q. They were not ?

A. I should say the order was given, judging from these papers only. I have no personal knowledge.

Q. Judging from these papers then, what is your answer ?

A. That the order was given to Mr. Woods without tender.

Q. Without tenders being called for ?

A. Yes, sir.

Q. From these papers or from your own knowledge do you know whether there was any previous contract for tents with Mr. Woods based upon a call for tenders ?

A. Well, I know there was a previous contract.

Q. At what time ?

A. I could not give you that. It may have been in 1903-4, or it may have been a little earlier.

Q. Will you make a note of that and get the information ?

A. Yes, sir.

Q. Then in this case you say it was simply an order given to buy these tents from Woods, Limited ? What about the prices ?

A. Well, the price was fixed, as I say, by this contract that I am speaking of.

Q. By the former contract ?

A. By the former contract.

Q. Do you say that positively ?

A. I am quite sure of that, because I know the prices for bell tents have been the same for some years.

Q. Then you are sure there was a previous contract ?

A. I am quite sure.

Q. And that contract was based upon tenders asked ?

A. Well, I could not say as to that.

Q. You do not know ?

A. No.

Q. That is a point I would like you to look up for the information of the Committee ?

A. All right, sir.

Q. You have told me that you do not know for what purpose these purchases of tents were made ?

A. Yes, sir.

Q. You do not know ?

A. I do not know.

Q. When you look up that information will you bring with you all copies of advertisements or circulars calling for tenders upon which the original contract was based ?

A. Yes.

Q. Now, these tents that are charged for at certain prices. For instance here are 3,499 bell tents at $25 each. What is the description and specifications of these tents ?

A. Those were bought on sample, not according to a standard sealed pattern in the inspection room of the department, not according to specification.

Q. They were bought on sample ?

A. Yes.

Q. There must have been specifications and descriptions ?

A. Not necessarily, because the sample may have been, and I think was, prepared, submitted and approved.

Q. What do you mean by sample, a ready-made tent ?

A. Yes.

Q. It must have had a certain quality of cloth and it must have had certain dimensions.

A. Oh, well, the specifications could be made up. I do not know that they are in existence. It may have been done verbally. I have never seen specifications of the bell tent. It is a military tent and I believe it is a standard form.

Q. You never saw the tent specimen ?

A. Well, it is in the department. I do not know whether I have seen it myself or not. It is in charge of the inspectors, the departmental inspectors.

Q. Is the specimen tent upon which these others were supplied, that being the sample, is that still in existence ?

A. Yes.

Q. And can be identified ?

A. Oh, yes, it is sealed as the standard pattern.

Q. Can you give me a description of that, that is, as to the quality of the cloth ?

A. Well, I know it is 12-ounce duck.

Q. 12-ounce duck ?

A. Yes, it is a non-absorbent duck, and it is a circular tent, I do not remember the exact dimensions—I cannot give it to you just as it is, but it is about 14 feet in diameter—14 x 10, I think.

Q. You are not certain about that ?

A. No.

Q. That is information which I would like to get. I want a description and specification of that sample tent. I want to know if it is still in existence. You say it is sealed and can be identified ?

A. It is not only in existence, but all the tents supplied are compared by the departmental inspectors with that tent. It is in use all the time.

Q. That is a question that I am going to ask you, were these tents tested ?

A. The bell tents are actually put up on the ground by the inspectors and compared with the standard bell, the sealed pattern of which, as I say, is in the department.

Q. By whom is that done ?

A. By the departmental inspector.

Q. Who is the man that would do that ?

A. Mr. James Robertson and Mr. J. W. Caldwell.

Q. These are the inspectors ?

A. Yes.

Q. And these tents as they were furnished by Mr. Woods would be tested by comparison with the specimen tent.

A. Yes.

Q. And would be, if they were up to that specimen tent, passed by these inspectors ?

A. Yes.

Q. And upon their passing them, of course they would be accepted and the payments authorized for them.

A. Yes.

Q. So that the size in diameter and the height, and the height of the wall and the description of the tent, as to whether it was round or a pyramid, or the like of that, are matters that you are not acquainted with ?

A. Not necessarily, no.

Q. But information with reference to which you will get for me ?

A. Yes.

Q. What were they made of—canvas ?

A. Duck.

Q. White duck ?

A. Yes.

Q. And the quality, you say was what ?

A. The weight was 12-ounce.

Q. And non-absorbent ?

A. Yes, sir.

Q. That is with reference to the purchase of the tents. Now, with reference to the other things that are shown in this account, that is, the overalls and rugs and bolsters and webbing, and the like of that. How was that bought ?

A. I can only give the same answer for the same reasons. I have not any personal knowledge of that.

Q. So that knowledge you will have to get as well as the other ?

A. Yes.

Q. The same with reference to the flag ?

A. That applies to—yes, it is all the same.

Q. Then, that is really all the evidence that you are prepared to give with reference to this matter.

A. Yes.

Q. I understand from you that the examination and passing of these articles by the inspectors, whether tents or otherwise, is a condition necessary to the payment ?

A. Yes.

Q. That it is certified in each case that they were up to sample.

A. Yes.

Q. And approved of ?

A. Yes.

Q. And until that is done no payment would be made ?

A. No payment is made.

Q. These tents that we were speaking of and for which payments were made, are they still in the service of the Militia Department ?

A. Well, presumably they are, because they are in charge of the Quartermaster General.

Q. Who is the Quartermaster General ?

A. Colonel Macdonald.

Q. I suppose you could give all this information ?

A. Well, he may not have had personally to go into it. I do not know whether he could identify that particular order of tents. He could only tell you what tents he has in store, I should suppose.

Q. You would be able to tell what kind of tent he requisitioned ?

A. Oh, yes, to be sure.

Q. And the inspectors are Richardson and Caldwell ?

A. Yes.

Q. Then these three gentlemen amongst them ought to be able to give the information you want with reference to that. That is as far as I can go to-day. I would like these gentlemen summoned, with Mr. Brown, to be present at the next meeting of the committee, the Quartermaster General, James Robertson, and J. W. Caldwell.

Witness retired.

APPENDIX No. 3f

HOUSE OF COMMONS,
COMMITTEE ROOM No. 32,
MONDAY, July 10, 1905.

The Select Standing Committee on Public Accounts met this day at 11 o'clock, a.m., Mr. Colin McIsaac, chairman, presiding.

The committee resumed the consideration of the accounts of Woods, Limited, as set out at Q—41 and —113 of the Report of the Auditor General for 1903-04.

Col. D. A. MACDONALD, called and sworn and examined:

By Mr. Foster:

Q. Have you had an opportunity, Colonel, of reading over the evidence given here on Friday ?

A. I had, sir. I looked over it yesterday. I was out of town on Saturday and took a glance over it yesterday.

Q. The Director of Contracts was here, but these transactions with reference to which I questioned him, had taken place before he took charge, and that is the reason I called for two or three other gentlemen. You have knowledge have you, Colonel, of these two accounts, which are at present before the committee, Woods, Limited, Ottawa, one account being $5,127.87 and the other for $103,865.28 in the Auditor General's Report for 1903-4.

A. In so far as having made requisition for the articles.

Q. And the main article in these accounts is the tents, and it is with regard to these that I specially wanted to ask a few questions ?

A. Yes, sir.

Q. When were these tents requisitioned ?

A. Well, in March, 1903, I think, the Minister of Militia sent for me to ask if we could spare 2,400 tents that were wanted by the Department of the Interior to afford shelter to the immigrants in Manitoba and the Northwest, and I told the minister that it would be an awkward thing for me to part with those tents in view of the tents being required for the militia who are going out in June and July, and my canvas covering being rather limited, I did not feel that we could part with so many tents unless they be immediately replaced. The minister said they were to be sold to the Department of the Interior, as I understood, and the tents were to be replaced. My impression is—I will not speak positively—that that occurred before I consented to issue the tents. I think I asked Mr. Woods if he would be able to meet the requirements in case of necessity,—I wanted to be on the safe side,—and although I do not remember the answer he gave me, I take it that his answer was that he could.

Q. That being so, he replaced the 2,400 ?

A. The 2,400 tents, yes.

Q. They were asked for by the Interior Department ?

A. Yes, and had to be replaced.

Q. These tents that were to be sold to the Interior Department, how long had they been in your possession ?

A. Oh, well, that would be a matter I cannot very well tell, because——

Q. They were at different points ?

A. Yes, they were distributed at different stations. I had to collect them from four or five different stations. We did not have enough at one station to even half

fill the requisition. We had been getting tents for nearly twenty years, at all events as far back as the eighties, and these tents had been in use at the different camps during these years.

Q. And as a matter of fact, these 2,400 tents were delivered to the Interior Department ?

A. They were delivered to the Interior Department.

Q. Do you know on what terms ?

A. I do not—what do you mean ?

Q. That is, as to what was paid for them? How did you arrive at the value of them, and the like of that ?

A. No, I cannot give you anything definite, because I did not make any personal arrangement as to that. I think I really had nothing to do with the contracts or with prices. I simply made the issue, as to any conditions, they were not arrived at by me.

Q. And this issue you made about March ?

A. About March.

Q. About that time ?

A. I would not be sure.

Q. Then did you immediately make requisition for the supply of tents necessary to replace them ?

A. I think I did, sir.

Q. To what officer ?

A. To the Director of Contracts.

Q. To the Director of Contracts ?

A. Yes I think there was then a Director of Contracts. My requisition should be found in the file I think, and I fancy I would have stated that the tents were to replace those issued to the Department of the Interior.

Q. Will you see if you can find the document on the file ?

A. I think this is it. (Producing document).

Q. Just read the requisition ?

A. This is addressed to the Deputy Minister of Militia and Defence. It is on the 17th April, Mr. Foster. 'Required, for the use of the militia, the following to replace an issue made to the Department of the Interior, the payment of which is to be provided by the said department in the estimates of 1903-4—Bell tents complete, 2,412.'

Q. What is the general course when a requisition is made by you ?

A. Then it passes into the hands of the Director of Contracts. The contracts are made in that branch and they are delivered to him. The inspection also of all purchases for the government service, pretty nearly all tents, clothing and so on, comes under him. There is a sealed pattern for all articles that we purchase in the inspection room and there are inspectors to compare every article with this sealed pattern. They are then sent down to headquarters stores with invoices or with lists, packing lists, in each case. In the matter of tents there would be an invoice sent down. They are rechecked by our people in the stores and if found correct are sent up to the office and a requisition issued to take those on store charge. Then they come under my control.

Q. You have nothing to do with testing ?

A. I have not, Mr. Foster.

Q. Who does that ?

A. That is done by inspectors under the Director of Contracts.

Q. Well when you make a requisition, before that is made authoritative, I suppose it has to have some counter-signing ?

A. I think by the Deputy Minister. This is addressed to the Deputy Minister. I think you will find this is addressed to the Deputy Minister ?

Q. Yes, the Deputy Minister. Who is it that makes the specifications as to the quality, size and the like of that ?

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A. Well, take a bell tent for instance. The bell tent is really a copy of the Imperial army tent and in purchasing it the name is so well known and the specifications, I do not think the actual specifications in feet will be given. I am not sure about that.

Q. Well there would be different qualities would there not, and different sizes and the like of that ?

A. Of course we get different sizes of tents. For instance we get marquees, and we get what is called a field officer's tent, and the bell tent, and then there is the hospital tent.

Q. And the bell tent ?

A. And the bell tent.

Q. So that in your requisition there would be no marquees nor officer's tents ?

A. No.

Q. There would be what is known technically as the bell tent ?

A. Well, they might all be embraced in the same requisition. I would name them as marquees, field officers' tents and bell tents.

Q. But in this requisition you seem to have mentioned just bell tents ?

A. That is all that I issued, sir.

Q. And when you issued a requisition for bell tents there would be a perfect and ocmplete idea of what you wanted in specified form ?

A. I think so, sir.

Q. You do not know what the specifications are ?

A. No, I do not. I know pretty nearly what the size of the bell tent is. The bell tent, I think, or at least I fancy, is about 14 feet in diameter by perhaps 10 to 11 feet 6 inches in height.

Q. And as to the quality of the stuff ?

A. Well, the quality—the duck that the bell tents are being manufactured out of is what they call a non-absorbent duck, it is supposed to be practically water-proof; a good heavy duck weighing I think about 12 ounces to the yard.

Q. Would that go as a matter of course ? If you made a requisition for bell tents it should be 12-oz. duck ?

A. Yes. The sealed pattern you see is there. Every tent should be according to the sealed pattern, and I believe they are. I believe every article that passes through the inspection-room is carefully inspected by the inspectors and they see that it is in every particular, in quality, material and workmanship up to pattern in every way. In these tents there are ropes and grummets, and curtain and there are buttons and hooks and eyes. These are all carefully gone over by the inspectors.

Q. The sample I suppose would be in the hands or in the care of the inspectors?

A. It is in the inspection room sealed.

Q. And as a matter of delivery it is the inspector's duty to see that every tent comes up to that sample.

A. To that standard, sir, in every respect.

Q. With that you have nothing to do ?

A. I have nothing to do.

Q. When these samples are sealed as you say who has control of them ?

A. They are left to the Director of Contracts.

Q. Who is he—the Director of Contracts ?

A. Mr. Brown.

Q. At that time ?

A. No not at that time. It was Major Beniot, poor fellow, he is very ill.

Q. Major Benoit is not now director ?

A. No.

Q. And the director here now, said that he could not answer these questions because he was not director at that time. We have been applying to get answers to our questions, because there must be some permanent record, so that the knowledge

must be obtained in some way by the succeeding director regarding what was done by the preceding director in such a case ?

A. You see the inspectors have—perhaps this would fill in the gap—the inspectors have to give a certified report of having inspected every article that passes through their hands and this is sent up to the Director of Contracts. I happen to know the routine. This is attached to the vouchers and the vouchers themselves are certified to, as to the receipt of these goods as well as to the quality, and these are certified to by the Director of Contracts before going down to the accountant for payment. These certificates I fancy would be in the Audit Office, because I think they come over with the receipts to the Accountant's Office. At all events he has them and the Director of Contracts always gets them.

Q. When did you receive these tents from the Woods Company ?

A. Well, I could not give you the details. They began delivering I think in May and kept on the deliveries perhaps 20, 30, 40 or 50 per diem, or so many per week. I assume that there were not enough in the 2,400 delivered to help me out in camp. I could not have got through with that number.

Q. They were all delivered within four or five months of the requisition.

A. I think so, but I cannot speak positively.

Q. The requisition was on April 17 ?

A. I think so.

Q. Were any of these tents that were issued to the Interior Department returned again ?

A. Not that I know of, not a tent.

Q. None of these came back ?

A. None of them came back.

Q. You don't know anything of the financial arrangements as between the two departments ?

A. No, I do not know.

Q. Or as to what was paid for them ? When those tents were issued to the Interior Department you took cognizance of their condition did you ?

A. No, I did not, it was a rush order and I think the tents were issued just as they came. We had to issue them from different stations—you mean as to the condition they were in ?

Q. Yes.

A. They were issued, I fancy, as they came.

Q. Would not a record be made by each issuing officer of the condition they are in ?

A. No, I do not know.

Q. It would not be ?

A. No, I do not think so. My instructions to the ordnance officers at the stations were to issue tents—so many bell tents,—and to see them on board cars, and so on. It was a rush order. I dictated the order one day and sent away 2,400 tents. They were nearly all away that night. I shipped from Montreal, Toronto, London, Kingston, and I think some from here.

Q. So far as the militia officers are concerned, they made no record of the tents?

A. No.

Q. If any record was made, it was by the department which took them over ?

A. Yes, the Department of the Interior.

Q. There was no conference between the two as to the joint record ?

A. No.

Q. Do you know whether these tents were bought upon contract, or anything of the terms as to their being obtained ?

A. No, I cannot tell you, but I assume that these tents would be based upon what had been paid before, the former contract with Mr. Woods. I fancy it was an extension of that contract.

Q. Do you know whether there was a contract before for bell tents ?
A. I know he made bell tents.
Q. You don't know as to contracts ?
A. No.
Q. You have nothing to do with contracts ?
A. No, I have nothing to do with contracts.
Q. When you made requisition for bell tents, what did you include in that ? Did you include everything necessary to set them up completely ?
A. I did, sir, everything complete,
Q. And I suppose the tents that were transferred to the Interior Department were in the same manner tents that were ready for setting up ?
A. Complete, sir.
Q. Complete in that way ?
A. Complete in every particular.
Q. Was anything else issued to the Interior Department besides the tents?
A. Not that I am aware of.
Q. Nothing in the way of blankets ?
A. No, sir.
Q. Do you remerber who were the inspectors at the time ?
A. I think Mr. Robertson and Mr. Caldwell.

Mr. JAMES ROBERTSON called and sworn and examined:

By Mr. Foster:

Q. Mr. Robertson, what are your duties in connection with the Militia Department ?
A. As an inspector.
Q. Inspector of——
A. Inspector of Militia Clothing.
Q. Militia clothing ?
A. Etcetera.
Q. Etcetera including tents ?
A. Tents.
Q. Supplies of all kinds ?
A. All kinds.
Q. Were you the inspector during the time that these bell tents were being sent in on the requisition made by Colonel Macdonald on 17th April ?
A. What date, please ?
Q. Well, the requisition was made 17th April by Colonel Macdonald.
A. What year ?
Q. In 1903.
A. I was.
Q. Did you make inspection of these 2,400 tents—2,412 tents ?
A. They had been inspected before Colonel Macdonald put in his orders to send them out.
Q. I do not mean the old ones that were sent out to the Interior Department. I mean the 2,412 tents that were requisitioned on the 17th April, 1903, to fill the place of these?
A. Yes, Mr. Caldwell or I inspected them.
Q. Do you remember whether you inspected them ?
A. I cannot say which.
Q. You cannot say which ?
A. I cannot say whether he or I inspected these. I will tell you that Mr. Caldwell inspected the larger number of them. I only inspected a few hundred.

Q. How can you say whether you inspected them or not ?
A. From my stamp.
Q. Your stamp ?
A. On each tent.
Q. What is the process of your inspection, now, with reference to the bell tents? Will you just tell the committee?
A. It is put up in the inspection room and attached at four points, and then we go around each tent and see that the seams are all right and that everything in connection with it is according to standard, both in size, weight and the stock, and in the general work.
Q. You have the specimen or standard ?
A. Yes.
Q. And you inspect every tent by that ?
A. Every tent is inspected.
Q. You do not simply inspect the sample of them ?
A. No, how could we stamp each tent as being inspected ?
Q. You have to inspect each tent ?
A. Every tent.
Q. And then put your stamp on it ?
A. Every tent.
Q. Where is that sample tent kept ?
A. In the inspection room.
Q. Under seal ?
A. Everything in the inspection room is under seal.
Q. And who has access to the inspection room ?
A. The inspectors and Mr. Brown——
Q. The Director of Contracts, yes.
A. And the Deputy Minister and teamsters coming and going have to be admitted.
Q. But always under supervision ?
A. It is under supervision. The door of the inspection room is kept always locked and you yourself or anybody else could not get in without our permission.
Q. That is, the permission of either one or the other of the gentlemen you have named ?
A. That is all.
Q. Then, after the inspection is over is the sample tent carefully kept ?
A. Certainly, everything we handle is kept carefully.
Q. Every sample is kept ?
A. Carefully kept and handled.
Q. And could be produced for comparison ?
A. Oh, yes, certainly.
Q. Well, you remember then the sampling operation of these tents ?
A. Yes.
Q. And of placing your stamp upon them ?
A. Yes.
Q. The rest of them were stamped by Mr. Caldwell ?
A. Yes.
Q. You are the two inspectors ?
A. Yes.
Q. And both were inspectors at that time ?
A. Yes, and are now.
Q. Now do you remember the specifications of that sample tent as to weight and kind of duck, for instance ?
A. Well, it is supposed to be 12-ounce duck.
Q. Yes, and of what quality, that is, outside of the weight, non-absorbent ?

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A. Well, that is a term.
Q. Is it a well defined term ?
A. Oh, reasonably so.
Q. How would you test, for instance, for weight and quality of the duck ?
A. In a machine that we have for testing the strength.
Q. Which you apply to each individual tent ?
A. Oh, no, not by any means.
Q. You apply that to the material.
A. To the material only.
Q. And then you compare the material so tested ?
A. Then our judgment of the quality tells us whether a thing is right or wrong.
Q. That is the sample out of which it is alleged those tents are made ? You test for weight and quality ?
A. And quality, that is right.
Q. Then you use your own judgment as to the weight of the individual tents ?
A. That is right.
Q. Does that test the non-absorbent quality ?
A. No.
Q. How then do you get at that ?
A. We do not get at that at all.
Q. You simply take the denomination of the goods as far as that is concerned ?
A. Yes, and by looking at the goods you can tell whether it would be a duck that would absorb the water or not by the make of it. If it is closely made, you know, it will not allow anything to go through. A very much lighter covering than that would not allow water to go through unless you put your hand on the inside in wet weather and pull your fingers down that way (illustrating with his hand) and then the water would come through.
Q. Your test then, as to non-absorbent quality, is merely one of mechanical judgment, so to speak ?
A. That is it, that is right.
Q. But you have no machinery and you put it through no process which absolutely tells you that it is non-absorbent or is not non-absorbent ?
A. No, none at all.
Q. Then of course as to the size and all the other dimensions those you can easily judge for yourself ?
A. By measurement.
Q. It is a matter of measurement. And all these tents which were submitted to you passed the test ?
A. All we accepted. Some tents may be defective in some little thing and they are sent back again for those lacks to be completed and then when they return they are stamped and accepted.
Q. But before any tent is accepted it has to absolutely come up to the test ?
A. Certainly.
Q. As a matter of fact do you remember whether there were many that were rejected at the first trial or not ?
A. Oh, no, there were very few.
Q. A small proportion ?
A. Very small; very, very small.
Q. Do you know from your own personal experience whether there is any other tent at present which is supposed to be better than the bell tent or which has superseded it ?
A. Well, in my opinion, the bell tent of to-day is superior to anything that has been furnished the department before.
Q. Yes, the bell tent of to-day would be the bell tent of 1903, I suppose ?
A. Yes.

Q. The same tent ?
A. The same tent.

Mr. J. W. CALDWELL called and sworn, and examined.

By Mr. Foster:

Q. Your office in the Department of Militia is what, Mr. Caldwell ?
A. Inspector.
Q. In connection with Mr. Robertson, you do all the inspection, do you ?
A. Well, with the exception of leather goods.
Q. You take in all of what you might call the dry goods part ?
A. The dry goods part, yes.
Q. Including of course these tents ?
A. Yes.
Q. Do you remember these tents being taken in 1903 ?
A. Yes.
Q. And the inspection of them ?
A. Yes.
Q. You personally assisted in the inspection ?
A. Yes.
Q. You have heard Mr. Robertson's testimony ?
A. Yes.
Q. He has been plain and clear in what he has said, would you say the same thing, that is in so far as he has gone, with reference to the method of testing and the results of testing in this particular question ?
A. Yes.
Q. In every respect ?
A. In every respect.
Q. You consider that you test these thoroughly by testing a sample of the cloth out of which it is alleged the tents were made ?
A. Yes.
Q. And you test the cloth first, do you ?
A. Yes.
Q. What security have you that the cloth you are asked to test is really the cloth out of which the tents are to be made ?
A. What security have we ?
Q. What guarantee have you that it is the same ?
A. Well, our own judgment tells us that as far as we are able to judge the cloth that the tents are made of is the same as that of the standard that is submitted.
Q. You have a standard tent ?
A. We have a standard tent, yes.
Q. It is not that tent or a pattern of that tent which you test, is it ?
A. No.
Q. But it is a sample which is said to be of a quality the same as that sample tent ?
A. Yes.
Q. That is what I wanted to get at. What guarantee have you that the sample of cloth is the same as the tent which is there for a sample tent ?
A. Well, our knowledge, by examination, by feeling the cloth and examining it with the eye, that according to our judgement the cloth in the tent is identical with that of the sample piece submitted.
Q. Do you consider that a really close test ?
A. Yes, we do, according to the best of our judgment we consider that a critical and close test.

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Q. Is there no other method of testing cloth to make it absolutely certain that it is the same as a given sample ?

A. Oh, there may be.

Q. You have to get at the weight. How do you get at the weight ?

A. Well, we take a piece of the cloth, a yard or half a yard.

Q. Of which cloth ?

A. Of the sample cloth which is submitted and weigh it.

Q. You know then its weight ?

A. And we know its weight.

Q. How do you know its weight corresponds with the weight of the cloth in the sample tent ?

A. Well, we think we can tell by handling the cloth, our knowledge of handling the cloth.

Q. But you did not take a piece of the sample tent ?

A. We have not in these particular tents.

Q. Of equal size and actually weigh it ?

A. No, I never weighed it.

By Mr. Carney:

Q. I want to say that the mills that make this canvas have a name and standing. They are well known and they turn out canvas No. 7B or No. 8C, and they brand it and the name on it. They are honourable and they take a great deal of pride in their products. There is no chance for deception or fraud. The canvas is turned out by millions of bales and there is no deception at all. When it goes into tents the canvas has the brand of the mills that have turned it out. Is that not the case, that the canvas is branded ?

A. I presume it is. We do not see the canvas before it goes into the tents, we only see it when it is in the tents.

By Mr. Foster:

Q. That is all so good as far as it goes. I do not think it helps us very much. You did not see the brand on every tent you inspected ?

A. No, the brand would only be, I suppose, on one end of a bale of cloth.

Q. You think the test is fairly satisfactory because as far as weight goes you have the weight of the tent itself ?

A. Yes.

Q. And you can therefore comparatively state whether the cloth that you are examining and testing is of the same weight as the cloth in the tent ?

A. I might say this: That if we were suspicious that the cloth in the tent was not equal to the sample submitted we would cut that tent up at once and test it.

Q. Yes.

A. But as far as these tents are concerned we have never been suspicious that the quality of the cloth used was not fully up to the standard. That is one of the privileges that we have and our instructions are that if we are suspicious at all to make a severe test in any way that we see fit.

Q. But your examination of them convinced you that the cloth was reasonably up to sample ?

A. Yes.

Q. That the cloth was as good as you could actually get it ?

A. That is right.

Q. And therefore you did not take any extraordinary means ?

A. We did not have any reason, we thought we had no reason to do it.

Q. Do you give any certificate other than the stamp you put upon the tent itself? For instance, after you finish your examination of a parcel of these tents they go out from your hands ?

A. Yes.

Q. Do you give any certificate of having examined the tents and the result ?

A. In the report that we make to the Director of Contracts ?

Q. You make a report ?

A. When I as an individual inspector inspect an article I have a blank form of report to fill in and every article that is accepted, I put down a number in a column for that purpose and then those that are rejected in another column and sign that. I also attach to that report the statement of any that we reject and the cause for rejection.

Q. Yes ?

A. And that report goes to the Director of Contracts.

Q. In the case of the tents in question did you do that with every individual tent or with every parcel of tents ?

A. With every individual tent.

Q. Has each tent a number ?

A. No.

Q. How do you designate the tent then in your report ?

A. Well, I say 'bell tents so many received.'

Q. Yes ? Then you would give a certificate for a parcel, not for each individual tent ?

A. I might examine fifty tents and accept them and I report that there are fifty tents accepted.

Q. Then you report for the lot ?

A. For the lot I have examined.

Q. Not for each individual tent ?

A. No.

Q. Now after you have finished your inspection what becomes of these accepted tents ?

A. They are sent down to the militia stores.

Q. And what receipt do you get ?

A. Well, I do not get any receipt, the receipt goes to the Director of Contracts.

Q. The Director of Contracts ? These tents come in, they pass through your hands, and as inspector you give them a certificate of inspection ?

A. Yes.

Q. You have nothing to do with the delivery of them ?

A. No.

Q. They are delivered by whom ?

A. Well, the clerk of the inspection room you might call him.

Q. When they are delivered they are delivered at what place ?

A. The carter takes them down to the militia stores.

Q. And they are delivered to the master of the stores' department ?

A. Yes.

Q. And he gives a receipt ?

A. There is a shipping bill sent down. There are two slips made out; one is what we call a packing slip, with so many bell tents, say. That packing slip states by whom they were inspected and by whom checked, and then there is a shipping bill also sent down asking the stores to receive so many bell tents with a date on it. That goes down to the stores, and I presume it is signed there by the officer commanding, whoever he may be, then I think it is sent back to the Director of Contracts.

Mr. H. W. Brown recalled:

By Mr. Foster:

Q. There is some information, Mr. Brown, I asked you for the other day which you did not have in hand then, but which you probably have had time since to look up. Can you give me any information that you have found in that respect ?

A. Well, in the first place you asked me to get any contract with Woods, Limited, or Mr. Woods, for tents covering those particular items.

Q. Yes.

A. Well, the contract I had in my mind when I spoke of it the other day was—there are some papers here which I looked up in the afternoon. That is what I had in mind (exhibiting papers), that tender of Woods, Limited.

Q. What is the date of that tender ?

A. The tender is dated November 3, 1903.

Q. November 3 ?

A. 1903.

Q. Well, that date then is after the delivery of the tents ? The requisition was made for those on April 17. The tender you have is not the one evidently.

A. I beg your pardon. I am sorry, I thought that this was the papers in regard to the contract in 1903-04, and that this requisition of Colonel Macdonald's—without looking at it I thought it was in the spring of 1904 instead of in the spring of 1903. This contract that I had in my mind fixing the price for the tents was the Woods, Limited, tender of November 3, 1903 which I remember having put in among the papers.

Q. Is that for an additional number of tents ?

A. That is for tents, circular, 2,500.

Q. 2,500 ?

A. Yes.

Q. What is the date of the account ?

A. November 3, 1903.

Q. 2,500. Well those would not be the tents that had already been requisitioned and received to the number of 2,412 ?

A. No, sir. As I say I had not these papers with me the other day and in the afternoon looking at this thing I did not expect that these earlier papers were not really in 1903 at all, but were in 1902-03.

Q. Now taking that contract that you have there ?

A. Yes, sir.

Q. That is for how many tents ?

A. 2,500.

Q. What are the terms in the contract, the money terms ?

A. The money terms ?

Q. Yes, what are they contracted for there ?

A. $25.

Q. And what are the specifications ?

A. Well the terms, as far as that goes, are contained in section 2 in the tender. This is a printed form of the Department of Militia and reads that the tenderer agrees that each article shall be similar and fully equal in respect to the pattern thereof, in the possession of the department and shall be subject to rejection if not judged by the department to be in accordance with the said pattern. There are no specifications so far as I know, but that is what determines the character of the article supplied.

Q. Is there nothing to identify the pattern beyond what you have read in the contract ?

A. Not as far as I know, except of course the sealed pattern in the department. This refers to the sealed pattern in the department.

Q. Just read that again ?

A. 'That each article'—that is to say each article mentioned in this list at the back—'shall be similar and fully equal in respect to the pattern thereof in the possession of the department and shall be subject to rejection if not judged by the department to be in accordance with the said pattern ?

Q. There is no number or anything to identify the pattern ?

A. No, sir, not so far as I know. The pattern of course is in charge of the inspector.

Q. What does he undertake to make ? Does he denominate the kind of tent there?

A. Yes, this is the list.

Q. What does he call it ?

A. Tents. I beg your pardon, I said there were 2,500 tents, it should be 2,000 tents. 'Two thousand tents circular' they are called here. That is really a synonym for bell tents, it is the same thing, the two terms are interchangeable.

Q. Tents cirrular and bell tents mean one and the same thing ?

A. So far as I know, yes. They are interchangeable.

Q. Anything given as to the size, dimensions, or weight or anything of that kind?

A. No, sir.

Q. Nothing except that allusion to tents ?

A. That is it. You asked me the other day for the description and specification of the tents.

Q. Yes.

A. And Mr. Caldwell the inspector made up the specification.

Q. Have you that ?

A. I have that here (produces document).

Q. Would you give me then the specification of the sample tent ?

A. Yes, this is the specification of the sample tent.

Q. You might just read it please so that it will go into the evidence ?

A.. (Reads):

SPECIFICATION OF BELL TENT FOR CANADIAN MILITIA SERVICE.

Material 12 oz. white 'Woods Non-absorbent' duck (No. 10). The tent is composed of twenty strips, 24 inches wide at the base and a door.

Diameter, 14 feet ; length of strips from apex to wall, 10 feet ; height of wall 2 feet 2 inches; pole, 10 feet 8 inches; 3 pockets; 3 ventilators; 22 guy ropes, 6 feet ; 19 picket ropes, 13 inches ; 45 small pins, 15½ inches ; 1 small mallet ; sod-cloth, 12 inches wide ; 12 small hooks ; 6 small eyes ; 4 large hooks and eyes ; 40 yds. strapping, 2 inches wide. 38 small grummets ; 22 medium grummets ; 60 buttons ; 18 white runners ; 4 red runners ; 3 rope rings ; 2¾ yds. red braid ; pin bag ; valise.

Q. That is given to you by whom ?

A. Mr. Caldwell, one of the inspectors.

Q. It purports to be what ?

A. A specification of the bell tent for the Canadian militia service.

Q. Such as are contracted for in the contract you have just read ?

A. Yes, sir.

Q. Such as were supplied in the case of the tents which we have been discussing ?

A. Yes, sir, I believe so. I could not speak positively as to that.

Q. Mr. Caldwell is still here. Do you mind, Mr. Caldwell, saying just here whether or not that specification covers the sample tent on which 2,412 tents were delivered in 1902 ?

(Mr. Caldwell):

A. Yes, that makes the tent complete.

Q. So far then as finding any contract for the tents which were delivered in 1903 you have not been able to find any ?

A. No, sir. As I say I rather misled myself thinking that contract I brought was the spring of 1904 without looking at the date. I really did not take the trouble that I should have.

Q. You did not make any further search ? After you struck that you thought you had it.

A. I thought I had it. That was really the contract I had in mind when I spoke the other day, because I remembered it from having collected these papers. That was really my recollection.

Q. Then you cannot give any further information with reference to the contract?

A. No, sir.

Q. Was there any other information I asked you for ?

A. Well, you asked me if tenders were called for. That is in connection with this contract which I mentioned and so far as I know there were no tenders asked for. Those are the only papers in the case so far as I know.

Q. Then so far as the contract you have before you, 3rd November, 1903, there is no evidence to show that any tenders were called for ?

A. No, I do not think there were. That price for tents was fixed prior to that, that is in the previous year, I believe. The previous year, that would be the year—the year 1902-03.

Q. But you do not know how it was fixed ?

A. No, sir.

Q. Mr. Caldwell, I think, Col. Macdonald stated there was no inspection, so far as he knew, of the tents that were delivered to the Interior Department ? Do you know from personal knowledge whether there was any inspection of them before they went out to the Interior Department and at the time of their going out ?

Mr. Caldwell—No, all I know is that everything that came through the inspection room was inspected before it went out of military stores. At this particular period do you mean was there any inspection ?

Q. Yes.

A. No. I know nothing about it.

By Mr. Fielding:

Q. They went out from the military stores to the Interior Department, but they had been inspected before they went to the military stores.

A. They were inspected when they went into military stores.

Mr. Foster.—My point was whether or no when these were delivered over to the Interior Department there was any inspection or report as to their condition and delivery. The answer was there was none, so far as Col. Macdonald was concerned.

By Mr. Fielding:

Q. There was no second inspection ?

A. There was no second inspection. They were issued as we had received them.

Col. Louis Felix Pinault, called and sworn and examined:

By Mr. Foster:

Q. I have a question or two to ask you, Col. Pinault. You are the Deputy Minister of Militia and Defence, are you not ?

A. Yes, I am.

Q. With reference to 2,412 tents, the requisition for which was made on 17th April, 1903, and initialled by yourself, what arrangement was made regarding the basis of payment for them ? In the first place were tenders called for for the making of these tents ?

A. I would not be able to say from memory. I do not think there was any tender called for.

Q. You do not think there was any tender called for ?

A. I think it was simply a continuation of the previous contract.

Q. Then I suppose we may take that for granted, that there was no tender called for at that time ?

A. I do not believe—of course I would not like to say positively without going through the file.

Q. I do not know that this would help you at all (proferring file of documents).

A. No, one would not be able to see it at a glance.

Q. Well, what I would like to know is, definitely whether that is so or not ? May I take that answer as being a definite statement that there were not ?

A. I do not think there were any tenders called for at that time.

Q. To make sure, would you just revise your knowledge of it when you leave here and if there were any tenders let me know ?

A. Yes.

Q. I imagine you are pretty sure in your own mind ?

A. Yes, pretty sure ; I think it was only a renewal of the previous contract. If I remember well, these tents were transferred to the Department of the Interior for immigrants.

Q. A number of tents were.

A. That is what I believe.

Q. And it was to replace this 2,400. What was the date of the previous contract with Mr. Woods ?

A. It must be the year before about July I suppose.

Q. About July, 1902.

A. What is the date of the——

Q. This date is April 17, 1903.

A. Yes, it must be—some time during the summer of 1902.

Q. Well, do you say that because you are in the habit of giving yearly contracts to Mr. Woods ?

A. Yes, we go to Mr. Woods and to all the other contractors when the estimates are available and we generally prepare our contracts for the year.

Q. Do you remember how many tents the contract is asking for ?

A. I do not know.

Q. About the same number, 2,400 ?

A. No not so many.

Q. That was to replace 2,412 that were delivered in 1903 ?

A. Yes, but this was an extraordinary order because we had given to the Interior Department a lot of tents and we had to replace them for the camp.

Q. This was intended to replace them and they were so replaced. It is in November, 1903, that you gave a contract for 2,000 bell tents. It is pretty nearly as many as was required for replacing the lot ?

A. I am not able to say positively.

Q. Yes, the contract is here.

A. Yes.

Q. That would seem like going upon—as if asking for a great many tents. You had your stores fairly well filled at that time when the requisition from the Interior Department came to you. Then you filled up that gap from the 1903 contract. That is in April. Then it seems that you made a contract for 2,000 on November 3. That would be for——

A. I would not be able to say positively without refreshing my memory. We generally give in May a contract for what we will require during the year. But this 2,400 was to replace the tents transferred to the Department of the Interior.

Q. Yes. It is—you will find it here, perhaps you might just take that (handing witness a file of papers)—you will find the contract for November, 1903 ?

A. Yes, I see that was an order, a contract with particulars, that was given I suppose by the minister on November 3, 1903.

Q. Well, was that to fill any extraordinary demand ? That is a large number of tents, 2,000, when you had had your stores replenished by the 2,412 received from April to June or July.

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A. I think the officer who would be able to answer that would be the Quartermaster General. When I receive a requisition it is from the Quartermaster General, that he requires so many tents to replenish the stores. We take the necessary steps and when we have the price fixed we explain it to the minister and I would not be able to explain exactly what it is for.

Q. Were any tenders called for with reference to that contract upon which it was based.

A. No it must be a renewal of the former contract.

Q. Or it is rather on the basis of—it would seem to be rather an order for so many tents at such and such prices. No reference is made to any former contract ?

A. No it is at the same price as was paid before.

Q. Well, now in 1903 that extraordinary demand for 2,412 to replace those that went to the Interior Department were any tenders called for in that case ?

A. No. It is exactly what I said before. I suppose it is the price of the former contracts that was contracted for this order.

Q. Now then going back to the contract for 1902 no tenders were called for that?

A. I am not able to say just now

Q. These tents you say cost $24 each ?

A. Yes.

Q. And 2,412 tents comes up to a good amount of money ? It would seem to be ——. What is the practice of your department ? Do you call for tenders for these large supplies ?

A. Yes, it is generally the practice to call for tenders, but as you are aware my minister has declared more than once in the House, that when the contractor has given satisfaction they renew to the same amount without calling for public tenders.

Q. Yes, well what I want to know is. I have been tracing back in the records for three years and I have not come to a call for tenders yet. When do we come to a call for tenders ?

A. I am not prepared to say without looking at all the papers. The man who is charged with this is Major Benoit. He is away now.

Q. Well, the department remains ?

A. Yes, but I was not notified before 20 minutes ago.

Q. Yes that is so. You have no recollection of tenders being called for during that time ?

A. Oh, yes, I am positive, but I am not able to say from memory.

Q. None for these in November, 1903 ?

A. I do not believe so.

Q. None for the order of 2,412 in April, 1903 ?

A. No it does not appear upon the file.

Q. And then for 1902, what is your opinion, were tenders called for at that time?

A. I do not know at all. I would not like to say yes or no without referring to the papers.

Q. That is the essential point, one of the points that I wish to know definitely, and if you are not able to give it definitely, would you be kind enough to look the whole matter up and be able to tell us ?

A. Yes, I will make the necessary search in the department.

Q. And you know of no reason why this extra number of 2,000 tents was ordered on the 3rd November, 1903?

A. No.

Q. Were any camps held at that time ?

A. No, but I suppose the Quartermaster General said he wanted these tents. We have been increasing the number of troops going into camp largely these last few years, and there was a special vote on capital account to provide the reserve. You see, in time of emergency we want to have more tents than we have now to accommodate the troops in the field.

Q. How many tents have you in store ?

A. I would not be able to say. Colonel Macdonald would be able to tell exactly from his books.

Q. When a requisition comes in from even so good a man as Colonel Macdonald you do not necessarily issue the order because he makes requisition ?

A. No, I generally ascertain—he has charge of that part of the work and when he makes a recommendation, I naturally suppose that they are required, they are wanted.

Q. You do not just go on that assumption? You inquire for what he wishes them ?

A. Yes, I inquire, but as it is, he is directly responsible to the minister, and I think when I approve his recommendation the contract is then made. The order I give is simply to get the specifications, get the details and prepare the contract. The contract is finally approved by the minister.

Q. You are not able to give definite information as to tenders having been called for in any way for either of these three?

A. No.

Q. Except with reference to the latter, but you say no tender was called for ; the others you don't know ?

A. No.

By Mr. Roche (Halifax):

Q. How long do these tents last in the usual operations ?

A. It depends on their usage.

Q. They wear out more quickly under some circumstances than others ?

A. Yes, if we have a very wet camp and wet weather at the closing of the camp of course we have trouble to store the tents in proper order.

Q. Have these men that make them any special patents or any preparation or machinery to make them ?

A. Yes, they are made of special duck, that they call non-absorbent duck.

Q. Have they any patents on the appurtenances to do that ?

A. I understand there is a patent, but I am not able to tell you.

By Mr. Foster :

Q. These same accounts, Colonel, have payments for flags. Would you, when you are looking up the information with reference to tenders being called for for the tents include that also in your inquiry ?

A. For flags ?

Q. Yes. Be able to answer the question as to whether or not tenders were called for the supply of flags ?

A. In 1902 ?

Q. In 1902-03. What do you mean by saying that there is a special patent for this kind of duck ?

A. I was told that there was a special patent.

Q. What do you mean by that—explain ?

A. They call the duck non-absorbent, and I am told that that duck costs a little more than the ordinary duck, and I think the report of our inspectors also stated that this duck is superior to the other ordinary duck.

Q. That is a process of manufacture ?

A. Yes.

Q. Does Mr. Woods manufacture his own duck ?

A. No.

Q. Where does this duck come from ?

A. I think that duck is manufactured in Canada—I am sure it is manufactured in Canada.

Q. Is it Nova Scotia duck ?

A. I do not think so.

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Q. Do you know where this duck comes from ?

A. I know it is Canadian duck, but I would not be able to state the name and the factory.

Q. Mr. Barker says it is made in Hamilton. Just refresh your memory or get any information you can with reference to there being any special patent for that kind of duck ?

A. Of course the information is in the department.

Q. Bring us whatever information you have in the Militia Department as to that. That is all.

(Witness retired.)

Colonel D. A. MacDonald, recalled:

By Mr. Foster:

Q. With reference to the contract of November 3, 1903, did you make a requisition for 2,000 tents at that time ?

A. I fancy I must have made a requisition, sir.

Q. What was the necessity for tents at that time ?

A. Because we absolutely required them.

Q. For what purpose ?

A. For training purposes and for the coming year. Getting the 2,400 tents did not help me out in keeping my supply up. We had to increase our annual supplies. The number of militia training at the same time was largely increased and the trouble was to cover them all. The whole of the rural militia were under canvas at the same time. We had formerly to transfer the tents from one camp to another. It was so arranged that I could transfer tents from London to Toronto or from Toronto to London, and perhaps from Kingston to Montreal. Well, in the handling of the tents there was a great deal of wear and tear, besides the cost of freight on all of them. I was anxious to get a fresh supply of canvas to cover the militia for the annual training, not to speak of emergency cases.

Q. So that, if you wished to call them all out at the same time you would be able to cover them ?

A. I have not canvas enough now if all the city regiments were out.

Q. You have for the rural regiments ?

A. I have over 7,000 tents between the two oceans, from Victoria to Prince Edward Island.

Q. How often do you inspect your standards, after they are put in the stores, how often do you examine them ?

A. The Board of Service examines them once a year. They are supposed to count everything in the stores and examine tents and blankets, and in fact everything, so that anything that they consider unservicable is not issued.

Q. With reference to those issued to the Interior Department, would it be a fair assumption that they had been pronounced servicable ?

A. Oh, certainly.

Q. And if they were not servicable they would not have been issued ?

A. No, they are sent into camp, we return a certain percentage of tents to afford shelter for men bathing, and so on.

HOUSE OF COMMONS,
COMMITTEE ROOM No. 32,
THURSDAY, July 13, 1905.

The Select Standing Committee on Public Accounts met this day at 11 o'clock, a.m., Mr. Colin McIsaac, Chairman, presiding.

The committee resumed the consideration of the accounts of Woods, Limited, as set out at Q—41 and Q—113 of the Auditor General's Report for 1903-04.

Col. L. F. PINAULT, recalled:

By Mr. Foster:

Q. Just one or two questions, first with respect to the matter of contracts. Did you find out when the first contract founded upon tenders called for had been given to Woods, Limited ?

A. There was no contract and public tender invited given to Woods.

Q. Yes ?

A. It was based on the former contract.

Q. On what ?

A. On the former contract.

Q. What former contract ?

A. You asked me if there was a tender invited in 1902. There was none.

Q. There was none in 1902, but the prices were based on the prices of the former contract ?

A. Yes.

Q. With Woods ?

A. The contract was made—I said the contract in 1903 was based on the former contract.

Q. Well——

A. And I said it was probably based on the contract for 1902.

Q. Now you say it was not ?

A. In 1902 there was no public tender invited and there was a contract made.

Q. And in 1902 you made the first contract for tents with Woods ?

A. No, he had a contract before.

Q. What year before ?

A. I think he had it in 1901.

Q. Were tenders called in 1901 ?

A. No.

Q. Then in 1900 ?

A. No.

Q. That is the first contract ?

A. Yes.

Q. Were tenders called for ?

A. No.

Q. On what date were the first prices fixed—in that year ?

A. Tenders were called for in 1899.

Q. Tenders were called for ?

A. Yes.

Q. By regular advertisement ?

A. Yes, in the newspapers.

Q. And who got the contract at that time ?

A. I think it was two or three firms, Mr. Leckie of Toronto and the Cole National Company of Ottawa——

Q. Yes.

A. And I am speaking from memory—I think Mr. Borbridge of Ottawa.

Q. And Mr. Woods ?

A. No, he did not get any order then.

Q. Then in 1899 you had tenders called for, and as a result of the tenders contracts were made with Leckie of Toronto, Cole of Ottawa and Borbridge of Ottawa ?

A. Yes.

Q. For the same quality of tents ?

A. No, it was not the same, I do not think it is the same quality of duck.

Q. They were tents for the Militia Department ?

A. Yes.

Q. And were of course good tents ?

A. Yes, I suppose they were good tents.

Q. You would not be asking——

A. Of course I am not the inspector. He would probably be a better man to explain it.

Q. For those contracts of 1899 what were the prices ?

A. I think it was $17.50 and $18.50 ?

Q. $17.50 and $18.50 per tent ?

A. Yes.

Q. For good and serviceable tents ?

A. Yes.

Q. Now, in 1900, instead of your making a new contract with one of these three or all of them and without calling for tenders, an arrangement was entered into with Mr. Woods and a contract given to him for bell tents, is that correct?

A. No, it was not only with Mr. Woods, it was given to Mr. Woods, I believe, and Mr. Leckie, and Mr. Borbridge and Mr. Cole also in 1900.

Q. Well, of course, I asked you to get the information so that you could give it to me ?

A. Yes.

Q. In 1900 no tenders were called for ?

A. No, and the contract was given at the same prices as in 1899.

Q. That is $17.50 and $18.50?

A. Yes.

Q. And it was distributed between——

A. Between the four.

Q. Woods being added to the trinity that had received it before ?

A. I am not positive, but I believe that he was added at that time.

Q. You are not positive because we have advertised you as the man we wanted to get the information from ?

A. You asked me to ascertain if tenders were called in 1901 and 1902, and of course——

By Mr. Taylor:

Q. I do not think that Cole was taken in ?

A. I am not sure that Cole was taken in.

By Mr. Barker:

Q. You substitued Wood for Cole ?

By Mr. Foster:

Q. Which was it ?

A. I am not positive that they were all in the same contract, but the other was divided between three or four.

Q. And at the same rate ?

A. Yes.

Q. Then, in 1901 what took place ?

A. In 1901—two of the contractors had taken a long time to deliver their tents and they were not asked again to supply tents for the department.

Q. In 1901 who had the contract to supply tents ?

A. In 1901, I think Mr. Woods and Mr. Borbridge.

Q. Woods and Borbridge; at what price ?

A. At the same price.

Q. $17.50 and $18.50. Well, now, you come up to 1902; is that the next ?

A. Yes.

Q. And what was done in 1902 ?

A. In 1902 a contract was made with Woods for 2,000 tents at $25.

Q. At $25 ?

A. Yes.

Q. And the whole contract was given to him ?

A. Yes, 2,000 tents.

Q. No tenders were called for ?

A. No.

Q. And since that time no one has had a chance to tender ?

A. No, the contract was renewed.

Q. At the same rate ?

A. At the same rate.

Q. Was the same system of inspection in vogue from 1899 up as developed here for 1903 ?

A. Yes, the same inspectors.

By Mr. Taylor:

Q. How many tents were delivered at $25 in 1902, 1903, 1904 and 1905 ?

A. I would not be able to say exactly. In 1902 I think it was 2,000.

Q. That was the contract ?

A. Yes.

Q. How many were delivered ?

A. 2,000 were delivered.

By Mr. Barker:

Q. You got about 5,000 in the last three or four years ?

A. Yes, but in 1903 there were two large orders.

By Mr. Taylor:

Q. How many ?

A. I think an order for 2,400 and another order for 2,000.

Q. 4,400 in 1903 at $25.

A. Yes.

By Mr. Stewart:

Q. What was the reason of the difference in price between $17.50 and $25 ?

A. I think I will explain what is our mode of proceeding. When we renew or make a contract without calling for tender we generally take the contract that has been let after public tender as the starting point, and the Director of Contracts is instructed to ascertain the condition of the market. He has to satisfy himself that there is no decrease in the prices. Then the contract is offered at the same price as the former order. When there is an advance that is another matter. He is obliged to

ascertain and verify the advance, and if the contractor says that he cannot take the contract at the same figures the Director of Contracts has to ascertain exactly the condition of the market and what is the advance in the cost of the material.

By Mr. Foster:

Q. That is all very accommodating ?

A. Yes, and I have found in the files a statement of the actual cost of these tents prepared in September, 1902.

Q. Have you that statement with you ?

A. Yes.

Q. By whom was that statement prepared ?

A. It was prepared by Major Benoit.

By Mr. Stewart:

Q. He was then Director of Contracts ?

A. Yes. That statement amounts to $22.69, leaving $2.31 for a profit for the contractor ; that is hardly 10 per cent.

By Mr. Foster :

Q. What are the items of that statement ?

A. They are as follows (Reads) :—

58 yards duck at 17c.	$ 9.86
Pin bag, spliced ropes, tent bag spliced, No. 3 duck.	1.50
Poles and pins.	1.50
Tent cap, with cork and two inside handworked rope grummets.	.75
Mallet.	.20
Ropes and splicing.	1.00
Grummets, patent brass.	.60
Runners and buttons.	.40
Brass hooks and eyes, large and small.	.70
Sewing on above by hand.	.50
Webbing.	.50
Jute sod cloth.	1.00
Machine-work making tent.	2.00
Thread.	1.00
Braid.	.05
Delivery.	.05
	$21.61
Cutting, heating, lighting, power rental, insurance, wear and tear on machine, 5%.	1.08
Net cash.	$22.69

By Mr. Stewart :

Q. When was that estimate made ?

A. It was made on the 25th September, 1902.

By Mr. Taylor :

Q. It is certainly evident to any business man that it is a peculiar statement, because everything is in round figures. If a person went into the actual cost of these things you would not find any two of them making out these figures in round numbers, 60 cents, 70 cents and so on.

A. That is all very well, but you see the official who made the estimate verified the statement and put that down as the result of his investigation.

Q. But the result of his investigation is not correct when it all comes out in even figures. Any merchant or business man will know that if he finds the cost of a certain thing, the prices will not come out like that, 60, 40, 50 cents. These are simply estimates, and estimates which are very large sized, when he says five per cent on wear and tear of the machine for making a tent ?

A. Yes.

Q. These are simply estimates ?

A. Yes, but these estimates I understand have all been verified by the two inspectors, who are practical men.

A. Did you find on the file an offer from one of the other contractors to supply this same tent at $18 ?

A. No.

Q. Was such an offer made to the department ?

A. I did not see any offer.

Q. Was any made ?

A. I do not know that it was made.

Q. I am informed that one of the former contractors offered when this contract was made to supply the tents for $18 ?

(No answer).

By Mr. Foster :

Q. By whom was this estimate made ?

A. Major Alphonse Benoit.

Q. This is not the original estimate (referring to document).

A. No.

Q. Have you got it ?

A. I took a copy of it.

Q. This is a correct copy ?

A. Yes, it is a correct copy.

Q. How did Major Benoit arrive at these figures ?

A. I would prefer him to speak for himself, of course.

Q. He is not here. How would you suppose he would arrive at that ?

A. I suppose by his calculations, with the assistance of the two inspectors of the number of yards to make the tent. I suppose he has ascertained the prices of all the different articles also.

Q. How did he get at these prices and at the amount of sewing on each tent, and the like of that ?

A. Of course, I am not able to answer how he has proceeded. He came to satisfy me at the time that it was a fair estimate. He consulted the two inspectors, who were practical men, Mr. Robertson and Mr. Caldwell. They say it was a fair estimate. The order previous—I have taken the trouble to ascertain myself that when we made the offer of the order at the same time to Mr. Woods he declined to do it, and told me at the time that there was a considerable raise in the cost of duck, and I got a quotation at the time from Montreal. At that time cotton was 17 cents and it has been going up. I wrote to the agent of the factory in Montreal, Mr. Stephenson, and he explained that the year before he got his duck at 13¾ cents and in 1902 he paid 17 cents.

Q. When you are through, here are some points I would like you to answer. In the first place, in that year when you gave your order entirely to Woods did you give any opportunity to Borbridge, Cole or Leckie to tender for the supply of tents ?

A. No. Two of them had taken a long time to deliver their order. They had received the order in 1900 and completed it only in 1902.

Q. But were they given any chance ?

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A. No they were not given any chance, and Mr. Borbridge had another contract for saddlery, being a harnessmaker.

Q. No one was given any chance ?

A. No, there were only 200 tents bought, but in 1902 there were 600 or 800 tents.

Q. So that, in would appear that instead of getting at the price of things and the cost to the department in a large contract like this by inviting competition, that you take it into your heads to have an official of the department, probably in conference with the men in the trade,—because he must get his knowledge from somebody——

A. Yes.

Q. ——make an estimate and then to apportion a percentage of profits and then hand it over to one man, on that estimate by the department itself and with a proportion of profit. That is the system that seems to have been carried out.

A. No, I understand that Woods wanted more than $25 for his tents.

Q. I dare say.

A. This is the estimate prepared by Major Benoit. Of course he is in receipt of all the trade reviews and he is kept posted on the prices and material, and he was advised to make a careful examination of the condition of the market and to ascertain exactly the price of material.

Q. What method do you follow with reference to your other large contracts in the Militia Department ? Do you call for tenders for your supplies ?

A. We call for tenders, and once the price is fixed by tender we generally renew the contract when there is no advance in the condition of the market. If there is an increase, sometimes the contract is renewed without calling for tenders by the officer in charge of the branch ascertaining exactly the difference in the cost of material.

Q. For large amounts of supplies ?

A. Yes.

Q. What is the rule of the department—to ascertain by advertising for tenders and to make the award to the lowest tenderer and give contracts in that way, or is the rule of the department to fix the price and give the contract to whomsoever it sees fit?

A. The rule is to give the contract after public tenders have been invited.

Q. Why was it not carried out in this case ?

A. I told you. the minister has often declared in the House that if a contractor is giving satisfaction we renew that same contract without calling public tenders. That is the instruction I received from my chief.

Q. This is a case where some $7.50 and $6.50 per tent have been added to the price and no one was allowed to get a chance to supply the tents at the same price, but there was an advance of $7.50 or $6.50 in the price and no tenders called. Is that the usual practice of the department ?

A. No, but we ascertained exactly the amount of the advance on the material.

Q. Why was not the usual practice of the department carried out in this case ?

A. Oh, I do not know. I suppose——

Q. Well, it is evident we cannot get at the bottom of this thing this year.

A. I am perfectly willing to give all the information in my power if there is anything else you want to ask.

By Mr. Taylor:

Q. Are you acquainted with tents and the mode of manufacturing ?

A. No, I am not.

Q. Have you any knowledge yourself as to the value of the thread that would be used in making a tent ?

A. No, I have none. I rely for that information on my inspectors.

Q. Do you think it would cost a dollar for the thread in a tent ?

A. I do not know, I have no idea.

By Mr. Piché:

Q. Have you ever measured that thread ?

A. No, I never did.

By Mr. Taylor:

Q. I am satisfied that the thread used in the manufacture of a tent will not cost 25 cents, and yet a dollar is put down for it.

A. But you had better ask the inspectors. They will tell you the exact quantities used.

By Mr. Stewart:

Q. You spoke of the material that was used in the making of the tents having advanced in price since 1902 ?

A. Yes.

Q. Have you any idea of the advance in the cost of the same material to-day as compared with 1902.

A. Yes, I have a statement here showing the advances in price.

Q. Has there been a still further advance since 1902 ?

A. I see by the statement of September, 1902, that the price of 'Eagle' duck of 12 ounces was 17 cents. There is another statement showing the increase in 1902. In February this same duck cost 16¼ cents, in April 16½, in September 17. In December 1903, it cost 18¾ cents, in January 1904, 20¼ cents. In February, 1904, it cost 21¾ cents.

By Mr. Foster :

Q. That was an increase in the price paid for a tent in what year ?

A. It was in September, 1902.

Q. As compared with 1901 ?

A. In 1901, but I have ascertained in writing to the company that the price of the duck bought by Mr. Woods was 13¾ cents.

Q. It is not a fact that the price of other material necessary as supplies in the department, may have also increased in that time ?

A. I suppose it is.

Q. Would you consider it a necessary reason and a reasonable reason that because the price of things had advanced that therefore you should make a change in your custom and ascertain the value without tender ?

A. No, but Mr. Woods was offered the contract at the same price as the previous year and he declined to take it, and an officer of the department was advised to ascertain the difference in material, and he did.

Q. After the price of $25 had been fixed by the department, did they communicate that knowledge to Borbridge or Cole or Leckie and ask them ?

A. No.

Q. Only to Mr. Woods ?

A. And it was, I may add, a special kind of duck, what they call 'Non-absorbent' and that duck costs a little more than the duck that I have just mentioned, the 'Eagle' duck, that they charge 17 cents for. It generally costs one cent or one and a half cents more.

By Mr. Piché:

Q. So that there was not only an increase in cost, but an increase in the quality?

A. I have a sample of the duck here and you can judge for yourself.

By Mr. Stewart :

Q. The tents that you are paying $25 for are better than those formerly bought for $17.50 and $18.50 ?

A. Certainly.

By Mr. Foster :

Q. Is this duck an article which can be bought and sold in the open market ?

A. I suppose so, but I see that Mr. Woods has a trade mark on the name.

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Q. These other gentlemen could have bought the duck, I suppose, in the market ?

A. Yes, but they would have had to pay more than for the 'Eagle' duck that we used to employ before.

Q. That was their own business.

A. Yes, but it would not have been accepted. We wanted non-absorbent.

Q. But suppose your specifications called for non-absorbent duck ?

A. Yes.

Q. Why should not Mr. Cole, Mr. Borbridge or Mr. Leckie be asked to tender on that quality of goods ? You had a perfect right to ask them.

A. I told you that they were not asked to tender because some of them took more than a year to fill their contract for the order that was given them before.

Q. The department could put its own conditions for fulfilment of contract ?

A. Yes, but I cannot but answer that they were not asked to tender because they took too long to deliver the tents.

Q. Who took too long ?

A. I think Leckie and Cole.

Q. But Borbridge, did he take too long ?

A. I do not think he took so long.

Q. Why not ask him ?

A. He was busy with other cotnracts, harness and saddlery.

Q. Did he come to the department and say that he could not undertake to supply any tents because he was busy with saddlery work ?

A. Not to my knowledge.

Q. Then why wasn't he asked ?

A. The year before we only ordered 600 or 800, and in 1902 it was 200 and it was not considered worth while to divide that contract between two or three firms.

Q. But you had 2,400—the same reason applies that it was not considered enough ?

A. The price was fixed at the time and we had received great satisfaction.

By Mr. Piché:

Q. What time of the year do you usually call for tenders for your supplies ?

A. It is generally after the vote of parliament is assented to, sometimes in July, sometimes in September, after the estimates have been sanctioned.

Q. Were you never asked by any Montreal firm for patronage in that line ?

A. Yes, we were asked.

Q. Of late ?

A. Yes, I had a letter some time during the winter and a letter probably last week.

By Mr. Ames :

Q. What Montreal firms have you heard from ?

A. The Merchants Awning Company, Notre Dame St.

By Mr. Taylor:

Q. As a practical man, if you yourself went to purchase the supplies for one tent or ten tents, do you think that the cost of a pin bag, spliced rope, and tent bag would be just an even $1.50 ?

A. Oh, it may be. There might be five cents more than that or it might be five cents less. I think our inspectors took the average in the matter.

Q. Then the poles and pins for a tent, would they cost just an even $1.50 ?

A. That is not only the pole and pin.

A. Poles and pins, $1.50 ?

A. That is the estimate of my inspector.

Q. Do you think that is the actual cost ?

A. I believe it is. I have no reason to suspect the contrary.

Q. The mallets would cost 20 cents a piece, little mallets just even 20 cents ?

A. Perhaps one might cost 18 cents and another 21 cents.

Q. Ropes for setting up the tent and splicing, just an even $1 ?

A. It is very easy to ascertain by measuring the length of the rope and taking the price. I suppose that is what they have done.

Q. Grummets, patent brass, cost just even 60 cents ?

A. Yes.

Q. The runners and buttons for the tents for eight cents would cost 40 cents ?

A. That is the same explanation that I have given.

Q. The brass hooks and eyes for the tent would cost even 70 cents ?

A. You had better ask this of the inspector. I tell you they have probably taken the average.

Q. I want to see whether you will verify this statement ?

A. The man who had charge of the contract had charge of this himself.

The CHAIRMAN—I do not think Mr. Taylor should press that because the witness has no personal knowledge.

By Mr. Taylor :

Q. He has personal knowledge of buying supplies. I want to find out if he thinks all these should come out on the even value ?

A. I do not know that they would come out on the even value. We receive contracts sometimes on the one-sixteenth of a cent, but I suppose they made a fair average. That is what the inspector told me.

Q. Do you tell me that he made this out as retail or wholesale prices ?

A. He said the actual cost.

Q. By retail.

A. It must be wholesale, I suppose.

By Mr. Stewart :

Q. You gave us the Director of Contracts' estimate of the cost of a tent in 1902, and I think you allowed a margin of profit to the contractor of two dollars and some cents ?

A. Two dollars and thirty-one cents.

Q. And you have also given us the increase in price of duck, which is about three cents a yard from 1902 to 1905 ?

A. Nearly four sents.

Q. And there are about 58 yards in a tent ?

A. Fifty-eight yards, yes. I was under the impression at the time that there was a combination between the duck manufacturers, and I wrote a letter to them to that effect.

Q. And according to your way of figuring the cost of the material the cost of the duck alone shows a difference of $2.32 advance ?

A. Yes, there was an advance of at least 25% on the duck.

By Mr. Piché:

Q. An advance from 13 cents to 17 cents—30% ?

A. The Non-absorbent duck cost 1¼ cents more. It would be18¼ cents.

The committee then adjourned.

REPORT

OF THE

PUBLIC ACCOUNTS COMMITTEE

IN RE PROPOSED

AMENDMENTS TO AUDIT ACT

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1905

APPENDIX No. 3g

House of Commons,
Committee Room, No. 32,
Thursday, July 13, 1905.

The Select Standing Committee on Public Accounts beg leave to report the following as their

TENTH REPORT.

Your committee have had under consideration statements and suggestions made by the Auditor General respecting certain amendments proposed by him to the Audit Act; and in connection therewith have examined witnesses under oath, and for the information of the House report herewith the evidence given by such witnesses; and your committee recommend that the said evidence be printed.

All which is respectfully submitted.

C. F. McISAAC,
Chairman.

MINUTES OF EVIDENCE

HOUSE OF COMMONS,
COMMITTEE ROOM 32,
WEDNESDAY, June 14, 1905.

The Select Standing Committee on Public Accounts met here this day at 11 o'clock, a.m., Mr. McIsaac, chairman, presiding.

The committee proceeded to the consideration of statements and suggestions made by the Auditor General respecting certain amendments proposed by him to the Audit Act.

Mr. J. L. McDOUGALL, Auditor General, was present for examination.

By Mr. Bergeron:

Q. When were you appointed Auditor General ?

A. First of August, 1878.

Q. Had you anything to do with the consolidation of the Act respecting the Auditor General of Canada ?

A. The consolidation ? Oh yes, that was done under my direction.

Mr. FIELDING.—The consolidation of later Acts. You do not mean the original Act ?

Mr. BERGERON.—He would have something to do with the original Act as a member of parliament. I mean what he had to do with in his capacity as Auditor General. Have you made any suggestions from time to time in the way of amending or changing the Auditor General's Act ?

A. Yes.

Q. Along what lines were those suggested amendments and why did you make them ? Just give us as briefly as you can a statement and let the committee know what difficulties there are in your own mind after your many years of practice in the carrying out of the Auditor General's Act and what you would suggest ? For instance in regard to having your report ready for parliament. Let us begin at the commencement?

A. I suggested that means should be used to get the detailed report ready in time for the session of parliament. It appeared to me that was a very important thing to do and I might read what my statements were on that point. I say here in my last report :

'There has been some comment in parliament on the delay which has taken place after the beginning of the session in furnishing this report in print.

'One must recognize that this report, like other reports to parliament, is part of the material to make intelligent and profitable discussion in the great inquest of the nation, a discussion which ought to be of the greatest interest to public officials, as well as to all other Canadians.

'Let me put the facts which appear to me of importance in endeavouring to bring about the desired change.

'There are two salient points in connection with the production of this report.

'One is the putting of the written report in the hands of the King's Printer. The other is the turning of the manuscript into print by the King's Printer. Now

we must bear in mind that he, the King's Printer, is not under the control of the Audit Office, while it might be unfair to attempt to saddle him with all our sins.

'It will be easily found on reflection that there are two important periods in this consideration—the close of the financial year, the accounts of which are to be presented, and the beginning of the session of parliament when they are to be presented.

'The conclusion will soon be reached that to get out a printed report of a certain size at a particular time you cannot hold the printer responsible without his knowing from what time he is to be uninterruptedly supplied with copy. On the other hand, you cannot hold the makers of the copy, the Audit Office in this case, responsible, unless you assure us that our part of the work, exclusive of the reading of copy, will be done if we conform to fixed conditions as to the rendering of copy. Besides, the following important points in this connection, although briefly described, must be carefully considered.

'The date when parliament is to be usually assembled.

'Balances of appropriations must not be brought forward at the end of the fiscal year under a regulation which makes expenditure under them a charge to the year from which they have been brought forward. Then the views of the Audit Office should be respected as to the number of its employees and the accommodation to be provided to such employees.

'It is quite plain that if all the government printing is to be done by the King's Printer, it cannot be done now, with the great progress that Canada has recently made, in a building and with a staff, which were barely sufficient ten years ago. If I limited my arguments to those that seemed reasonable in my own defence, silence with reference to the conditions now affecting the discharge of his duty by the King's Printer might leave it to be supposed that I intended it to be inferred that he is blameworthy.

'Might I suggest that a meeting or two of a sub-committee of the Public Accounts Committee be devoted early during this session to the subject. I believe it would well repay the time spent. Put on each man's shoulders what are his reasonable obligations, and secure to him his equally reasonable aids of all kinds. Parliament will then be freed from much anxiety on the subject.

'For some time the Audit Act and allied legislation, as well as the practice connected with the payment and control of public funds, have attracted rather unusual attention in and out of parliament. Surely it is not to the few alone it seems remarkable that a keen-witted people, thoroughly alive to the necessities of a careful audit, so far as the men who are employed in auditing, should apparently be satisfied, while the Audit law was not discussed. To allow that law to remain unchanged, even unexamined, for more than a quarter of a century from the time when the system was begun, was fraught with danger. No one had ground to feel any sensitiveness because it was supposed that the suggestion of amendments to it would reflect on a person who was thought to have had a part in framing the Act under which we are now working.

'It has been announced by the leader of the government that the subject is now engaging the attention of the government.

'As I have been for a long time Auditor General, in fact since 1878, when the system had its beginning here, it seems proper that I should deal briefly in this place with the improvements in the legislation and practices which it appears to me should be made, not supposing for a moment that the changes ought to be confined to what strike me as proper.

'The addition of Comptroller to the designation of Auditor General may appear to have no better raison d'être than the anxiety of a young person to get a front seat in a lecture hall, he being known to hear well, appears to have in the eyes of an elder who himself has lost his interest in the display of good clothes. The cases are, however, not similar. Not only is the like official in Great Britain called Comptroller and Auditor General, but the offices were deliberately united there in 1866, when their Bill was passed after much care.'

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The officer in the United States performs the duty of Comptroller and has the title. It is well that as far as may be, that is, as far as duties besides being distinct are important, they should be recognized under a separate title. Every one who has occasion to do business with a public official should learn at once from his official designation what all his duties are. Not only should the official be described as I mention, it is of vital importance that he should perform the duties. The man who audits intelligently and carefully the public accounts should have the power to direct how the expenditure is to be made in the future, while his directions do not interfere with the independent directions which some other official is empowered to make. The ounce of prevention is in this case as well as in others so much better than the pound of cure.

The danger of leaving the title of auditor without the addition of comptroller was shown by a discussion in the House of Commons in which the Hon. James Sutherland, Minister of Public Works took part. It was a mistake which one not directly interested in the special duties of the Audit Office might well have made. His contention was that the Auditor General dealt only with moneys after payment, while any one who looks at section 32, and its subsections, will at once notice that he has the duty of questioning applications for payment and therefore is comptroller.

'Nearly one-half of our payments, looked upon in the light of the gross amounts, are made by this system. How important that the system should be as good as it can be made. I have always felt that this was an absurdly inadequate section, as it now is, considering its great usefulness if properly worked. The power to issue credits for making payments I believe absolutely necessary in a country of this extent territorially and otherwise. It ought to be confined, as it occurs to me, (1) to fixed payments periodically recurring, like salaries of permanent officials, (2) to payments of small amounts at distant places, and (3) generally to smaller individual payments where mistakes are not likely to occur. These credits should be, with few exceptions and only when the amounts are very small, drawn in favour of two persons who can act only as joint holders of the credit—one of them being thus a check on the other. The cheques under the credit should be made to the order of the person who receives the money, his endorsation to show as evidence that the money has been received.

'Then I think that these credits sould be issued by the Minister of Finance, or his deputy, and the Auditor General jointly, and should be held by the persons in whose favour they are drawn not to apply to such classes of subjects as are indicated by either the Finance Department or the Audit Office as those which are to be held as outside of their application.

Q. I beg your pardon, but in order to shorten your statement, have you made demands to that effect ? Have you tried to get more space, have you made suggestions, and if so, to whom ?

A. Yes. They were mainly informal. This matter was up before at a meeting of the Public Accounts Committee, when I drew the committee's attention to the point. Then I mentioned this thing to any ministers whom I happened to meet. I think I talked to Mr. Fielding, Mr. Fitzpatrick, and to the Prime Minister about these things.

Q. And what answer did you get ?

A. They were of course informal conversations that I had with these gentlemen, but the idea was mainly that the buildings should be nearer together, that we should not depend upon buildings scattered over the city, erected by private individuals, who let them for general renting purposes, and that kind of thing, and in the same way what strikes everybody with reference to the King's Printer is that he cannot do all the work in the same building with the same staff. Everybody knows that ; it does not need to be more than mentioned to see that. You know that the report does not come down from parliament in time. Whoever is to blame, or if anybody is to blame for it, there is no doubt the report ought to be out at the usual time of the meeting of the House. Perhaps the Audit Office is to blame in some respects—I am not now arguing that. But the work ought to be assigned to each department. As I say here

the King's Printer is not under the control of the Audit Office and the Audit Office is not under the control of the King's Printer so that you must have each person or each department dependent upon itself for its own work. And if you say that, if you say to the Auditor General, 'You must have your report ready by a particular time,' then you must aid the Auditor General in every way to do it. He does not do all his work by himself. In the same way if the King's Printer has a part to do it is no use his saying, 'If I had that in time I could have done it.' You may say 'You had it in time, and you ought to have done it.' Well, if the government provides a large new building for the King's Printer and gives him all the people that are apparently required, then he will get his work out. What you really want in dealing with the subject is to have this report in time in print, and it is evidently a perfectly practicable thing if you supply the two departments which are concerned in it, and separately concerned, with the means of doing each its own material and assistants.

Q. As a matter of fact have you got for the efficiency of your service all the accommodation that you want and all the help that you need ?

A. I have now the means, although not in what I would call an ideal way of housing our people. Of course every man knows that if there is a head of an office, a superintendent of it, he wants to have the people above him or near him.

Q. You mean to say that some of your officers are separated ?

A. Are separated from me.

Q. All your officers are not together ?

A. No they are not together, that is what I mean. Of course I am in a better position, the Audit Office I mean, in that respect than it was before, because we had no extra space and we needed extra people to do the work. Now we have extra space, but the staff are not under the supervision of the head of the Audit Office in the same way that they would be if they were all in the same building.

Q. How is that condition met ? Who are the officers separated from your main office, and what is the kind of work they do ?

A. Well, so far as we are concerned, the examination of the expenditure of a department is kept by itself naturally. You have a chief man there with a certain staff of assistants. He gives his instructions to people who are under him. If he thinks he requires instructions, he goes to the Auditor General for them, but it is not as if one could step in each day without making somewhat of a journey to talk to him. If you have a minute to spare and you are on the same flat or in the same building, you can discuss a matter with any one of your assistants.

By Mr. Barker:

Q. I understood you to say of the officer to whom you are now referring as being separated from your office that he is necessarily with the department with which he is connected in business ?

A. Yes, of course.

Q. Then you cannot get them in our own building ?

A. He is not connected except in this way: He gets reports, accounts, and all the rest of it from the department.

Q. Well, of course he must have those men who are connected with him in doing that work ? Whatever else is done they must be beside him and away from you ?

A. Away from me you see. Then if I have five minutes to spare and we were in the same building I could go upstairs and talk with this man and ask him how he is getting on just as any other business man would, if he had an extensive business.

Q. I assume that cannot be remedied. But the point Mr. Bergeron is getting at is this: Are they necessarily away from you ?

A. The point I understood Mr. Bergeron to make was: We have an audit office and there are several people in it doing certain work. Whether it is my business or not I am here, I am a public servant. I of course think of my own special work first. My thoughts naturally run on the lines as to how this general service can be improved.

APPENDIX No. 3g

Any man forms an opinion about that. Well we can have buildings owned by the government. Are those buildings that are owned by the government better or worse for public purposes than buildings owned by persons who are renting them to the government ? I am only repeating what I have said before. Of course I cannot help but think: We borrow our money practically at three per cent, and most outside people borrow at five or six. The man who borrows at 5 or 6 per cent is going to charge us double the cost even without his profit and he will naturally expect profit. This will be the case if we rent buildings; it is only natural that the owner should want some profit.

By Mr. Barker:

Q. One moment. Mr. Bergeron wanted to find out from you, as I understood, what officers pertaining to your department that you would like to have with you were separated from you ?

A. Of course I would like to have every officer with me.

Q. You mentioned an officer who is necessarily away from you in connection with another department ?

A. Yes. Perhaps I am at fault in not making that clear. We have two batches, you might say, two sets of persons, who are connected with the examination of accounts. We have them away and those that are under them, perhaps nearly twenty men altogether.

By Mr. Taylor:

Q. Away from where ?

A. Away from the building here, the Eastern Block.

By Mr. Bergeron:

Q. Where is that ?

A. They are down in what they call the Harris & Campbell block.

Q. Where is that ?

A. That is on O'Connor street, below Sparks street.

Q. Are there any others ?

A. No.

Q. There are the two sets ?

A. There are the two sets.

Q. One in the Eastern Block and one in the Harris & Campbell building ?

A. No, there are two sets there you understand.

Q. Down there ?

A. Down there. There are two sets. And why are there two sets ? Our business is this : We keep the accounts in the first place of all the expenditure and revenue of the Dominion. They keep those accounts in the departments as well, but so far as we are concerned we have three bookkeepers connected with that particular business. Then the rest of our men are mainly people who examine the accounts of special departments—all those men that are over there. Let me explain to you that Mr. Reid is the head of one of those two branches and Mr. Gross of the other. Mr. Reid deals with the Mounted Police accounts, the whole of them. He deals with the Indian accounts. He deals with the Department of the Interior accounts. He deals with the King's Printer's accounts. He deals with the Geological Survey accounts. Mr. Gross deals with the Department of Agriculture accounts. He also deals with the Militia Department accounts and the contingency accounts of all the departments.

Q. They divide the accounts of all the departments ? Is that what you mean ?

A. Not all of them, but they take those that I have mentioned. Then there are other accounts. For instance Mr. Hayter does the Railways and Canals accounts,

Mr. Douglas does the Public Works accounts, Mr. Kearns who is here, does the Marine and Fisheries accounts and the Department of Justice, Trade and Commerce and the accounts of the Labour Department.

Q. The accounts of all the departments which are under the control of your office are under the heads of so many people ?

A. Well they are under heads, apart from the people who keep the accounts. There is Mr. Reid that I mentioned, Mr. Gross, Mr. Kearns, Mr. Douglas and Mr. Hayter.

Q. Five ?

A. Yes. Then there are certain accounts that are looked after by a Mr. Brown.

Q. That is six ? Six heads you may call them ?

A. Yes.

Q. Where are they ?

A. Those two that I mentioned to you are over in the Harris and Campbell building, there is no difficulty about them. Mr. Hayter is on the ground floor, just opposite to where I am.

Q. That is in the main office ?

By Mr. Wilson:

Q. Tell us the size of his room ?

A. Well you have been there. You did not find a great deal of room with the men that were with him all moving round did you ? I ought to say there is a Mr. Gorman a chief clerk, who deals with the revenue. He is in the lower flat also.

Q. Then as a matter of fact—because we have not very much time to go through all this—you have not got all the accommodation that you would like to have, and your office staff, as Auditor General, is divided, when as a matter of fact, you would rather have them all under the same roof.

A. To be sure.

Q. Now let us go to another subject—because this is a mere matter of detail—there is, by reason of the fact that you cannot get what you want a kind of misunderstanding to say the least, between the government and yourself ?

A. I do not think I would say misunderstanding.

Q. They do not give you what you want ?

A. Well I do not feel pleased to be held responsible for the work. If it was a thing that could not be helped it would be different. But even with economy—of course one will think about these things—I would like to have that changed.

Mr. BERGERON.—Well we will see later on.

By Mr. Stewart:

Q. Before Mr. Bergeron leaves that first point. The first point he made was that your department is now divided ?

A. Yes.

Q. How long is it since the department has been divided ?

A. It has been divided since November last.

By Mr. Wilson:

Q. How long ?

A. Since November.

Q. Last ?

A. Yes.

By Mr. Foster:

Q. How divided ?

A. Well divided in that sense. I had to get room somewhere on account of the difficulty in getting along in these crowded places with people who have a large amount of work to do. It is only in November last that I got the additional room.

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By Mr. Campbell:

Q. I would like to ask Mr. McDougall if he can communicate with these different officials ?

A. Oh, yes, I have a telephone.

Q. You can communicate with them at any time ?

A. Yes, at any time.

By Mr. Bergeron:

Q. The work has increased a great deal since you were appointed Auditor General ?

A. Oh, yes.

Q. About what percentage?

A. Well you can pretty well, perhaps, speak of it with reference to the increase in expenditure.

Q. Well altogether the work that you performed some years ago ?

A. We had thirteen men when I went there, all men that had never been much used to this work. We have forty people now.

By Mr. Barker:

Q. Three times the number ?

A. Three times the number.

By Mr. Bergeron:

Q. What about the question we were talking of, about room ?

A. Well I had more room even before these people left than I had when I went there first, but not three times the amount, which I naturally required for three times the number of men.

Q. In proportion to the increase of work ?

A. Yes.

By Mr. Johnston (Cape Breton):

Q. I would like Mr. McDougall to tell us what he thinks of the character of the work performed ?

A. How do you mean ?

Q. Is the work carried on correctly and satisfactorily by these different people that you have outlined ?

A. Certainly, if you mean now with regard to the staff of the office.

Q. Yes.

A. That is what you really mean. Is it a satisfactory staff ?

Q. It is?

A. It is a satisfactory staff.

Q. Are they doing this work very satisfactorily ?

A. Very well indeed. Every opportunity it has of doing good work it has taken advantage of. I can say that for them.

By Mr. Monk:

Q. You began your examination by speaking of the time at which the report ought to be in the hands of the members ?

A. Yes.

Q. When do you complete the auditing of the years' accounts ?

A. At present you mean ? Well about the first of the year, about the first of the calender year.

Q. It is only then that your work is terminated ?

A. Terminated, yes. Of course you can quite understand that the King's

Printer to begin on my report need not wait until he has the whole of it. If he has one-third of the report he can begin to print just as well as if he had the full report in his hands.

By Mr. Barker:

Q. When do you begin to give the copy usually ?
A. About the first of November usually.

By Mr. Bergeron:

Q. What I wanted to find out from you is whether it is possible to print the report, or print a part of it at any rate—it has been printed in separate parts this year—and have it in the hands of members at the beginning of the calendar year. instead of the beginning of the session. The reason I put the question is that we get a voluminous report at the beginning of the session when we have no time to give it any attention. I want to know if it is possible to have the report in our hands before the session begins ?

A. It would depend upon the time the session is called. But there is one point I understand Mr. Monk to raise and that is, can we get a part of it printed earlier ? Certainly you could get a part of it earlier if the printing was done at the same time. It depends upon the two things. I am not disposed to lay stress upon what has been done in the past. I am quite willing to defend the Audit Office if anybody makes an attack. We cannot remedy the past. There are two different officers having separate and distinct duties to perform in connection with that. One officer cannot go into the office of the other and say, you are to do a certain thing. But if you tell us what we have got to do and say to me: I will give you all the men you want if you will only do a certain thing for me by a certain time or say to the King's Printer, if you have not got room enough, we will give you more room or if you have not men enough we will give you more men, it greatly simplifies matters.

By Mr. Barker:

Q. Could you have a third of your report ready by the first of December ?
A. Under my personal arrangement I could have a third of my report ready to be printed.

By Mr. Bergeron:

Q. Then you could send it to the printing office ?
A. Yes.

By Mr. Monk:

Q. What do you mean by a third of your report ?
A. A consecutive third, if you like, of the report.
Q. You begin your work do you not, after the 30th June every year ?
A. You can understand that we do not get any reports from the Yukon and all those distant places immediately after the 30th June, because they only complete their work on the 30th June, you see. As soon as we get the material we put whatever men are available to deal with that material and soon get it out.

By Mr. Foster:

Q. With reference to the third which you have ready, that part would be complete ?
A. Complete, yes.
Q. For instance it would be the whole of the report of the Militia Department, or the whole of the report of the Marine Department or the whole of the report of some other department ?
A. Quite so.

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By Mr. Monk:

Q. What I would like to find out from you, Mr. McDougall, is this : This year we have been receiving the audit of different departments in instalments ?

A. Yes.

Q. Would it not be possible for you if you had the necessary staff to furnish the members of parliament before the first January every year with a complete audit of each department and to give them to members as they came out ?

A. I am not outside of the control of the King's Printer in this respect.

Q. I know that.

A. You want it in print, it is no use to give it to you in manuscript.

Q. When would you be ready to give it to the King's Printer ?

A. First of November.

By Mr. Foster:

Q. With how much ?

A. With a third.

Q. Then how soon would the second third ?

A. The second third probably on December 1, or possibly only the middle of that month, and the rest on January 1.

By Mr. Ames:

Q. Would you be ready with one-third on November 1, another third on December 1, and the balance on January 1 ?

A. I am not quite sure about the last third, but probably between December 15 and January 15.

By Mr. Bergeron:

Q. And the rest lies with the printing office ?

A. Certainly.

By Mr. Johnston (Cape Breton):

Q. I understood you to say a moment ago you had different officers in charge of the various departments ?

A. Yes.

Q. Assuming you had a third ready by November 1, what third would that be ?

A. It would be just this : I would find out how this work was going on. I would say to the staff 'Go and help this man who is behind and when he has got his work done he will turn in and help you with yours.'

Q. Then you would put your entire staff at work ?

A. I will not say my entire staff but the staff that would be necessary, the men that I thought were the best suited to do this particular work.

By Mr. Bergeron:

Q. Explain what is the work of the Auditor General? Can any money be paid by the Dominion government without the amounts passing before you and deciding whether they are according to law or not ?

A. There are two ways in which moneys are paid. One is by what is called the Receiver General's cheque. An application to the Audit Office for payment certified by the Auditor General. It never comes to me direct but comes through somebody else in the Audit Office.

Q. Through some of your officers ?

A. Through some of my officers, yes, and if it had not been properly certified by the officers of the department from which it came it would be sent back to be examined. Then we send through the certificate for payment to the Finance Depart-

ment and the Finance Department makes any inquiry it wishes and then certifies to the cheque before it is paid. Then it goes through. There is another method under which two-thirds of the Dominion government expenditure is made. That is by what they call letter of credit cheque. The letter of credit is issued by the Audit Office and the Finance Department under the 30th section of the Audit Act to the department to pay moneys, say $100,000 or $200,000 as the case may be. Altogether in a year the expenditure in that time is about two-thirds of the total. In the case of a letter of credit there is no examination made by the Audit Office before payment. The examination is made after payment.

By Mr. Foster:

Q. In both these cases ?
A. In the letter of credit case.
Q. What about the other ?
A. It is examined before payment.

By Mr. Bergeron:

Q. I want to make this plain, Mr. McDougall. One of the obligations of the Audit Office is to pass upon items which have been voted by parliament ?
A. Yes.
Q. That is the first part of it. Now $50,000 has been voted towards the building of a bridge ?
A. Yes.
Q. When that comes before the Audit Office you want to find out whether the money has been spent for that bridge ?
A. Yes.
Q. How do you know whether it has been expended, this money voted by parliament which comes up on a letter of credit ?
A. The money is voted by parliament. There is no trouble about that. You see this credit goes to the Bank of Montreal or to some other bank such as the Bank of Commerce, the Merchants Bank and so on, but there is nothing said in it as to the specific votes that are to be covered. You, Mr. Foster, no doubt, remember about that. You cannot expect the bank to do our business in that respect. But the department has to follow the appropriations. They have the appropriation account passed by parliament just as we have. There is no trouble usually in that regard. There is sometimes the overspending of an appropriation, not so very large, but the real difficulty as I view this thing is this : A letter of credit is a good thing for fixed sums like salaries and the like. For instance, take the Mounted Police who get fixed salaries and are located at far distant points, or for small payments at a distance, it is a great convenience for the department. But it is not a good thing that so large a portion of the expenditure of the Dominion should be upon letter of credit. That is my view.
Q. Why should there be a letter of credit to pay an amount which has been voted by parliament ?
A. Well you want to get the money quickly with the individuals who are needing it and you can only get a fixed sum. If you have a large contract you say, 'well that expenditure ought to be examined by the persons who are engaged mainly in that kind of business.' If a man is an auditor he ought to know better than another man of equal intelligence and of less practice if the sum is properly payable. It is different if the sum to be paid is a salary, a fixed monthly salary.
Q. Why should there be a letter of credit for a monthly salary ?
A. Because it takes time to audit. All these accounts come over to us and are dealt with in their turn, and it takes more time in the department from which it came to do it. Then the department has its officers who have the information at their fingers' ends, don't you see? They send these cheques in time to the distant places ?

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Q. Is there not a danger that this money will be spent without your being able to tell whether it is properly spent or not ?

A. Yes, I know. At the end of the month a statement is sent to the Audit Office of the cheques drawn. Thus every month we get the vouchers for all this expenditure.

Q. I do not think you got vouchers in the Martineau case ?

A. We did not get the vouchers in the Martineau case and therefore we did not detect it, but we did not pay the Martineau money at all.

Q. Is there not a case in point that there is some wrong there ?

A. You cannot protect a bank against forgeries. You cannot protect a bank against accepting those cheques, don't you see ? We have two persons to sign the cheque. We have the cheques drawn in favour of the person who is to get the money and he must endorse the cheque. His signature should be on the cheque. In the Martineau case we did not lose any money. We are here, we public servants, to protect the Dominion. That is what we are here for. Incidentially we have to protect the men who are doing business with us if we can.

By Mr. Barker:

Q. Am I right in understanding you to say that your objection to the credit system is that it can be used for all purposes whereas you think it ought to be used only for specific items ?

A. That is my view, and I think Mr. Courtney or whoever is in his place, and myself, or who ever is in my place, should be able to say to the department : 'You have to confine your work to certain things.' I do not mean that we should necessarily unite, but if Mr. Courtney says the money should not be applied to such a thing, or if I should say that it should not, our views, the views of both should prevail.

By Mr. Geoffrion:

Q. Do you say your duties are properly defined by law ?

A. I say they are not.

Q. They are not ?

A. They are not.

Q. That is what you say ?

A. I say they are not.

Q. That the law does not define your duties ?

A. Not as it is now. It would be very funny if the law that was made 27 years ago did do so.

Q. Is it not a fact that the law of 27 years ago is still the law until it is changed?

A. It is.

Q. Then as I understand it there ought to be a law which would define to a certain extent your duties ?

A. Yes, and besides our work is not really what the law said it should be. That is because it was impossible to work it out. Nobody charges, at least I do not charge—

Q. Then what law is governing your duties now ?

A. What law ?

Q. Is there a certain law ?

A. There is a certain law, but it would be impossible to do certain things except by really, in practice, going outside the law—perhaps not contrary to the law, but outside of the law. You can understand that in a large place like this with the work increasing as it has been——

Q. I want to find out by what power, law, or other thing, you are governed by in your duties ?

A. I am going by the law as nearly as I can. There are some things which are not mentioned in the law and I consider my general duties are to save the money of this country.

By Mr. Bergeron:

Q. Section 30 of the Consolidated Revenue Act, the one we are talking of now, is the law by which certain moneys pass before you for sanction or refusal ?

A. Yes.

Q. Now I understand you have made suggestions to amend that law ?

A. I have.

Q. Why did you make those suggestions ? Did you find out in the management of your office that it did not work or something of that kind ?

A. I thought it was not clear that I could do what I have been in the habit of doing. The law could be improved I thought, and I consider all the suggestions I have made are improving suggestions. Of course I do not say that because they have occurred to me any one should accept them, but I say they are worthy of consideration on that account.

Q. As it is now the heads of departments, as I understand, have got to send to you for authorization to spend certain amounts of money ?

A. Yes.

Q. Based upon the votes that have been passed by parliament ?

A. Yes.

Q. That is section 30 of the Audit Act, in one word ?

A. Yes.

Q. As a matter of fact is that done or not to-day ?

A. Do they send to me for authority ?

Q. Yes.

A. That is done.

Q. Well, what is the amendment you want to make to the Act ?

A. I say this : If I find that a man is not doing what I consider to be his duty—you know that in the best governments in the world this is liable to occur. Well, an officer makes certain mistakes or call it what you like. I draw the attention of the deputy or the accountant to it. I say 'This is not done as I think it ought to be done.' Probably we will agree, but if we do not agree I would like to be in the position of saying to him 'You cannot have the credit.'

Q. Well, to-day if you do not agree, what becomes of it ?

A. I beg your pardon.

Q. If you do not agree what happens ?

A. As a general thing they have acceded to this request. But supposing that they don't. I will explain this to you by an example. When Mr. Foster was minister and Sir John Thompson was here, a deputy had differed from me upon certain expenditures. I said, 'I cannot make this expenditure. If you don't like it, apply to the Treasury Board to overrule me.' He said, 'I will draw these checks out of my credit.' I went to Sir John Thompson and told him about it, and he said 'What do you come to me for ? Don't you know that you needn't give him his credit ? Refuse it.' I went to Mr. Foster—probably he does not remember it ?

By Mr. Foster:

Q. I do not.

A. He does not. He said the same thing to me. I knew where I was. Of course, if the Audit Office agreed with the government of Canada a man got no credit.

By Mr. Bergeron:

Q. Was that case so good ?

A. That was good.

Q. According to what it should be ?

A. Yes.

Q. Is it like that now ?

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A. Yes, it is usually. But, I mention this case. Just lately a man, a prominent man—I found that he had overdrawn, that he had drawn out of his credit over $2,000. As far as I know he was a good official ; the minister said he was. That was my own idea. I said, 'This won't do. What are you going to do about this.' I said, 'I cannot issue you a credit unless I make arrangements to have this money refunded.' You can understand a man gets out of his credit a certain amount of money for travelling expenses, and at the end of the time he has a little coming to him, but he says, 'I will keep this for the next trip.'

Q. I don't want to know the name.

A. I cannot tell you the name.

Q. What kind of officer can pay himself like that—can issue the check ?

A. No man can do it by himself.

Q. No ?

A. But it is a delicate condition for any man in the department who is perhaps under him to intervene.

Q. To refuse ?

A. To refuse. I say,—well, I do not want to go into that part of it. At the end of the year this man drew the money out of his credit for the next year instead of refunding it. I admit it is not my place to displace this man. I think he was a good official.

Q. Did you complain to his minister ?

A. I did.

By Mr. Fielding:

Q. When did this particular case occur ?

A. At the end of last calendar year.

Q. When did you report it to the Finance Department ?

A. I did not report it at all. I said this to his minister and to the Prime Minister.

Q. Have you since reported to the Finance Department ?

A. No, I do not think I have. I said to this man, 'Well now, you cannot go on. I cannot give you credit.' Then, we got this matter straightened, he paid a certain amount of money——

By Mr. Bergeron:

Q. The same thing might happen again.

A. Of course, if I could not say, 'I will not give the credit to you.'

Q. What is the suggestion you make to obviate that by clause 30 ?

A. I say that either Mr. Courtney or myself should be able to stop granting credit at any time.

Q. Without being overruled by any authority ?

A. Yes.

Q. You assume to say that the law should be made to give you such authority ?

A. Yes, to be able to say to these people, we can find out in each department where the weak spot is better than any other department or person.

Q. Did you make such a suggestion to anybody ?

A. These suggestions have been reported since 1898 and 1899.

Q. Since then have you talked with any members of the government about these suggestions of yours, and if they could be carried out for the efficiency of the service ?

A. I spoke to Mr. Fielding and I spoke to the Prime Minister about them.

Q. What is the result of those conversations ?

A. There is nothing except that Mr. Fielding says when there is any evidence of any amendment being required he would be glad to do it. He said, 'We won't make any change'—that is what I understood in the last conversation I had with him.

Q. He is not afraid that that case that you spoke of will ever occur again ?

A. As far as Mr. Fielding is concerned, he does not know it, unless he knew it through the Prime Minister or the particular department.

By Mr. Barker:

Q. You say that about two-thirds of the Dominion expenditure is made without being audited, do you ?

A. Yes.

Q. Have you in any case where an item has been before you for audit and where you have not passed it, held it back for evidence or information, or in any way refused to pass it ? Has the item been paid out of the credit while it was under suspension in your office ?

A. I cannot recall that, no.

Q. You don't recall any ?

A. No.

Q. So that if anything has been held up by you—a check—you don't know ?

A. I have taken pretty good care that it would not be treated in that way so far as my knowledge went.

Q. How do you know ?

A. I cannot prevent them paying it if they choose.

Q. They can do it ?

A. Yes.

By Mr. Fielding:

Q. So far as you know, it never occurred ?

A. Yes, so far as my recollection goes.

By Mr. Johnston (Cape Breton):

Q. Is this system of issuing letters of credit a new system ?

A. It was a new system when I came in, but it was very little practised before. It was greatly improved. This system of having two people always sign the credit may have always existed, but this system of making the checks payable to the order of the person who gets the money was instituted by myself. I remember well that my attention was drawn to it. I made a recommendation that all these checks should be made payable to the order of the person who receives the money.

By Mr. Bergeron:

Q. So as to be able to follow it afterwards ?

A. So as to say to the man: 'You have got the money.' I found shortly after I came in, a person with whom I was acquainted had come to the city, and I asked him, 'What brought you down ?' He said : 'I came down to get my check cashed.' 'Why,' I said, 'You have got it ; I know. I have seen it.' He said, 'I did not get the money.' I would have been able to tell if he had endorsed it. He had not.

Q. Where had the money of that man gone to ?

A. It had gone to the paymaster. He did not intend probably to keep it.

Q. The man probably got it afterwards ?

A. Yes.

By Mr. Johnston (Cape Breton):

Q. How old is this system of issuing credits to the various departments ?

A. This system, as I told you, is a system that I think ought not to extend. It is contrary to the system that seems to me to be necessary. You want to enable these men to get the money quickly if it is quite plain that the money ought to be paid to them at all. You want, if you think it should not be paid, if it is of sufficient importance owing to the peculiarity and the size of the account, that it should be examined by the person whose business it is to examine, who examines from day to

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day, who has gone through all the classes of accounts and who will be able to say, 'there is more information wanted about that ; I want a certificate for instance' or some other information.

Q. As a matter of fact, can you give the committee any idea how long this system has been in operation in Canada ?

A. It has been in operation since I came here, and Mr. Courtney who knows more about what happened before, says, before that.

Q. Is your control of that expenditure less to-day than it was fifteen or twenty years ago ?

A. Less in that one respect, that there is doubt whether I can stop these payments at a particular time.

Q. Are these doubts new ?

A. Yes, mostly new. I will be quite willing to explain to you——

Q. What has created the doubt—any change in the Act since 1878 ?

A. No.

By Mr. Foster:

Q. Before going on, I would like to have this one thing made clear. Some one asked what power you wanted. You said you wanted the power to stop a credit, provided that so and so had not done what you thought was right ?

A. Yes.

Q. The point I want to make is this : who fixes the conditions under which these men are to make the payments ? Do you, or does the government ?

A. The Treasury Board would do it on my recommendation.

Q. I want to know who has the authority. For instance, is there a payment under a credit in the Militia Department, who says what men are to sign checks, who says what men are to countersign ? Is it you or the government ?

A. The government say who are to draw the checks. I take it upon myself if a man is a man, for instance, a notorious drunkard, to go to the deputy and say 'I won't issue'—the checks under that 30th section have to be applied for by the Auditor General. I take it that that means that the Auditor General must hold himself responsible for having issued that credit to the particular man. That is what I take it I should do.

Q. Very well, one man is a drunkard. You say you don't think he is fit. You have no power to appoint a man in his place.

A. No, that is done by the Governor in Council.

Q. The men who are to do this are not appointed by you but by a power superior to you ?

A. Yes.

Q. You find that these regulations are made and these men are appointed and that they abuse their positions ?

A. Yes.

Q. And then when they do that and only when they do that you want to have the power to say, 'Put yourself right before I give you another credit ?'

A. Yes. That is what I want. That is the condition I suggested, that is for the sake of getting proper control, that is, that these men should have a credit confined to a particular service, to a particular appropriation. You cannot hold the Bank of Montreal, for instance, responsible for that, because the Bank of Montreal says, 'We are a banking house, we will accept these checks up to the amount of the credit.'

Q. You do not contend that this large expenditure, two-thirds of it, can be done without letters of credit ?

A. No.

Q. Do you contend that any considerable portion of it could be done under a fixed system rather than the credit system ?

A. Yes.

Q. That is what I want to get at. You do not contend that the credit system should be done away with ?

A. No.

Q. But that it should be properly controlled ?

A. Properly controlled.

Q. But a portion of it could be done away with, and that it could be paid by fixed check, Receiver-General's check ?

A. Yes, but of course there are very large sums that require examination before payment.

Q. You say that two-thirds of the expenditure is paid under the credit system. Give the committee an instance of where you could pull down any proportion of that and put it under the other system, that is, that you examine before you pay. Give a concrete instance.

A. A short time ago I applied to the Marine and Fisheries Department. I said 'You have taken over a very large amount of work which was done before by the Department of Public Works. Now, why shouldn't you apply to us for these payments ?'

By Mr. Bergeron:

Q. What was the answer ?

A. The answer was—they were courteous enough—they said, however, they did not see why they should not make the payments out of their credit.

By Mr. Foster:

Q. The public works that were administered before and have now been taken over by the Marine and Fisheries Department were formerly paid only in part under the credit system.

A. The credit system.

Q. These now are being paid altogether under the credit system ?

A. Everything is paid under the credit system, and part of that work had been done under a direct cheque before.

By Mr. Barker:

Q. By the Public Works Department ?

A. Yes.

By Mr. Ames:

Q. May I ascertain whether I have a clear understanding of the system employed by putting a question. Supposing for example parliament voted the sum of $100,000 for the construction of a new dredge in connection with the St. Lawrence channel. Having received a certified copy of that resolution, do you open, as it were, an account in your books against that dredge and credit it say, with the receipt of $100,000 ?

A. Certainly.

Q. Now, if the department says to you, 'We desire to commence work by day labour on that dredge, we desire to expend money from week to week, we want a credit of $25,000 for that,' do you transfer $25,000 to them ?

A. No.

Q. Having received this $25,000 from the Department of Marine and Fisheries are they bound—they are bound I suppose, to see that that appropriation of $25,000 is expended entirely upon that dredge, are they not ? Supposing they draw $2,000 or $3,000 over that appropriation and apply it to some other piece of work, can you check them ?

A. I at once tell them. You see it is this way : they get a credit—they don't get a credit for the portion that they are going to spend on the dredge at all, but they get a general credit.

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Q. But when they get the credit for the whole $100,000——

A. Not particularly for the sum, for the dredge, but they apply usually for $100,000 or $200,000 to cover authorized expenditure general.

By Mr. Foster:

Q. For all purposes ?

A. For all purposes, the expenditure that they are going to make under the credit for a month—we get at what about a month's expenditure will be. Then, when they have made this expenditure, they have drawn the cheques, they send in a statement of the different appropriations to which these cheques are to be charged, then in about a month after that the vouchers come in. We of course have to repay the bank if we have given the bank a credit. There is no use of objecting ; they have expended the money for us, and we must repay them for all the cheques drawn against that credit. If They have a credit for a round sum we have to repay cheques drawn under it. Then, when we get the vouchers we examine and see where every cent of that money has gone, unless there is something unreliable in the vouchers, and we put in our report the analysis of the vonchers which they say makes such an awful report, such a tremendous size. We give the people the opportunity of helping us to audit them by giving the statements.

By Mr. Ames:

Q. What happens, for instance, if parliament votes $25,000 for a specific purpose and you find at the end of the month that $27,000 has been expended ?

A. We have to make a statement of the $2,000 of overdraft and parliament has to vote it.

By Mr. Bergeron:

Q. What guarantee has parliament that the money has been well expended ?

A. We give the guarantee that at any rate there is evidence given to us that the expenditure has all been made for that purpose.

Q. You believe that ?

A. Certainly. We get the vouchers to tell us that. But, as Mr. Ames said, we do not specify in credit to the bank the particular appropriations to be covered by it.

Q. Is there not a great abuse on the part of the government to-day, that every amount of money which has been voted last year by parliament for certain works has to be supplemented, and the supplementaries are increasing all the time ? Does not that condition make it very hard for the Auditor General to find out whether that money is spent properly or is not wasted ?

A. I do not know that it does. They do not make these over-expenditures as shown when a statement comes in without my notifying them that an over expenditure cannot be properly made on that appropriation. I press as hardly as I can upon their notice the fact that an over expenditure has been made, I do not think, so far as I can see——

By Mr. Foster:

Q. Could it not be remedied in this way: to absolutely forbid any over-expenditure without authority for the over-expenditure ?

A. If you could do that——

Q. Could not you ?

A. Cannot the House ?

Q. As a matter of fact they do over-expend ?

A. Yes.

Q. As another matter of fact they over-expend without authority ?

A. Yes.

Q. There should be some very easy method of making a clerk who did feel that he had done wrong and never would get a chance to do it again ?

A. You remember in your time, when you and I had a discussion about this, and you said, 'I think the Bank of Montreal should have a separate credit.' I said, 'No, I do not think you can do that.' But, I said that the accountant knows every cheque that is issued.

Q. The accountant of each department ?

A. Yes. The appropriations are sometimes over-expended. You ought, I think, to pass an Order in Council that the accountant should never authorize an over-expenditure, because the books of account are there before him and he knows from them whenever a cheque that he is signing is going to overdraw his appropriation. You cannot expect the minister to do it. We never do it without sending a notice to the deputy minister in writing that there is going to be an over-expenditure and receiving one in reply authorizing the over-expenditure.

Q. That is the point I wanted to get at.

A. I have said occasionally to the departmental accountant, 'Where is your notification to the deputy minister that this charge would overdraw the appropriation, and his acknewledgement that this would be an over-expenditure over your appropriation, and his instructions to you that nevertheless he was to prepare the cheque'?

By Mr. Fielding:

Q. This would not require an amendment to the Act ?

A. No, it could be done now.

Q. The over-expenditure in some cases arises in this way: The department has a number of appropriations for different services. The accountant makes out his cheque on the appropriation for a certain service and when it comes to you, you think it is not properly assigned to that appropriation and should be assigned to another vote ?

A. Yes.

Q. And afterwards, though the accountant has not issued any other cheques over his appropriation, it turns out it is charged to the wrong appropriation—you think it should be charged to another ?

A. Yes.

Q. And then you readjust it ?

A. That is exceptional.

Q. And sometimes at the end of the year it happens that there is an over-expenditure on one branch and an under-expenditure in another ?

A. Yes, I think that is exceptional, but it does occur occasionally.

By Mr. Bergeron:

Q. You should have the signature of the Chief Engineer for that.

A. Oh, yes. That is not a common thing. A man says, 'We really cannot let a man go without his money ; he will starve,' or something of that kind. That is a statement that is sometimes made if people have not looked ahead to this.

Q. What about bringing down an appropriation after the end of the fiscal year ?

A. If you put the expenditure in the year in which it belonged in the first instance, then of course there is some difficulty to get your accounts out at the proper time, because when you have to July for instance to issue cheques for the previous year it takes us longer to issue our reports.

By Mr. Foster:

Q. What is the length of time allowed now ?

A. They have three months. Up to July 31 they can pass an Order in Council to bring down an appropriation to the end of September.

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By Mr. Bergeron:

Q. How would you get over that ?

A. I would see that the accounts for the year will have the cheques that are drawn during the year, the payments made which is allowable under the law.

Q. You would send them over to the other year ?

A. Yes.

Q. That is a matter of bookkeeping ?

A. Certainly. Most of the expenditures of the country stop on June 30. We cannot make the examination until after they come in. It is as much as you can do under almost any kind of circumstances that I can think of to get one-third of this report ready in the Audit Office by November 1. Then, it takes some time to print it.

By Mr. Foster:

Q. The time really runs to August 1 ?

A. Yes, usually.

By Mr. Blain:

Q. Is the number of accounts paid under the letter of credit system largely on the increase ?

A. Yes, they are largely on the increase, just as other things are on the increase. In most cases they did the same thing before. But you see there are new classes of work done.

Q. Have you ever pointed out to the government those accounts that should be paid under the letter of credit system and those that should be paid otherwise ?

A. I do not know that I have. I may have talked to them. There has been a lot of informal talking done, but I cannot recollect all that took place. A great deal of this is done by informal talk. I made out a statement lately and found there was about $44,000,000 out of a little over sixty odd million dollars——

By Mr. Barker:

Q. There was $44,000,000 paid that way last year ?

A. Yes.

By Mr. Bergeron:

Q. I see by your correspondence you have had a great deal to do with the Treasury Board ?

A. Yes.

Q. And a great deal of overruling ?

A. Yes.

Q. Have you any suggestions to make so that parliament would know if you have been overruled whether you were right or wrong ?

A. Yes, my suggestion is that every member of the Treasury Board—the board being a court in this instance—should be given in these matters just as they do in the Supreme Court. Then, I contend that these overrulings should be as they are, in my report every year, and they should be dealt with by a committee of the House of Commons.

Q. Are the powers of the Treasury Board arbitrary ? Can they overrule you even when you are right ? How is that done ?

A. Of course I think I am right every time. If it is a legal question they must get a statement from the Department of Justice that it is legal to do so, and then there is no limit to what they may do.

Q. The law is very large ?

A. It is large, yes.

Q. Did you make any suggestion about that ?

A. I did in my report.

By Mr. Fielding:

Q. I understood you to say, speaking of these letters of credit and possible abuse —I want to see if I caught you correctly. You said that if a matter came to your notice in which you thought the department had abused a letter of credit, in your judgement they were not applying it wisely, that you should have the power to stop their letter of credit and that there should be no appeal from you, that your decision should be final ?

A. Oh, yes, that I should be final, unless there was going to be an improvement.

Q. Who is to be the judge ?

A. I am to be the judge.

Q. You are to be final judge ?

A. Yes, I mean also that the Deputy Minister of Finance should also be able to stop it and that he should be final also.

Q. That either one or both of you should be final, that there should be no appeal?

A. Either one or both in that respect, so far as this particular man is concerned.

By Mr. Barker:

Q. That would not prevent an item going through.

A. No, not at all.

By Mr. Fielding:

Q. It would prevent them getting a letter of credit. Supposing the government, in the exercise of their wisdom, issue a letter of credit, and in the judgment of the Auditor General it is not wisely applied, then he thinks, either he or Mr. Courtney, or he and Mr. Courtney, jointly or separately, should have the power to stop the letter of credit in the name of the particular persons as one of the deputies and that there should be no appeal from them.

A. So far as that particular man is concerned.

Q. So far as that particular man is concerned ?

A. But not so far as the department is concerned.

Q. Stop the credit for that man ?

A. Certainly, and he knows about that particular man and all others who sign credits.

Q. I do not want to reason ?

A. But I want to reason. Who is the man that knows whether that man does his work well or not ? You give a great deal of power to the Auditor General, certainly you do, but he has a great deal of work to do. Why should he not say—what object has he to bring in any other man, he is not going to appoint another man in this man's place, the government will appoint his successor, but if the Auditor General knows that the man that is appointed does the same as the other man has been doing, the Auditor General will stop him from getting a letter of credit ? That is my argument.

By Mr. Bergeron:

Q. It is for the benefit of the service that the Auditor General is taking this position. Mr. McDougall is of the opinion that he, or Mr. Courtney, in a case of that kind, should simply say : 'You shall have no more letters of credit,' and that their judgement is final. That is as I understand it.

A. Yes.

By Mr. Foster :

Q. Does that settle it finally ? Here are two men, Jones and Smith, who have to draw cheques and sign and countersign, they are appointed by the government, and Mr. McDougall has nothing to do with that. Jones and Smith go on with their work under the letter of credit——

A. Excuse me, the Auditor General has a right in the first place——

Q. I know, yes, but once that right has been exercised and they are appointed. and they are going on in the course of their work issuing cheques. Supposing that the Auditor General in the course of time finds that Jones has mal-administered the appropriation, or drinks, or anything like that, because if he has only done wrong once he may do it again ; then what you want is to be in a position to say : 'You must make a change in your method, that man is not a fit man for the position and until that has been readjusted or changed, I will not issue another letter of credit.' That does not take away from the authority of the government to investigate that case, and to say afterwards : 'Well the Auditor General is right, he was drunk or inefficient and we must get another man' ; or if he was not, the government could say to the Auditor General : 'You were mistaken and have a wrong idea of this case.' And then to trust to the fairness of the Auditor General to withdraw his objections.

By Mr. Fielding:

Q. Somebody must have the power, I will agree, but the Auditor General complains that he must have the power ?

Mr. BARKER—There is the other point. The Auditor General is an officer of parliament, he is not responsible to the government, but to parliament directly. Now if the Auditor General in an arbitrary way were improperly to stop a letter of credit, if he were, out of prejudice, or anything else, to refuse to accept cheques or certificates of a particular officer, parliament would dismiss the Auditor General in a moment—if the Auditor General were to act in that way.

Mr. FIELDING—And if the government were to do likewise, parliament would dismiss the government. I think the government must always be responsible for every dollar of public expenditure and anything else is a violation of the first principles of responsible government.

Mr. BARKER—Yes, but parliament has not accepted that responsibility solely, although the government is responsible to the country and to parliament, parliament has seen fit to appoint an officer to check every expenditure of the government.

Mr. FIELDING—To watch.

Mr. BARKER.—To do his duty, and if he acts improperly, parliament will dismiss him.

Mr. FIELDING.—And if the government acts improperly, parliament will dismiss the government.

By Mr. Johnston (Cape Breton):

Q. Who appointed you ?
A. (The Auditor General). The Mackenzie government.
Q. And not parliament ?
A. No, but it is parliament that dismisses me, under that section.

By Mr. Bergeron:

Q. Under the Act ?

A. Yes, under the Act. I want to explain one thing—I have two or three times objected to people when they were appointed. For instance, there was one man whom I knew to be a drunkard—what did I do ? Did I say immediately, this man won't do? I went to the department to the deputy minister and I said, 'Do you know so and so is a notorious drunkard, and do you not know I have some responsibility in connection with this.' He said : 'Oh, I did not know he was a drunkard ; I do not want him at all.' Afterwards I spoke to the minister and he said : 'I endeavoured to dismiss him altogether but he was too strong for me' ; he did not get a letter of credit, but I watched to dismiss him knowing that he was a drunkard. In another case, a man who was assistant accountant was passed over as a substitute to sign. Well, they gave him to countersign a man who was a junior. I said to the deputy minister : 'Here is a

man who was appointed for special qualifications, the assistant accountant, it will be subversive to discipline will it not, if he is passed over ?' I happened to know very well the junior, but I did not know the assistant accountant. He says: 'Oh, very well, we will have to change our recommendation to Council, we will recommend that the assistant accountant sign as substitute.' I did not know Mr. Marchand for whom I was fighting, at the time, but he is now carrying out his work very well as I hear and believe.

By Mr. Fielding:

Q. When you recommended these changes they were immediately made ?
A. Yes.
Q. Is there a man to-day signing cheques against whom there is any objection ?
A. No.
Q. Therefore there is no need for any change in that respect ?
A. Oh, yes, I will show you why.

By Mr. Bergeron:

Q. I would like to get an explanation, I would like to get some explanation as to the Martineau case?

Mr. FIELDING—That will be an interesting subject to investigate.

Mr. BERGERON—I was not here when the case came up.

Mr. FIELDING.—It is not too late to commence now.

Mr. BERGERON—I do not care about investigating the case. I can understand, I think, with the explanations which have been made how it could happen. If it could happen for that amount of money it could happen for a larger amount. There must be some principle involved somewhere.

By Mr. Johnston (Cape Breton):

Q. Before departing from the question raised by Mr. Bergeron, with regard to the overrulings of the Treasury Board, that you are sometimes overruled by the Treasury Board, is this a new practice of the government ?

A. No, it does not make any difference to me who is the government, or who is in or who is out. I want to get the business of the department in a way that I can defend it. Whether it is the Hon. Mr. Fielding or the Hon. Mr. Foster, that has nothing to do with me.

By Mr. Fielding:

Q. As a matter of fact these overrulings are brought down to parliament every year, and are entirely within the scope of parliament, and parliament can do as it likes with them ?

A. Yes.

Mr. BARKER—The objection to these overrulings is that they never give their reasons.

Mr. FIELDING.—The best judges never do give reasons for their judgments.

Mr. BARKER—That is because they are afraid of being ruled out if they give them.

A. I can say that in England, where they are supposed to know more about these things there is a small committee appointed to pass on these overrulings. Where there is a large committee of forty-eight members or more although they are members of parliament they are like other people, and have the ways of the world and probably they have the idea that what is everybody's business is nobody's business. In England they have the small committee that deals with everything that comes in this way from the Treasury Board and they say whether in future the Auditor General's idea is to be adopted or the practice of the government is to be followed.

APPENDIX No. 3g

By Mr. Bergeron:

Q. Is it a sub-committee ?

A. No, I think it is a committee of public accounts. The Committee on Public Accounts here is composed of 80 members. In England they have a committee of fifteen men appointed from year to year, a committee in which each man feels responsible for the opinion he gives.

By Mr. Geoffrion:

Q. What have you to say with regard to the Public Accounts Committee's Report?

A. I am not dealing with the special report of the Public Accounts Committee now. Of course I do not agree with the overrulings, because they are overruling me. But I say that these overrulings should come to the Public Accounts Committee which will deal with them, the members of which will say what they think.

Mr. BERGERON.—We are not too many, we had no quorum the other day. While you were answering Mr. Fielding, there was a suggestion you wanted to make. Mr. Fielding asked you if the reports to the House of Commons about the overrulings of the Treasury Board were satisfactory ?

Mr. FIELDING.—I did not ask that, I did not ask if it was satisfactory, I asked : 'Was it not a fact that these overrulings are laid before parliament ?'.

By Mr. Ames:

Q. Did not the Finance Minister ask if there was any official retained in the department that was unsatisfactory ?

Mr. FIELDING.—Pardon me, 'signing cheques,' I said, I asked 'is there any person to-day signing cheques, against whom Mr. McDougall has any objection ?' And he said, 'No.'

A. I wanted to read the correspondence that has taken place between the Deputy Minister of Finance and myself. It is quite as important you see, with regard to these letters of credit cheques that they want to go on, and when one of the signors is ill or absent there must be some other person appointed to sign for him.

By Mr. Johnston (Cape Breton):

Q. Before leaving this point is there anything to prevent, if in the opinion of any member of parliament there is anything wrong about them, is there anything to prevent that overruling action of the Treasury Board coming before the Public Accounts Committee ?

A. I do not know that there is anything, but I do say this——

Q. It is a legitimate matter for any member of the Public Accounts Committee to inquire into any overruling of the Treasury Board ?

A. Yes ; but I say that in England they have found a small committee useful for that, and therefore I make the suggestion that there should be such a small committee here, and also the suggestion that the names of the members of the Treasury Board who assent to any overruling, and of those who do not do so, should be recorded.

By Mr. Fielding:

Q. I suppose you would publish the same thing in the ordinary affairs of the government, that every time a man is appointed we should give the information as to how many members were present and who voted for him ?

A. No, because I say the Treasury Board sits as a Court, that is my opinion, that is, they do not deal there with matters of policy. As a matter of fact the members of the government deal with policy, but when sitting as a member of the Treasury Board a member of the government might act quite differently from what he would when sitting as a member of the government.

Mr. BERGERON.—It is more of a legal character—the Treasury Board.

Mr. FIELDING.—Then the laymen will have to be dismissed from the board if it is a legal body.

A. No, I do not say that.

Mr. BERGERON.—They get the report from the Minister of Justice, I understand, so that it is not hard to decide.

The AUDITOR GENERAL.—I said here in my letter dated August 3rd, 1904 :

AUDIT OFFICE, Ottawa, August 3, 1904.

SIR,—In connection with the recently introduced system of paying employees of the Intercolonial Railway by cheque, we beg to advise you that the following persons have been authorized by Order in Council of July 23, to sign and countersign cheques for the general manager and chief accountant and treasurer.

For General Manager :—

Thos. Williams, F. J. O'Rourke, C. B. Trites, W. H. Fillmore, H. F. Hamilton, J. C. Stewart, E. E. Ayer, F. E. Lockhart.

For Accountant :—

C. W. Burnyeat, J. W. Forbes, G. H. Seaman.

We have the honour to be, Sir,
Your obedient servants,
J. L. McDOUGALL, A.G.,
D. M. of F.

This was a letter sent by me, a draft letter sent by me to Mr. Courtney to have him sign it, and it was addressed, as we do here in the report, to Mr. W. J. Anderson, Manager of the Bank of Montreal at Ottawa.

In reply to that Mr. Courtney says :—

FINANCE DEPARTMENT, OTTAWA, August 5, 1904.

SIR,—Referring to the draft letter of the 3rd instant sent me for joint signature, addressed the Bank of Montreal, Ottawa, respecting the signing of letter of credit cheques for payment of the employees of the Intercolonial Railway, I have the honour to state that I do not consider that the procedure adopted in the draft letter complies with the terms of the Order in Council of June 27, 1888, a copy of which you will find on page A—6 of your report of last year.

Section 1 of the order as on page A—6 provides :

'That for each department substitutes be authorized by Order in Council to sign for those in whose favour the letter of credit is drawn, and that a copy of the Order in Council be sent to the Bank of Montreal, or other bank on which the credit may be drawn.'

The Department of Railways and Canals who has charge of the service should forward a copy of the Order in Council of July 23 last (of which I have not yet received a copy) to the Bank of Montreal, with specimen signatures of those to whom authority is given to sign as substitutes.

Draft letter returned.

I am, Sir,
Your obedient servant,
J. M. COURTNEY, *D. M. F.*

The Auditor General.

Then I wrote to Mr. Courtney, as follows :—

AUDIT OFFICE, OTTAWA, August 8, 1904.

SIR,—I have your letter of the 5th instant with regard to the authorization of the bank to receive, instead of the names of the persons in whose favour a departmental credit is issued, such substitutes as Council may provide.

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You and I jointly authorize the Bank of Montreal or any other bank, to honour departmental letter of credit cheques, or in fact, any letter of credit cheques. You cannot do it alone. I cannot do it alone. No other person had any authority, no matter who he is, to empower the bank to cash a letter of credit cheque. The Order in Council, if shown to the bank, would not justify the bank in taking the signatures of the persons who are authorized. We alone can do that. As a mere matter of practice it would never do for the bank, of its own motion, to receive anything but what we send it.

What is proposed to be done now has always been the practice. If any change is made, besides transgressing the law, as I view it, we would be getting into inextricable confusion.

It seems to me only necessary to draw your attention to this subject, without entering fully into it ; but if you do not see the force of my contention, I shall be glad to go further into the maater with you.

A person although appointed to do a certain thing, has no authority whatever to appoint his substitute to do it.

My recollection is that I have dealt with this subject before within the past year, but in the meantime I do not see my letter, and I am anxious that the matter should not be delayed, because I want to get the officials at Moncton into the way of issuing cheques for the payment of salaries wherever banks are within easy reach.

Speaking of your not having the Order in Council, I would suggest what probably occurs to yourself, that you should apply to the clerk of the Council to send you these Orders in Council whenever they are passed.

To my mind the clear intention of the law is that you act for the government as a body, and that I act as the agent of parliament.

I am, sir, your obedient servant,

J. L. McDOUGALL, *A. G.*

The Deputy Minister of Finance.

By Mr. Bergeron:

Q. When was that ?
A. That was on August 8 last.

By Mr. Geoffrion:

Q. You act as the agent of parliament ?
A. Yes, I say that.

Then on August 13 Mr. Courtney replied :

SIR,—I have the honour to acknewledge the receipt of your letter of the 8th instant on the subject of authorizing the bank to accept the signatures of substitutes on letter of credit cheques, which shall receive attention.

I am, sir, your obedient servant,

J. M. COURTNEY, *D. M. F.*

Then on September 1, I wrote to him saying :

SIR,—Let me call your attention to my letter of the 8th ultimo, on the subject of authorizing the bank to accept the signatures of substitutes on letter of credit cheques.

On the 13th ultimo you acknowledge its receipt, but I have had nothing further from you on the subject.

I am, sir, your obedient servant,

J. L. McDOUGALL, *A. G.*

Then on September 8, Mr. Courtney says :

SIR,—Referring to your letter of the 1st instant on the subject of letter of credit cheques, I have the honour to say that I believe the provisions of the Order in Council of June 27, 1888 have been carried out in the particular case which gave rise to the correspondence.

I am, sir, your obedient servant,

J. M. COURTNEY, *D. M. F.*

On November 10, 1904, I wrote to Mr. Courtney, as follows :—

SIR,—In further discussion of the substitutes proposed for Messrs. Pottinger and Williams, to sign cheques for Intercolonial railway wages.

It might perhaps meet the wishes of all, if the bank were notified by us separately.

I would be pleased to learn whether you have notified the bank that the new substitutes (as named in the present instance) may be accepted, as far as you are concerned. I shall thereupon send a similar notification on behalf of this office.

I should be glad to have it understood that there is to be some fixed manner of acting in this regard for the future.

I am, sir, your obedient servant,

J. L. McDOUGALL, *A. G.*

On the following day, November 11, Mr. Courtney replied as follows :—

SIR,—I have the honour to acknowledge the receipt of your letter of the 10th instant on the subject of the letter of credit cheques for the wages of the Intercolonial railway employees.

As stated in my letter to you of September 8 last, I believe the terms of the Order in Council, governing the matter have been fully complied with.

By Mr. Bergeron:

Q. He stands on the constitution ?

A. Yes.

Mr. FIELDING.—On the rock of the constitution ?

A. The letter continued as follows :—

'Under my direction, and with my approval, a copy of the Order in Council authorized by this section, although the cheques are usually smaller in amount than specimens of the signatures themselves, was sent to the Bank of Montreal, Ottawa.

'With regard to the concluding paragraph of your letter, I can only say that this department will endeavour to strictly comply with the terms of the law and the regulations governing this letter.

I am, sir, your obedient servant.'

By Mr. Fielding:

Q. That is signed by Mr. Courtney ?

A. Signed by Mr. Courtney.

I then wrote a letter to Mr. Aylesworth, in which I say this :

AUDIT OFFICE, OTTAWA, November 29, 1904.

DEAR MR. AYLESWORTH,—A difference is just now arising with reference to proceedings under section 30 of the Audit Act (Chap. 29, Revised Statutes).

By far the greater number of Dominion cheques are made by the machinery authorized by this section although the cheques are usually smaller in amount than those issued directly against the Receiver General's accounts. Last year the grand totals in the respective cases were $42,000,000 and $22,000,000, with some amounts not easily classed as belonging to either.

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The credits are generally given to the Deputy Minister and the accountant of the department jointly, neither being able to use the credit without the co-operation of the other. The letter of authorization to the bank (usually the Bank of Montreal at Ottawa) has hitherto been signed invariably by the Deputy Minister of Finance and the Auditor General. There is nothing in section 30 which directly draws attention to the requirement of having this letter signed by the Auditor General.

However, the credit would, as was supposed by me, be not good unless it had been issued with the approval of the Auditor General. A credit I thought would not be good unless it was authorized. The bank should have the information from the officials, which showed on the face of it that the credit was regularly given. This double signature gave it this character and besides the credit was signed by two persons, which in every thing connected with money is simple and effective. Each of two men may be great rascals, but they may work together for a lifetime and not know it, if their business connections extend to nothing beyond their public duty of signing together public cheques, or other similar documents affecting government money.

It has been found necessary for almost every credit to have substitute signatures for both the deputy head and accountant, that is, really to have one or more other credits. The substitute signatures are the subjects of Orders in Council, not, as I contend, that the authorization to draw money from the government bank comes from the Order in Council; but that I am authorized by the Order in Council to apply for credits to them, on the application from the respective departments in their favour.

Now, Mr. J. M. Courtney, the Deputy Minister of Finance, refuses to take part with me in notifying the bank that the persons who have been authorized as substitutes may be accepted in the signing of letters of credit cheques, thus maintaining virtually that those who came into the transaction after the credit was issued have then power given to them, it being from a different source from that which gave the credit in the first instance. Therefore, if there was any difficulty in showing to the auditor that certain persons in the departments might be safely and properly instructed with a credit, the power would be regularly given to the same effect by first applying for a credit, in favour of those in whom the auditor had confidence, and then transferring all the power desired to untrusted persons by the means of substitutes.

You will understand that as required by section 30 a statement of cheques drawn during a month comes to this office during the early part of the following month, and that without waiting for the vouchers on which the cheques have been issued this office causes the bank to be repaid. It may turn out sometime that whether by design or not a cheque has been issued to some person to whom nothing was due or in excess of what was due. I feel that if I have applied for the issue of the credit or taken part in it the country is responsible for the cheque which on the face of it only, is regular, but would not be so if the credit had not in this, the only authorized respect been regularly issued. Am I right in this ? If so, I am not justified in the latter case as it appears to me, in repaying any such cheques, until the vouchers have been examined in this office, and therefore must treat the credit itself as nugatory. Properly I ought to notify the bank when the notification is being forwarded to it by the Deputy Minister of Finance, that I cannot recognize the notice as justifying the new persons nominally authorized as having the power to pledge the government money for the purpose.

Let me try to make clear what seems to be involved in the words on the application of the Auditor both by the Act itself and what the Auditor General alone does under the Act and alone can do.

What are the objects in connection with government payments ? Not to pay anything but amounts due ; second, to pay amounts due quickly.

It is not supposed that the Audit Office is the only office where care is taken to prevent irregular payments. See section 42: 'The deputy heads of the several de-

partments or the officers, clerks or other persons charged with the expenditure of public moneys, shall respectively audit the details of the accounts of the several services in the first instance, and be responsible for the correctness of such audit.'

What is a special duty on the Audit Office and on the part of the Auditor General, is a duty on every other government official as far as he can reasonably be expected to do it. Unless the contrary were stated in section 30 or some other place where credits are spoken of, seeing that his assent is required, he would be supposed to exercise his full power to do, with reference to this mode of expending public moneys, what he is required to do when direct payments are made of this same public money.

At section 31. By this section the Auditor General shall see that no money is spent except when there is direct parliamentary appropriation, and only after the Governor in Council has decided to make use of the parliamentary direction to spend which has been entrusted to him.

I inclose several papers which will show you our process.

Although this letter is written with reference to a difficulty which exists in this office now, I should be glad to spend a day in Toronto at some early time to make the working of the section as clear as possible to you. It might have the additional advantage of throwing some light on the Martineau case.'

That case was being discussed at the time before the courts.

'I am, sir, your obedient servant,

J. L. McDOUGALL, *A. G.*

By Mr. Bergeron:

Q. As a matter of fact these cheques are paid without your going through the vouchers, before you have time to go through the vouchers ?

A. Without going through the vouchers, yes. Of course we must pay the bank, having given them a credit, that is, if I find they are regular cheques.

By Mr. Fielding:

Q. You would, of course, see the cheques when they are returned, you would have that voucher ?

A. Yes.

Q. And what you mean is that the bank does not sit in judgment as to the propriety of issuing that cheque ?

A. Certainly.

Mr. Aylesworth answered my letter under date of December 7, 1904, as follows :—

TORONTO, December 7, 1904.

DEAR SIR,—I have given the best consideration I can to your letter of November 29.

The subject you ask my views about seems rather a matter of the internal economy of the different departments or offices in the civil service than any question of law. In expressing my views about it I feel that I am scarcely giving what can be called a legal opinion, but more properly speaking, simply the considerations which on examining the Audit Act occur to me as illustrating the way in which it should be worked out.

Under section 30, it would seem to me that it is only the minister who can cause credits to be issued. The minister is to act upon application of the Auditor General, but I do not see that the Auditor has any part whatever in causing the credits to be issued, except that he from time to time applied to the minister to do so.

Possibly this is a matter of form rather than of substance, because under the statute the initiative seems to rest entirely with the Auditor, and apparently no power is conferred upon the minister to cause credits to be issued, except when the Auditor

applies therefor and I would think only in favour of such officials as the Auditor may name in his application.

I would think, therefore, that there was no propriety in the letter of credit being signed by the Auditor General, except that it is a convenient means whereby to indicate to the bank that the particular credit is one which has the Auditor's approval and for which he had applied.

But while the statute does not seem to contemplate the Auditor having any part in the actual issuing of the credit, the result seems practically the same, inasmuch as if credits are to be issued only on the application of the Auditor there can be no credit issued unless it has first had the Auditor's approval.

The bankers of the government are of course supposed to be acquainted with the provisions of the Audit Act, and if I am right in the view I am expressing that the minister is empowered to issue credits only when and as the Auditor applies for them, the bank ought not to honour any letter of credit which the Auditor has not asked for, and I presume that if any credit was issued otherwise than on the application of the Auditor, when the monthly statement of moneys drawn under credits came to him, he would not pass the statement as correct in so far as it included cheques signed by any other persons than such officers as he had asked credits for.

In this way of working out the statute I should think there would not be any practical difficulty. If any person was named by Order in Council or otherwise, as what is termed a 'substitute signature' and if such person was an official in whom the Auditor had not confidence, he could decline to make application to the minister for the issue of a credit to such person, and if the attention of the government bankers was called to the provisions of section 30, and the apparent precedent necessity for this application of the Auditor to the minister, I should not suppose any letter of credit issued without the Auditor's previous application, would be acted upon at the banks or the cheques of any person honoured unless the Auditor had first asked that a credit issue in favour of such person.

The letters of credit, as I understand the practice, are in each instance issued in favour of some named official or officials. I assume that they are not issued simply in favour of a department without naming the person connected with such department whose signature to cheques under the credit is necessary ; and if I am right in this assumption, the question of what officials are to be named as those in whose favour credits may issue seems to be altogether under the control of the Auditor.

I enclose herewith the forms of papers which you sent me to show the method of procedure in the department.

Yours truly,

A. B. AYLESWORTH.

On December 12th, 1904, I wrote to the Deputy Minister of the Finance Department :—

By Mr. Bergeron:

Q. All that you have just read was Mr. Aylesworth's letter—that was Mr. Aylesworth speaking there ?

A. Yes.

Q. That is his letter ?

A. Yes. Then I sent a letter——

Q. I just wanted to be sure, he does not seem to be giving any opinion as to the contention between you and Mr. Courtney about the signing of cheques together.

Mr. BARKER.—He was giving an opinion that the substitutes could only be appointed by Orders in Council.

By Mr. Bergeron:

Q. He does not seem to give an answer to your question then ?

A. I think he does myself that that was a convenient method of doing what we do. As a matter of fact the bank is governed by officials who do not know the business of the bank, as I will show you in reading the letters that I wrote to the bank when I drew their attention to that.

Then I wrote to Mr. Courtney with reference to the letter of Mr. Aylesworth as follows :—

AUDIT OFFICE, OTTAWA, December 12, 1904.

SIR,—With reference to the letter of Mr. A. B. Aylesworth, K.C., regarding the issuing of letter of credits under section 30 of the Audit Act, which letter I forwarded to you, I have much anxiety on one point with which it deals.

Cheques have been signed by certain persons with reference to whom I took no action, I not having been asked to do so. If I understand Mr. Aylesworth's view correctly, I am not justified is passing the cheques for the repayment of the bank in such a case, even if I should have been justified in passing the application for a credit, if I had been asked. This is a very unpleasant position.

Then am I, or am I not bound to notify the banks of this difficulty so that they may not cash these cheques, or should I warn them that I shall not pass the cheques until I know more about the case? I write to you so that you may understand my difficulty and make such suggestions as occur to you for removing the difficulty. Every day will, so far as I can see, add to the difficulties until the cause is removed.

I am, sir, your obedient servant,

J. L. McDOUGALL, *A.G.*

The Deputy Minister, Finance Department.

I have had no letter from Mr. Courtney in reply to that.

Q. What was the date of that letter ?

A. December 12.

Q. And there was no answer ?

A. None that I am aware of. I do not remember getting any.

Mr. ROCHE (Halifax).—I think parliament has already been sitting here for five months, and we will probably be here another month, and if we sit till the day of judgment these matters of detail between the officers of the Audit Department and the Finance Department will not be settled because they are too voluminous and too minute and there are too many of them. The best way would be to have these matters settled by a conference between these two gentlemen if they can settle the matter in dispute ; if they cannot let them settle what points they have in common in order that the matter may be reduced to a minimum and then let the correspondence which will reach from now till the first of January be carried on between these gentlemen, and then have the contents laid before the committee next year so that they may pass an intelligent judgment upon it and make a finality of it, as far as the committee is concerned. We can go on here working on minute points of detail, playing battledore and shuttlecock, between the two departments and never arrive at any satisfactory conclusion. I will move that there be a small committee selected that will meet with the two gentlemen and determine what they agree upon and what they differ upon and submit that to the committee.

Mr. FIELDING.—I would like to hear the Auditor General's statement through. Both of these gentlemen have been here for a quarter of a century or more and I am afraid they will not settle it among themselves.

Mr. BERGERON.—You cannot settle it until Mr. Courtney answers your last letter.

Mr. FOSTER.—I think there should be an amendment to the motion, that these two gentlemen should be put apart to settle it, and that parliament should sit here until they do settle it.

A. So far as I am concerned, if I have any right to offer an opinion, I think that that statement of Mr. Roche is a very good one. I am willing to sit with anybody that is willing to settle these things.

APPENDIX No. 3g

By Mr. Campbell:

Q. Mr. McDougall has stated that he has a very important letter which he wrote to the bank, we would like to hear that ?

A. Yes, I unfortunately have not the letter which the Bank of Montreal sent in reply. I have had the letter but I cannot find it, and the bank has not kept a copy. I wrote to the Bank of Montreal on February 15, 1905, as follows :—

AUDITOR GENERAL'S OFFICE, CANADA,
OTTAWA, February 15, 1905.

SIR,—So far as our returns show you have honoured letter of credit cheques signed or countersigned by certain officials at Moncton of the Intercolonial Railway, not previously referred to in any document from here.

I learn that you have been notified by the Deputy Minister of Finance that an Order in Council had been passed which had entrusted the officials with the duties.

I took no part in connection with the notification. It is strange that you did not observe that in this case there was nothing from this office on the subject. Although I am taking part in the repayment of the Bank of Montreal of sums less than the amount of cheques by regularly authorized officials, I feel unable in the meantime to sanction cheques drawn by those with reference to whom I have been in on way committed in correspondence. I have performed no duty under section 30 of the Audit Act in connection with the officials indicated.

There is a difference of opinion between the Deputy Minister of Finance and myself on the manner of discharging that duty which it is well I think to have removed without delay. I have had a correspondence with Mr. Aylesworth, K.C., on the subject which you will find at W—352 and 353 of my report just presented to the House.

I have the honour to be, Sir,
Your obedient servant,

W. J. ANDERSON, ESQ.,
Manager, Bank of Montreal.

AUDITOR GENERAL.

This is the second letter of mine to the Bank of Montreal, which will explain to some extent the nature of the reply I received from them. I have unfortunately somehow mislaid the letter from the bank and they tell me they have not kept a copy of it, but my letter will indicate what the nature of their reply was.

By Mr. Bergeron:

Q. Is that an answer to the bank's letter ?

A. Yes, this letter is an answer to the letter of the bank in reply to mine of the 15th February, which I have already read.

Q. That will give an idea of the letter you have lost, you say ?

A. Yes.

By Mr. Campbell:

Q. Can you not try again to get a copy from the bank ?

A. No, I cannot. The bank cannot give me a copy. No doubt it was in my office, but it has gone, I have traced it to a certain person, but have not been able to get it.

Q. Can you not try agains to get a copy from the bank ?

A. I will try again, but the bank said they had not kept a copy. My letter to the bank of the 18th of February, 1905, was as follows :—

OTTAWA, February 18, 1905.

SIR,—I have your letter of yesterday in reply to mine of the 15th and 16th instant.

I thought that my letters would have indicated to you that in my opinion there was some doubt as to the legal claim which you have against the Government of

Canada for the repayment of cheques drawn by the persons indicated in my letters and that you would consider the question in the interest of the Bank of Montreal apart from that of anybody else and that very likely you would call to your aid your legal advisor who would perhaps consider it of consequence to examine closely the advice on the question given to me by A. B. Aylesworth, K.C.

You say 'do I understand you to ask it (the bank) to disregard delibertely an order of the Governor in Council ?' I imply that I have doubts whether the Order of the Governor in Council is a full compliance with section 30 of the Audit Act. The Order in Council is necessary, but I question its sufficiency.

You also say :

'It seems to me that it is unfair for you to endeavour to draw the bank into a controversy between yourself and the Department of Finance.'

I can only say to this what has been already practically said that you might be expected to examine the validity of the documents on which you are requested to pay money.

I am, Sir, your obedient servant,
(Signed) J. L. McDOUGALL,
Auditor General.

The Manager, Bank of Montreal,
Ottawa.

Of course I did not want 'to draw the bank into a controversy between myself and the Department of Finance.' I merely wanted to say to them that there was some doubt about the legal position.

Mr. FIELDING.—On that point let me call the attention of the committee to an Order in Council, dated June 27, 1888; I understand that the point which Mr. McDougall is bringing before the committee is with regard to the substitution of names in signing cheques in the case of letter of credit accounts; that is where a letter of credit has been issued, and where it has been proposed to substitute names other than those originally authorized after the letter of credit has been issued. The Order in Council was made in June, 1888. I do not know whether Mr. Foster was Minister of Finance at the time or not, but it reads as follows :—

The Treasury Board had under consideration a communication from the Auditor General with regard to the signing of letter of credit cheques and submitting a list of the names of persons who signed such cheques for the different departments, and they recommend to Council :

(1.) That for each department, substitutes be authorized by Order in Council to sign for those in whose favour the letter of credit is drawn, and that a copy of the Order in Council is sent to the Bank of Montreal, or other bank on which credit may be drawn.

(2.) That the departments be instructed not to permit any person to sign except those authorized by Order in Council.

The remainder relates to not signing cheques in blank and to the form of the cheque and so forth. That is the procedure under which we have been carrying on business since 1888, and in the matter in dispute we have been acting under the advice of the Department of Justice in every case ?

A. But you do not say that other people were authorized to countersign without authorization. If I saw what was irregular then or irregular at all, but I found it was irregular and not——

By Mr. Fielding:

Q. We are not finding fault with Mr. McDougall for calling the attention of the committee to it, but we are acting under the advice of the Department of Justice in all these matters.

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By Mr. Bergeron:

Q. Have you anything to say with regard to the manner in which contracts are given now ?

A. I say this, in my opinion that when a man tenders for a contract that the government should hold itself responsible for the information that is given by its engineer, that no information at all is given without the engineer has made a report.

By Mr. Geoffrion:

Q. That is a question entirely outside your department ?

A. Perhaps you think so.

Q. That is a matter for the consideration of the department charged with the work, or are you acting as an adviser ?

A. Perhaps so, but I am only answering Mr. Bergeron.

Q. Yes, but I want to find out whether it is in your department or outside of it ?

A. That is it, I will explain to you my reason for bothering myself about these things. I say that I think all these contracts ought to be on schedule contracts. That is to say, you pay for the work you get done. I also argue that a man ought to know before he gets the work done that he is to be paid for the work done, and that he is to be paid interest if there is undue time in determining if the work is done. That seems to be reasonable. Now, a man, no matter what he is or with whom he is connected, does not need to have half a dozen people come here to get his rights given him. I will tell you in illustration of this thing: We are doing work at Depot Harbour, well, a man came to me, one of the contractors, and he said 'you are objecting to me doing this work, it must be done, we tendered for it, but do you know, when we went to do this work instead of it being 4 feet to solid material it turned out to be 12 feet ?

Mr. JOHNSTON (Cape Breton).—It is now pretty near one o'clock, and I would like to know as a matter of fact, whether our examination in connection with the audit has been disposed of ?

Mr. FIELDING.—I think we should hear Mr. McDougall through, of course if he says he cannot get through to-day, he can come back at another meeting ?

A. This man said 'when I went there, instead of it being 4 feet, as they said it was, to the solid material, it turned out to be 12 feet. Do you think I ought to do that' ? I said, 'I think you ought to;' and he said 'if it is your man that deceived us, we should not be called on to do the work.' Then there are other restrictions in the contract about doing everything that the engineer wants you to do outside of the specification. I would be glad if somebody, outside the engineer, could tell us——

By Mr. Bergeron:

Q. Who can tell you this ?

A. Mr. Aylesworth, a member of the government, and if he were here he has been present in Ottawa and he has sat and heard contentions last for days when some engineer holding everything in his hands, some incapable, or headstrong man or something of that kind when evidently the man who had the contract was being robbed.

By Mr. Fielding:

Q. In the case that you mention, where the contractor said he found he had more work to do than be expected, does not that contract contain a provision that he is required to examine the work himself ; is it not one of the conditions under which he tenders that he examines the work for himself and tenders accordingly ? Is that not in the contract ?

A. Perhaps it is, but I don't think—do you not know that people do not do it.

Q. That is not the question, the contract provides for it ?

A. It is the question, because in the end the government will have to pay for it. It says in the contract that he is to do whatever is necessary no matter whether it is

four feet or more. He has to do that work. It does not say that he is to examine it, but if you can make it plain so that any man will understand it, you do not want that man to go there, when it is inevitable that he should lose money. You do not want a man to lose money.

By Mr. Geoffrion:

Q. Is not that a question for the Department of Justice ?

A. No, sir, it is a question for the Auditor if he is Comptroller and if he is an honest man.

Witness retired.

Committee adjourned.

HOUSE OF COMMONS,
COMMITTEE ROOM 32,
WEDNESDAY, June 21, 1905.

The Select Standing Cofmittee on Public Accounts met here this day at 11 o'clock, a.m., Mr. Colin McIsaac, chairman, presiding.

Mr. J. Lorne McDougall, Auditor General, again appeared before the committee for examination anent certain amendments proposed by him to the Audit Act.

By Mr. Bergeron:

Q. I understand you have a written statement that you want to put before the committee ?

A. Yes.

Q. You had better put it into the hands of the chairman ?

A. I will read it and then hand it in. (Reads).

'May I draw the attention of the committee to the difficulties of properly filling the office of the Auditor General and of the importance of considering them without delay.

'In this connection the claim of Mr. Roche of Halifax that the whole subject of the Auditor General's position and the law that should guide and protect the performance of his duties, should be referred to a sub-committee, seems unanswerable.

'In support of Mr. Roche's contention and in regard to the choice of a successor to the office of Auditor General, let me point out that there will be no more than three sittings of the whole committee before the end of the session if we go on at the rate of one feeting a week, while it would require a meeting of a sub-committee every day until the end of the session to do the country justice in the choice of an Auditor General. If you are to get the right kind of a man he will be particular to know that he is in a position by carefully considered legal support to defend the financial interests of the people against all the attacks which may be made on them. He will be just as anxious before he assumes a life office to see that he has good ground for believing that the pecuniary interests of his wife and children and others dependent upon him will be secured. In this latter connection he will early examine how he would stand if he were to accept. He will see that if others should have some room to innocently accept pickings from the government whether the government which may appoint him or one of a different political stripe, he cannot do so.

He will also see that the Auditor General now, under the statutory provision which fixed his salary, gets a smaller salary than those officials who were on the same

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scale as himself until quite recently. He will probably examine the circumstances under which the degradation of the Auditor General in point of emolument was brought about. It is scarcely likely that the only explanation which seems apparent, that the degradation in this respect was determined upon because the present holder of the position was detected in bringing about the largest legitimate saving ever made in the public funds of Canada without his being able to point out that any other person ought to bear part of the punishment for so great a crime ; it is scarcely likely I say that the explanation would be very comforting to the new man about to accept the office. Would it not be well then to change that part of the law which fixes the salary so far as the successor is concerned ? You can easily put a word in the amendment to the salary section to prevent the present holder taking any advantage from the increase, if you think that his punishment should be continued.

It will not make any difference to the new man who is offered the place, whether the offer comes through the present occupant voluntarily giving up the position or by his having to give up the place through growing inactivity which cannot be long delayed. Is there or is there not a serious loss which threatens the country—the having to fill the position with the law unsettled as to the rights of the country and as to the personal rights of the official ?

Should not the sub-committee sit each day until the business is settled, and be struck at once ?

I now refer to another matter. Taking up the matter of letters of credit and signatures to be substituted for those named in the credit in case of need, let me ask you to consider the great seriousness of the case as it now stands, the Bank of Montreal with which we have such extensive and intimate connections cashing cheques which so eminent a lawyer as Mr. Aylesworth advises I cannot legally take part in repaying, as is done in the general working of the credit.

I suppose that the consideration which you have been able to give the subject from time to time since the last meeting makes it unnecessary for me to point out that the present overdraft of $1,000,000 will be attended with a tremendous amount of trouble in its adjustment.

It seems that the first step to be taken is to require the attendance of Mr. Aylesworth, Mr. Newcombe, Deputy Minister of Justice, and Mr. Anderson, Manager of the Bank of Montreal.

I cannot see how the Order in Council quoted by the Minister of Finance, that of June 27, 1888, justified in any way the position taken by his deputy.

When Mr. Roche's eminently practical suggestion was made to the committee, the leaders on this subject of finance, the minister and Mr. Foster, remarked as I understood them, that an insurmountable barrier to the success of the suggested method of dealing with the question in that way, was the difficulty of getting the Deputy Minister of Finance and myself to agree.

Now, I think it a disgrace to a man in my position to be so much under the influence of ill-temper as to be unable to take a reasonable stand with regard to the affairs of this office because he may not choose to regard the other person who is necessary to the transaction, as all that is attractive to him in the ordinary social relations. Besides, so far as I know, Mr. Courtney's interruption to what had been fairly agreeable intercourse arose from my strong objection to his getting ten dollars a day while crossing the Atlantic, his ordinary living outlay having been paid for in a separate manner by the country. I pointed out that I thought the government could not legally give this to him or to any other person, that, as the Imperial government gave to its highest officials for this wine allowance only a dollar instead of ten, the appraisement of this government must have been greatly too high.

To prove my own thorough conscientiousness in the matter, it is only necessary to point out that I declined to accept anything for this purpose, although I would have been $500 in pocket by doing so in connection with a trip which I made to Europe.

Q. Now, continue on the subject you were dealing with the other day when we adjourned ?

A. That was about the rights of the government to spend any money that it chooses to spend as I understood.

By Mr. Fielding:

Q. You alluded to the difference between Mr. Courtney and yourself as to travelling allowance ?

A. Yes.

Q. That allowance was $10 per day ?

A. Yes.

Q. Payment of that allowance had been established some years ago by the late government in the case of another deputy minister ?

A. Yes, and I fought it just in the same way.

Q. Therefore what you were fighting against was what had been the established practice for years under both governments ?

A. Certainly, it was done by the other government, but it was not the established practice. I fought the case out.

By Mr. Bergeron:

Q. Did you criticise it then too ?

A. When it happened before ?

Q. Do you mean to say if it happened before under a Liberal government or a Conservative government it is a good thing ?

A. No.

By Mr. Barker:

Q. I understand that you did not object to the payment of $10. You objected to the allowance as a fee, but you stated that if the expenditure had occurred and the detailed statement was given that you would allow it even if it were twice $10 ?

A. Oh, yes.

By Mr. Fielding:

Q. But is it not a fact, Mr. McDougall, as respects the higher class of officials, that instead of exacting a detailed statement of expenses it was deemed expedient in the case of such officials to allow them a fixed sum per day, the sum of $10.

A. Yes.

Q. And in accordance with that practice the case of Mr. Courtney occurred ?

A. Yes.

Q. There is no dispute over that, all I want to establish is it was a practice in vogue, or a practice which had existed, for some years ?

A. Yes, but I want to make it clear that my reason for continuing to object to that was I thought I could not be overruled as a matter of principle on the point unless it was brought to the Parliament of Canada to be disposed of. This is an illustration of other difficulties that I have. I am in the unfortunate position of having very often to fight small matters because the court to ultimately decide a principle had not passed upon it.

Q. In a case of that sort the only point was you did not want to be overruled without the matter being reported to parliament ?

A. Not reported, but passed upon.

Q. Well passed upon is what parliament itself is to decide, you cannot compel parliament to do anything. But is it not a fact that when the case first arose some years ago and that principle was discussed, you did report to parliament and parliament was fully aware of all the facts ?

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A. My argument is that the system should be stopped. It is not the fact of its being reported to parliament that settles the matter, but what does settle the matter is if a committee of parliament, the Public Accounts Committee, passes upon it and it is reported to the House. They may say 'It is a perfectly proper thing to do.' Then it is right. But no matter how often I am overruled by the Treasury Board, I get no new authority to deal with this as a legal matter until it comes to be considered by this committee and is reported upon to the House.

Q. Who is to be the judge, Mr. McDougall ? You having reported a matter to parliament, parliament having referred your report to the Public Accounts Committee who is the proper authority to judge then as to what action shall be taken ?

A. No authority that I can understand.

Q. Is it you or parliament ?

A. Not I, certainly, not I at all.

Q. Then if this matter has been reported by you to parliament and parliament is familiar with the facts, and parliament, either for good or bad reasons, sees fit to take no action, what then ?

A. It is nothing. It is no more than if it had not been reported on. According to my idea parliament must do it.

By Mr. Macdonald (Pictou):

Q. Do you not think your responsibility ends when you report to parliament ?

A. No, I do not.

Q. Do you think it is your duty to go to parliament and tell them what they should do ?

A. I think if I am asked to. I do not think that they would necessarily follow my advice.

By Mr. Barker:

Q. Is your contention then, that if you report a particular thing once to parliament and they take no action upon it, that does not justify you forever in going on ?

A. Yes, that is my contention. It does not justify me at all according to my opinion.

By Mr. Lennox:

Q. Mr. McDougall, I understand you to say this : When it was first done it was wrong in your opinion ?

A. Yes.

Q. When it was repeated it was a wrong repeated ?

A. Yes.

Q. And you understand your duty to be to call the attention of parliament to it until it is redressed?

A. Until something is done about it by parliament. The moment parliament says this is to continue I have nothing more to say.

Q. You do not mean to say it is your duty to guide parliament ?

A. I have nothing to do with that.

Q. Do you know of any parliamentary authority for fixing this allowance at $10 a day ?

A. No.

Q. If there is parliamentary authority for fixing this allowance of $10 a day they could fix it at $20 a day equally well ?

A. Yes.

Q. What you say is there should be either a smaller allowance such as is allowed in England or an actual allowance according to the facts ?

A. Yes.

Q. A detailed account ?

A. Yes.

Q. And you prefer detailed expenses to anything else ?

A. Yes.

Q. Your opinion is that the gentlemen should put in actual expenses and not imaginary expenses ?

A. Yes. That any man who spends money should give a certificate that he has actually spent it.

Q. Mr. Courtney is an illustration. He refuses to give a detailed account of his expenses in that behalf ?

A. He has never given it.

Mr. COURTNEY.—He has never asked for it ?

WITNESS.—I have never asked for it because I was overruled by the Treasury Board.

By Mr. Lennox:

Q. He has not given it ?

A. No.

Q. I thought you had asked for it ?

A. Well, I think I have.

Q. Well, reading what appeared in the Auditor General's report gave me the impression that you had asked for it ?

A. Well, that is my recollection, but I do not pretend that I recollect everything I do.

Mr. FIELDING.—I would not permit Mr. Courtney to give it under the circumstances.

By Mr. Lennox:

Q. Very likely not. Well, now, have you ever been point out any authority that the department has for fixing this allowance at $10 a day ?

A. No.

Q. And it is a mere departmental recognition of this amount ?

A. It is the Treasury Board's decision in an individual case.

Q. Is that not a department ?

A. There are several departments represented on it.

Q. It has been before the Treasury Board has it ?

A. Oh, yes, several times.

Q. And I suppose that is not the only instance ?

A. No.

Mr. COURTNEY.—Why did you pick me out ?

By Mr. Bergeron:

Q. Do they all do it ?

A. I am mentioning the difficulty that was spoken of the other day when they said 'you gentlemen cannot agree.'

By Mr. Lennox:

Q. Am I right in understanding you to say that Mr. Courtney's case is not the only instance ?

A. Certainly.

Q. Is it only an illustration ?

A. Certainly.

By Mr. Fielding:

Q. You stated in answer to Mr. Lennox that you were not aware of any parliamentary authority for the payment of the allowance in question. Are you aware

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that the matter was referred to the Department of Justice and that the government were advised there was parliamentary authority for the payment ?

A. Yes.

Q. Therefore you differ from the Department of Justice on the law ?

A. Yes, on that point.

Q. That is the misfortune of the Department of Justice ?

A. That may be very funny.

Q. It is not very funny, it is very serious. Another question. Mr. Lennox stated by way of instance that this was merely a departmental matter, whereupon you said it was the recommendation of the Treasury Board, which consists of representatives of several departments. Is it not a fact it was done by Order in Council ?

A. There may have been as to Mr. Courtney's case, I cannot say ; I do not remember. I recognize the fact that I can be overruled, and I have no right to complain in an individual case, but the Treasury Board has no authority that I can see to establish this general rule.

Q. Even if the Department of Justice says otherwise ?

A. I do not care who says it. It is for parliament to say.

By Mr. Macdonald (Pictou):

Q. I understand you to take this position in opposition to the fact that the law advisers of the Crown have advised the department that its practice is correct and in accordance with the law ?

A. Yes.

Q. You understand that advice was given by the law officers of the Crown under the previous government ?

A. Yes.

Q. And notwithstanding that you make your assertion ?

A. Yes.

Q. Contrary to the Treasury Board's judgment, and contrary to everybody ?

A. Not yet contrary to parliament.

Q. But contrary to the advice of the properly recognized law officers of the Crown you assert that this is so ? You know that your reports have been before parliament every year ?

A. Yes.

Q. And those expenditures have been before this committee in every succeeding year of parliament ?

A. Yes.

Q. And nothing has been said to parliament to find fault with these things, nothing contrary to the advice of the Minister of Justice ?

A. No.

Q. Except by you ?

A. No.

By Mr. Bergeron:

Q. You want to show why there seems to be a coolness between Mr. Courtney and yourself, and you do not know of any other reason ? I understood that there was a kind of misunderstanding between you ?

A. Yes.

Q. And you do not know of any other reason ?

A. Mr. Fielding, the Minister of Finance and Mr. Foster, spoke when Mr. Roche suggested that there should be a sub-committee to deal with this question, and that the sub-committee should call Mr. Courtney and myself and others before it. Mr. Fielding and Mr. Foster said: 'Well, it is not likely these two men will agree about it.' I am not attacking Mr. Courtney at all about this. I say that if I were influenced in my action in public matters by a feeling of want of friendliness, if I

could not control myself in such a way, I would be to blame, and therefore I should be disciplined or something. But I say I do not know of any feeling that has existed between Mr. Courtney and myself except that which appears to have originated with him. He said : 'You came before the Treasury Board with the statement that I got $10 a day.' I said to that, 'they only get a dollar a day in England.'

Mr. COURTNEY.—With all due respect the last time I was in England I asked the working inspector of the Royal Mint, Mr. Riggs, who has been sent to Perth, Melbourne and Sydney, to the branch mints, what his allowance was, and I went to the Treasury Office afterwards. I found out these officials are allowed two guineas a day besides their travelling expenses.

By Mr. Bergeron:

Q. Two guineas a day ?

A. Yes.

Mr. MCDOUGALL.—It must have happened since I was in England and since I published the report as to what was paid in England, as I was informed.

Mr. COURTNEY.—I also wrote a letter to the Treasury and have its official letter.

By Mr. Bergeron:

Q. There is one case here which seems to be as bad, if not worse than Mr. Courtney's. I find in the Auditor General's Report, L—16, the following items : Smart, G. B., board and lodging, $465.38; baggage transfers, $8.50; cab and bus fares, $56.40; cigars, $7; fares, $48.78; livery, 264.75; postage, $3.76; printing cards, $2.60; pullmans, $107.85; street cars, $19.20; telegrams, $11.55; telephones, $4.10; tips, $23.95; sundries, $1.87; total $1,025.69. I was under the impression that Mr. Smart was a deputy minister but I find he is a relation of the former deputy. What do you think of an amount like that ?

A. Whose was it ? I do not remember at the moment.

Mr. BERGERON.—It is the account of Mr. G. B. Smart in the Immigration Office.

Mr. FIELDING.—The Auditor General has reported on that account.

By Mr. Bergeron:

Q. The item 'tips, $23.95.' I do not think that is a proper account for the public to pay ?

A. I differ—there are circumstances where the government should pay them, there are certain tips paid every day. Other people pay them and I do not object to that because they are paid in the course of ordinary travel, but what I do object to is a thing, which on the face of it is outrageous to me. You know that because everything we could possibly pay we really pay directly when we are travelling on the ocean. When I was travelling there I gave a guinea, or whatever it was to certain people. But I did not incur an expenditure of $10 a day because my actual expenditure had been already met. The ordinary traveller gives certain tips, but I contend that nothing more than the private individual would give should be given. This particular item I have not now any knowledge of.

By Mr. Fielding:

Q. But you did investigate that ?

A. As a matter of fact this money was paid. I do not know of it just now, and I do not pretend that everything that goes through the office is investigated by myself.

Q. But that has been investigated by your department ?

A. I do not know and therefore I cannot say anything. But I will be glad to come before you some other day and tell you all about it.

Q. But as regards all these accounts on which you have made no special report, if there is anything wrong you call attention to it. In the absence of that, the presumption is your officers have examined the accounts ?

A. I was complaining about that the other day. I say that two-thirds of the expenditure under this credit system, $40,000,000, has been made without our examining it beforehand.

Q. That is not the question. We are not discussing the system.

A. You ynow well enough in all this immense business we cannot examine the accounts after payment in every case. That is one point I am arguing about: the position of the government. They say 'we won't amend.' You said yourself 'we won't amend the Audit Act.' I say even if I were a young man with all this growing expenditure the auditing would require the very best law you could make. It would require the best attention on the part of a capable man to have the expenditure of the people of this country treated in a perfect manner; that is my own contention.

By Mr. Bergeron:

Q. Do you not think that if the Auditor General wanted to perform his work efficiently in the public interest he must have large scope, a large amount of liberty at his disposal ?

A. Well, not so much liberty as that he must have defined what he can do with regard to all expenditures. If there is a possibility of controlling all this expenditure without interfering with the proper facilities for doing public business, the power should be put in his hands.

By Mr. Fielding:

Q. That is discussing the general system which is important and I do not want to side-track it. But we are dealing now with a particular account that Mr. Bergeron has called attention to. Is it not a reasonable presumption that in the absence of a special report against it, your officers have examined that account ?

A. Perhaps they have. They should have.

Q. And they having made no report against it, it was a fair presumption that they were satisfied with it ?

A. The fair presumption is they did all they were able to do.

By Mr. Bergeron:

Q. And they could not succeed ?

A. Perhaps they could not.

By Mr. Taylor:

Q. I suppose the accounts came to you certified to ?

A. It was first paid under the credit system ; I could not change a dollar of it.

Q. It was certified by the certifying officer in the department of immigration ?

A. Yes.

Q. And you had nothing to do with it ?

A. Except to make any remarks I thought I ought to make about it.

By Mr. Bergeron:

Q. Do you remember some years ago there was a case where employees of the government travelled with passes in their pockets and charged their passage money. They sent their accounts in for fares and there was an investigation and it was found out. Did you hear whether there was any remedy applied and whether the system was changed or is it still going on ?

A. I have not heard lately that it is.

By Mr. Fielding:

Q. Does it need an amendment to the Audit Act to correct anything like that : Where persons travel on passes and charge their railway fares ? Have you not ample

power in the Audit Act to call attention to anything of that sort and to provide a remedy ?

A. I have, of course, if the application comes in time to make a payment, but if the payment is made beforehand I would have no power.

By Mr. Bergeron:

Q. And if you are supported by the government ?

A. Oh, yes.

By Mr.Lennox:

Q. How would you know the man had a pass ?

A. I would assume that he had not a pass unless somebody came and made the statement.

By Mr. Lancaster:

Q. If he had a pass and did not say anything about it but made railway charges, and no person told you of the circumstances you could not possibly call attention to it ?

A. I could not. I would consider it would be rather offensive to say to him, 'You may have a pass.'

By Mr. Fielding:

Q. Would there be any change in the Audit Act under the amendments you suggested ?

A. If I do not suggest them all somebody else will suggest some additions. I do not for one moment imagine I suggest everything that has to be done. I am only an official of parliament and I think there are additions to be made. I do not suppose I think of everything nor do I expect parliament will acquiesce in everything I say, but I hope at least they will examine it. They will say, I expect 'Here is an official who has been here twenty-seven years. If he suggests something as being worthy of examination let us examine it.' That is my argument and if they find a half of one of these suggestions of mine that is going to do good to the country, if they find nothing more and say 'we will accept that' it will be satisfactory to me. That is my view.

By Mr. Macdonald:

Q. How long have you been making these suggestions ?

A. I have made them since 1898.

Q. You did not make them before that ?

A. I have talked of things I have no doubt, but I do not remember. Yes, I think I did make some suggestions earlier than that, but did not put them into any printed addition to my report.

By Mr. Bergeron:

Q. Well can you make the suggestions now ? I understand you have some other suggestions ?

A. I will tell you what they are. The most important thing I have is with reference to the statement made by Mr. Fielding the other day that the government must be held responsible. I suggested in the first place what was spoken of the other day about the time of bringing down the report. Then another suggestion I have is, that as in England, the Auditor General should be called what he really is, a Comptroller, so that the public will understand——

By Mr. Fielding:

Q. What he is or what he desires to be ?

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A. Not at all. What he is and that is illustrated in the Davis matter. If he had not been you would have been a million dollars out of pocket to-day.

By Mr. Macdonald (Pictou):

Q. You need some more powers ?

A. I want powers and I want it clearly defined what I am.

Q. Are you not certain what you are now ?

A. Well not very certain. Then I argue that the accounts should be called the Canadian Exchequer accounts when the money is paid in by the people, and that it should not be to the credit of the Receiver-General, because the Receiver-General is a member of the government, and the money is not the government's until it has been voted by parliament. Then there is the suggestion of dropping the resolution of the House of Commons section, because money is not now provided for by resolution, it is always by statutory enactment. I dealt with that the other day. 'Credits greatly modified as provided by section 30.' This is probably the most important thing in the whole matter. Many of the cases dealt with by the Treasury Board should be disposed of by statutory provision. As to the right to get $10 per diem when travelling, I claim there should be a statutory enactment for that. Then there are amendments in addition to section 32. I would read those if you would allow me to do so. There is one point in the Audit Act, although we have not acted upon it, for these accounts to be put to special account. We don't put the expenditure to special account, but there is a special warrant and instead of being put to a special appropriation it is treated as an ordinary approprition.

By Mr. Bergeron:

Q. But how can you manage the expenditure under a special warrant ?

A. There is no reason why that should be put to a special account. When the government passes a warrant of that kind, the Governor General's Warrant, it is merely an authority, just as an appropriation, to make the expenditure.

Q. To spend the money ?

A. To spend the money.

Q. But supposing the government want to take a special warrant say for $500,000 for militia purposes or something which has been unprovided, how can you control that money ?

A. You cannot control it any more than you can control an appropriation. They have the full right to do it.

By Mr. Macdonald (Pictou):

Q. Do you want to say you should have the power to say how the money should be expended ?

A. Not at all. A Governor General's Warrant really becomes an appropriation. It is not that I want to interfere with at all. When a Governor General's Warrant is issued it is full authority to me to be charged to whatever expenditure they are making in connection with it out of the $500,000 referred to.

By Mr. Bergeron:

Q. As the law stands there is no expenditure over $5,000 can be made without tenders having been called. What you suggest is you should be in a position to prevent payment ?

A. Unless tenders are called ?

Q. Yes ?

A. They are not free from the necessity of calling for tenders under the law, merely, because they have an appropriation.

Q. The law says you must call for tenders for an amount over $5,000 ?

A. Yes.

Q. We find out in discussing the estimates that there are a few cases where tenders were not called for although the expenditure was as much at $15,000. In cases like that would you suggest the Auditor General should have power to say 'You have not the ability to incur that expenditure and you will not get the money for its payment.'

A. That is to say we should not pass the payments ? They asked for a payment unless they draw it out on credit, when we cannot control.

Q. Should they not be obliged to follow the law ?

A. It is certainly irregular if they make expenditure without calling for tenders.

By Mr. Lancaster:

Q. What Mr. Bergeron desires to know is in the event of a contract being awarded without tender and they try to get payment should you not have the power to say that they should not be paid ?

A. If it comes to me by direct application I would have power. If they draw a letter of credit cheque it goes to the bank. If there is a letter of credit existing I would be obliged to take my part in reviewing the facts and it would be the duty of the office to say 'this is irregularly done,' but the bank that has the credit must be repaid no matter how the irregularity in the department in issuing the cheque.

Q. The duty is not done unless it can be enforced ?

A. That is what I am arguing in reference to certain expenditures which are naturally variable and on which mistakes may be made. These expenditures should be made by direct application to the Audit Office.

Q. So that you could perform the duty ?

A. So that I could perform the duty.

By Mr. Bergeron:

Q. You are speaking of clause 30 ?

A. I am now at clause 33.

Q. Read the clause as it stands and say to the public what you would suggest in regard to it ?

A. Here is one : 'No payment shall be authorized by the Auditor General in respect of work performed or material supplied by any person in connection with any part of the public service of Canada, unless in addition to any other voucher or certificate which is required in that behalf, the officer under whose special charge such part of the public service is, certifies that such work has been performed, or such materials supplied, as the case may be and that the price charged is according to contract or if not covered by a contract is fair and just.' Now, I suggest an amendment which would make the latter part of the clause read 'and that the price charged is according to contract made after public advertisement for tender.' If the price is not according to contract then the engineer must certify that the prices are fair and just. But at present if they make a contract that need not be done. It seems to me that there is the same reason for having the certificate of the engineer, the man who knows whether the work is according to contract.

By Mr. Lancaster:

Q. If there is no tender ?

A. If there is no tender. But one of the things which I propose is that there should be public advertisements for tenders.

By Mr. Bergeron:

Q. It is better to have tenders ?

A. The ministers of course, are the highest people in the country and they do very important work, more important perhaps than anybody knows, but they cannot

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be aware of the prices in the market, and they cannot necessarily possess the engineering knowledge, and even if they did they would not have the time in connection with the awarding of these contracts.

Q. When there is a contract given and prices specified you know where you are ?

A. I know where I am.

Q. But if there is no such thing you do not know where you are ?

A. I do not know.

Q. And you cannot audit these accounts because you have not got the necessary information ?

A. I do not know, I have not got the data.

Q. What do you suggest ?

A. I say the contract should be made after public advertisement for tender. That seems to me to be pretty plain. If you call for tenders you give everybody a chance to say what are his lowest prices.

By Mr. Lancaster :

Q. The fact that a man has a contract is no guarantee of low prices unless there is competition by means of tender ?

A. Then I say here in addition to this: 'If an official of any department dealing with the claim against the government, knows that the claimant is indebted to the government, whether the indebtedness is of record in the department or not, he shall take no part in the payment of the claim against the government except to the extent that the amounts due by the government exceed that due to it.' What I mean is I am more likely to know than any person else if a man is in arrears with the government in connection with one department if he comes to me for payment in connection with another department ? I say that it is not a debt due to the department, but it is a debt due to the country. All this money we are dealing with belongs to the country.

Q. That is the way to look at it ?

A. Well I was told I could not collect this money.

Q. In other words the man cannot get what was coming to him ?

A. The man for one reason or other might get overpaid.

Q. He would get his money from the Crown but would not pay his debt to the Crown ?

A. That is it.

By Mr. Fielding:

Q. How would he be overpaid ?

A. It is so.

Q. How would it arise ?

A. That a man is overpaid ? You know about these different bounties that are paid by the government. Take the bounties on steel rails. There was an application from the department to me to pay money or that account. I said : 'I shall not until I consult my lawyer,' and I consulted Mr. Aylesworth and he said : 'I think that is a perfectly proper claim under the Act.' Then I passed it, but afterwards I was visited by Mr. Newcombe, who said : 'I am not sure about that, why did you pay it?' 'I said I have the application of the department.' I recognized the fact that the department ought not to have applied for it if it knew the Department of Justice thought it was not a legal claim.

Q. How did they pay it ?

A. Mr. Fielding asks : how payment was made. Mr. Newcombe said : 'I believe that is not right.' Of course if Mr. Newcombe had given me that opinion I would never have paid the claim. I would never have paid it if I knew the Department of Justice had taken the other opinion. It might be that I would be objecting to pay money that is due to this gentleman until the Government of Canada says : 'Look here, you may go on and pay this money on these new applications, knowing

that the money was no doubt due, whether they were properly paid before. You pay it in the meantime and trust to our being able to collect it later on.'

By Mr. Bergeron:

Q. That is to say, pay more than what should be paid ; a case like this where some man leasing wharves or property from the government and not paying a cent for years and years, but selling something to the government and exacting payment immediately. That is the case I had in mind. You make the compensation, you pay all the time? .

A. Here is the case of the Canada Atlantic. I thought, with information that came to me, they got $60,000 to much. Well, it passed through my hands. I got that idea, but I did not know anything of it from any personal knowledge when it was paid. Somebody told me something afterward. I said this certificate was not a good one. It did not seem to be a good certificate that same to me to pay this money. When Mr. Booth or the Canada Atlantic would get a subsidy I would say, Well, I would like to keep this other money now,' and I now want that I will not be permitted to pay this money due to this man or this company from any department as long as this other account is unsettled.

Q. It is not settled yet ?

A. Not settled yet, no. Now, here is a very important thing. Note sub-section 4. ' The power vested in the head, the executive of the department to make contracts for work or materials does not imply the power to rescind or alter such contracts when made unless the change is for the benefit of the government.' I presume that means for the benefit of the country. It always means that. What I am arguing is that a contract where honestly made with a man by the government cannot be rescinded for the benefit of the contractor. Of course, if the government are unable to get the work done, they say, ' Well, we will do the best we can now and the country may be obliged in the interests of the country to give this man some more money, because he can still do it for less than any other man who could be found.' That is for the benefit of the country. Look at the Davis case. I am only mentioning that as an illustration. Nobody ever said that he did not get all that it was agreed he would get. Nobody said he was not wealthy or would not get fair treatment by carrying out the first contract, while, if he had got all that the second contract was going to empower him to get it would have been greatly above the present value of the work.

By Mr. Lennox:

Q. The case of Corry &Laverdure would be as good an illustration.

A. Yes.

By Mr. Bergeron:

Q. How much money did you save in the Davis matter ?

A. About $800,000 at the present value, taking the present values. Although I saved that it was good luck, and I was in a position that I had either to take this $800,000 or get nothing.

Q. Who were you fighting ?

A. The government.

By Mr. Fielding:

Q. Explain that ?

A. I will.

Q. That general statement must not be made without an explanation.

A. This contract, the second contract, came to me. I was to make a payment on account. I objected to it. It went to the Treasury Board and I was overruled by the

board. I was told that once being overruled this whole money could be paid ; I could not deny that that was the opinion I got from my lawyer.

By Mr. Bergeron:

Q. What is the amount ?

A. You see, there were eighty odd payments.

Q. How much each ?

A. About $20,000. That was roughly $1,600,000. But taking the present value it was about $800,000 or $900,000, but they were only willing that I should get $800,000, and it was pointed out to me that if I did not take that, that probably nothing would come. I thought as a public servant my duty was to take this sum instead of getting nothing.

Q. The Treasury Board said that to you ?

Q. Oh, well, it was said to me. Of course, the Treasury Board took the ground—they overruled me—they took the ground that of course the matter was overruled and I had to pay.

Q. You say, 'I could not get more than that; I was told to take this.' Who is the other party ?

A. Oh, well——

Q. I mean who was it ? It was not Mr. Davis ?

A. No.

Q. It was not members of the House of Commons?

A. No.

Q. Well, then——

A. Of course, after all, if anybody doubts that this is what occurred, I will be glad enough to say what it is. I would like to confine myself to what is public. I do not care about saying any more, but if anybody wants it I can.

By Mr. Lennox:

Q. You have made your explanation ?

A. Yes. Then, I say, I cannot do this. I am now in the face of a fact that is the most appalling thing to me of anything which I have had to do among my public duties. All the rest is nothing. People say, 'Why do you say you will throw up this work unless it is changed ?' I am not saying I will throw up this office, that is, if I am wanted to remain here. No matter what is done after that. But with regard to these changes now being considered, I believe if a contract is made and the contractor wishes to go back on the contract and give nothing, if the government determines to give him everything and can do it, I do not want to be there, that is all. You can get somebody who will.

By Mr. Bergeron:

Q. And you are giving that Davis case as an example ?

A. As an example, yes.

Q. And it is a very bad case ?

A. I do not know that any worse can be found.

By Mr. Fielding:

Q. You reported on that to parliament ?

A. Yes.

Q. Parliament has been fully aware of it since last session ?

A. Yes.

By Mr. Johnston (Cape Breton):

Q. And it has been satisfactorily explained to parliament.

A. Oh, no.

Q. And what is more, it has been perfectly explained to the country and the people have passed judgment on it ?

A. Of course, I will not pretend that I know as much as Mr. Johnston does about many things, but about this, I fancy I do. If he had had it in his mind for about a year, as I have, he would be able to meet me.

Q. I would rather take the opinion of the Minister of Justice.

A. Oh, but you know Mr. Aylesworth, whom I consulted, said that it was legal, but does anybody say that it is fair or just or right ? If they do, I do not happen to be on their side.

By Mr. Lennox :

Q. You remember, you had in that matter the opinion of the Deputy Minister of Justice that a great deal of what the Treasury Board contemplated was illegal. Do you remember that letter ?

A. I do not remember that.

Q. It is in your report ?

A. Yes ?

By Mr. Fielding :

Q. Have you an opinion from the Minister of Justice or the Department of Justice that anything the Treasury Board was doing was illegal ?

A. I do not remember.

Q. I should think not ?

A. No ; it is a simple thing.

By Mr. Bergeron:

Q. Is it in the interests of the country that the Auditor General should be fighting all the time to save the interests of the country as an Auditor ? We never hear that in other places. The directors of those interested generally stand by the Auditor. Here it seems he has to fight with the government all the time.

A. What I am arguing is this, do you need any lawyer to report to you as to whether you ought to have handed that immense sum of money over to this man who was sufficiently paid any way according to his own first arrangement. You answer me : 'It was perfectly legal.' I say, yes, because the lawyer says so, I am willing to to take that stand, but you have only to change the Act of Parliament. Will you change it ?—that is the whole point—to prevent any man getting what he has no right to.

By Mr. Lancaster:

Q. We should make it illegal.

A. That is what I say, if you do not say so, it is certainly worthy of consideration.

By Mr. Bergeron:

Q. When you have called the attention of parliament to this matter it is enough for you ; it is out of your hands as far as you are concerned.

A. Yes. But I do not choose to remain here even if I live long enough to see the building of the Grand Trunk Pacific, to do what is going to be robbery, as it appears to me, to the country. That is all. You can get someone else. That is the whole point. If you can get $1,500,000 additional out of $1,000,000 of the people's money, what can you get out of $150,000,000. That is the whole point. It is a simple rule of three question.

By Mr. Foster:

Q. It will be solved before ten years are over.

A. I spoke the other day about bringing down the appropriations at the end of

the year. I hope that it will not be done, because it would cause our report to be late in presentation to parliament.

By Mr. Bergeron:

Q. That is not so important as other questions that can be remedied. What you wanted to amend is clause 32 and clause 33.

A. The one I have been speaking of to-day is clause 33.

Q. Yes.

A. With reference to that I labour under this difficulty, that although the Chief Engineer, who is perfectly capable, and who was friendly with me—more friendly perhaps than I deserve—made with reference to the contract that was made by Davis with the Government of Canada before 1896, what I thought a capable and honest certificate. Now when we came to deal with the subsequent contract that was made in 1900——

Q. Under the new administration ?

A. Yes, I thought he did not. What I argue is that the engineer takes or should take no directions from anybody. As an engineer he makes a statement of the facts.

By Mr. Lancaster:

Q. From his own knowledge ?

A. Yes, or the knowledge of a subordinate.

By Mr. Bergeron :

Q. You say he should do that.

A. Yes.

Q. But he did not do that.

A. No. He takes the ground—first in the case of the Sorel bridge, he sent to me a statement that the bridge cost $210,000, and it would in fact bring to the contractor 15 per cent on the cost, which would make, as you see, about $31,000 odd. When it came to me I looked at some details. I happened to have had a little to do with lumber at one time, and I saw a good round sum charged for piles, $1 a foot, and some elements in the superstructure and all that. At any rate, I thought it advisable for me to send a man to find out what the bridge cost. I did, and he said : 'I will make it sufficiently large; it cost $110,000, at the outside.' That is $100,000 less than the charge through the Railway Department. When I got that opinion I wrote to Mr. Schreiber asking if he would be good enough to say what his engineers said it cost. He sent me statements that it cost $98,000. I passed the subsidy on that basis, about $15,000 only. The engineer was possibly perfectly conscientious so far as he was concerned, but he held that if the government told him the cost was so much, he was bound to say so. In other words he is bound to certify not what he knows but what another person told him.

Q. Is that engineer that certified that the bridge cost $210,000 still in the employ of the government ?

A. It was one of their engineers that did it, not a man from the department.

Q. If you had not known something about lumber you would have paid him on the basis of $210,000 ?

A. Yes, possibly.

Q. Another Auditor General would do it if he did not pay a good deal of attention ?

A. Yes.

Q. Who would be responsible to the country for having sent to your office that estimate of $210,000.

A. I take it that it would be the government engineer and he thinks it is the government of Canada that would be responsible for that, and that he should take their directions as to cost.

Q. The government of Canada are not engineers. I would not blame the Minister of Finance if he paid $210,000 on a bridge that his engineer said cost that. There must be something wrong in the system when an engineer could go to the Auditor General's office with an account that should be paid on a bridge which cost $210,000 when as a matter of fact the bridge only cost $98,000. Where is the key to that. There is something wrong there. Who is the official who is responsible ?

A. It happened in the Davis case in the same way. But the point is that the engineer thinks he is bound to take the directions of the government of Canada for that.

Q. That is Mr. Schreiber.

A. Yes.

By Mr. Fielding :

Q. What do you mean by 'direction of the government of Canada' ?

A. If they pass an Order in Council.

Q. Is not it a fact that the government have passed these orders in council, all orders in council, upon the recommendations of their officials ?

A. We will find what has been done in this case anyway. Mr. Schreiber, when I asked him, sent me a statement. I said to him, 'You have sent me a statement that the cost was $98,000 after you first sent me an application to pay on $210,000.'

By Mr. Bergeron:

Q. Who sent that application ?

A. I think he did.

Q. It is a very extraordinary case. He must have relied upon somebody else. He did not go there himself ?

A. All he tells me is, 'I am told by the government and I do it.'

Q. He did not go there ?

A. He did not go there. His officials went there. His contention is that he must do what the government says. If the government say that four and five make twelve it is not true and everybody knows that it is not true. The government cannot make it true.

By Mr. Emmerson :

Q. Do you say that the Chief Engineer of the Railways and Canals Department claims he cannot give a certificate respecting any account excepting under the direction of the government ?

A. Oh, no, not at all.

Q. Do you say that he ever does ?

A. I do say that he does and did.

By Mr. Fielding :

Q. By direction of the government ?

A. I tell you that he told me and this is his explanation.

By Mr. Emmerson :

Q. Don't you know that an Order in Council cannot pass from the Railway Department affecting the payment of any money there without the certificate of the Chief Engineer ?

By Mr. Foster:

Q. Don't it come this way, Mr. McDougall, that the Minister of Railways at that time, for whatever reason or from whatever knowledge made a report to council ? His recommendation went to council that the bridge was to that extent finished and

that the cost as given was that much, and that the percentage was 15 per cent was it not ?

A. That was all right.

Mr. FIELDING.—He never sent in his report.

Mr. FOSTER.—Yes, he did, I think I have it, and that the percentage, 15 per cent, amounting to so much, should be paid.

A. Yes.

By Mr. Fielding :

Q. Was there any report of the engineer before the minister's report ?

A. I cannot say positively about that. I do not remember.

Q. Is it not the general practise that a minister's report of that kind should always be founded upon the report of the Chief Engineer ?

A. Ordinarily it is. I do not say this was done every day, but I say with reference to that Sorel bridge, and with reference to the Davis matter, that Mr. Schreiber did not make the same kind of careful examination for himself in the second case that he did in the first case.

Q. But he must in each case have made a report to council ?

A. I suppose so.

Q. Touching the Sorel bridge case, you yourself in the manner described had the account reduced ?

A. Yes.

Q. The machinery of the Audit Act at present was sufficient to enable you to do that and save that money, and you think the public interests are protected.

A. Oh, no, it is not the kind of business I like to do, because I run too great a risk.

By Mr. Foster:

Q. The minister asked, as I understand it, recommending the payment of a percentage on $210,000.

A. Yes.

By Mr. Fielding :

Q. I do not hesitate to say that no great item should be passed without the report of the Chief Engineer, most decidedly.

A. That same thing was true in the Davis case, but with a larger amount. I wrote a strong letter which you will find on page 35 of my report. I do not know whether I spoke of that before.

Q. Do you remember the amount of the Davis claim which you say was passed by the Treasury Board ?

A. There were certain payments passed at that time.

Q. Were you not aware that the view of the Treasury Board was that the account up to date would be a legal liability and could be enforced against the government, but that the whole matter might be revised as respects the future, and that what the Treasury Board would do would be the passing of that account up to date, being legally advised it was a contract ?

A. It may be so, but I have not inquired into it. I think the position was the same as Mr. Aylesworth's, that the government having made a certain contract was responsible for carrying out that contract. That was the position he took.

Q. Was there not a clause in the Act, and it was in that very contract itself, which allowed the government to expropriate property if they wished to do so

A. Yes.

Q. Did the Treasury Board call attention to that, that this account up to date would have to be paid because it was a legal liability, but the whole question of the future arrangement should remain over? The latter part I do not recollect.

A. But anyway they fixed the fact that they were obliged to carry out the second contract, which I am fighting about now.

By Mr. Emmerson :

Q. Will you kindly tell me what time that Sorel bridge case occurred ?

A. I will be glad to point it out to you as it is described in my report.

Q. How long ago ?

A. It was some time ago, about 1902; not later than that. It may have been in 1901.

Q. I would like an answer to this question ; I want to make some inquiry myself. In every report to Council, for instance, from the Department of Railways, affecting the payment of a subsidy or affecting a payment of any kind, does it not recite—that report to Council—that the Chief Engineer having reported so and so, the minister thereupon recommends to Council ?

A. Perhaps so. But surely I cannot do so—at any rate I do not see the reports to Council ; I see the orders of Council.

Q. Does not an Order in Council recite the facts contained in the reports to council ? You are surely familiar enough with the routine of the Privy Council to answer that question, as to whether the minute of Council is not based upon the report to council. Does it not recite what is contained in the report to council ?

A. I really would not deal with that with any certainty, because I do not think that the Order in Council follows a uniform method with reference to that. I certainly do know that in these two cases the Order in Council was not based upon the information that the Chief Engineer had on the subject, because you see in this Sorel case the moment I wrote to him that the engineer, Mr. Keefer, whom I had appointed to look into it, had made a report $100,000 below what the Order in Council stated, that he himself stated that the value was $98,000.

Q. I only know what the practice and procedure of the Railway Department has been since I have had anything to do with it, and I found when I came into it that in all proceedings affecting the payment of subsidies or otherwise the report to council recited the fact that the engineer has reported, and the minister made his recommendation based upon that report. That was the uniform practice and I followed simply on that line. I was asking if you knew of any exception to that ?

A. I cannot really tell you, although I get the Orders in Council.

By Mr. Lancaster:

Q. If the practise was as he stated, how could you account for the two reports, one being twice as much as the other, coming from the same person ?

A. It does not seem possible. You could have Mr. Schreiber here. What I understood from him was that he practically does what the government tells him. If the government tells him to do a certain thing he does it.

By Mr. Emmerson :

Q. I do not find it so.

A. Perhaps not. He tells me so.

Q. What is the name of the contractor at Sorel ?

A. It was Mr. Beauchemin.

By Mr. Barker:

Q. I understand that the bridge was built for the railway and not for the government.

A. Yes.

By Mr. Lennox:

Q. To go back for a moment to the question of the Davis contract that you are dealing with. What the Minister of Finance said was that the Treasury Board over-

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ruled and made a recommendation. Now, as a matter of fact, if you will recall the correspondence with Mr. Aylesworth, it pointed out that the contract exceeded the powers given, I think, by the Order in Council, did it not ? Do you recollect that ?

A. No. Of course, I know that he said so with reference to the electric lighting —do you mean that ?

Q. With reference to the Davis contract ?

A. That was part of the Davis contract. I do not think he said that with reference to the power.

Q. I think Mr. Aylesworth subsequently advised you that the contract was illegal because it exceeded the powers given by the Order in Council ?

A. Not surely generally illegal.

Q. Illegal to that extent ?

A. In one respect probably.

Q. I think probably he meant illegal in all respects ?

A. I did not so understand it.

Q. Notwithstanding that the Treasury Board held the whole thing to be legally payable—do you recollect that ?

A. I recollect that.

By Mr. Fielding :

Q. Are you not aware that the question of the whole amount of the contract was not involved, but only a certain part ?

A. Yes.

Q. Therefore the statement that the whole amount was involved is misleading ?

A. Yes, it will be because the time had not expired.

By Mr. Lennox:

Q. The whole amount that was then submitted for payment ?

A. Yes.

By Mr. Fielding :

Q. Are you not aware that the question of liability was referred to the Department of Justice, and it is a fair presumption that the Department of Justice in that case must have advised that the proceedings were legal ?

A. The Treasury Board always act in accordance with the Department of Justice report, although not bound to.

Q. If these things occurred at the time, as a matter of law it must be a difference between Mr. Aylesworth and the Department of Justice, and naturally the Treasury Board would be governed by the Department of Justice ; that is the practice.

A. That is the practice, I think.

By Mr. Lennox:

Q. One of the things to be paid for was the electric energy ?

A. Yes.

Q. And as a matter of fact through the default of the government or in some way there was no possibility of using that electric energy down to the time the account was presented ?

A. No.

Q. And it had not been used as a matter of fact ?

A. No.

Q. So that we did not get one dollar of benefit as regards the electric energy, down to that time ?

A. No.

Q. Although the Treasury Board directed that the whole amount should be paid ?

A. Yes.

Q. Then, as regards the electric lighting, it was ascertained that only a very small proportion of the lights had actually been in operation for a great portion of the time.

A. Yes.

Q. Notwithstanding that the Treasury Board directed the whole amount to be paid ?

A. That is to say, as if they were in operation.

Q. But on subsequent investigation, whatever the cause of it was, a great reduction was made with regard to both these items?

A. Yes.

By Mr. Fielding :

Q. In the past and as to the future, that is, on the account actually presented ?

A. I cannot say as to the past.

Q. Do you not know ?

A. No, but certainly as to the future.

Q. I want you to look after it ?

A. Yes.

Q. I recollect it well that a reduction was made and dated practically from the beginning, and then a provision was made, a recommendation by these three gentlement who investigated the matter, that a certain amount would be paid for until some alterations were made to the works?

A. One reason why I do not want to be so positive about the past is because I know some money has since been paid to Davis on account based on a certificate from Mr. Schreiber that he ordered the light to be used. It is not a very large sum. That is in the Exchequer Court.

By Mr. Lennox:

Q. Is that in addition to what was decided at the time it was before the Treasury Board ?

A. Yes.

Q. That was the item that was left in abeyance ?

A. Yes.

By Mr. Fielding :

Q. Will you look into it and see if it is not correct that whatever the Treasury Board did as respects the legal aspect was done on the recommendation of the Department of Justice ?

A. That is my opinion.

By Mr. Taylor:

Q. Going back to the Sorel bridge ; I understand you to say that the bridge had been built by Mr. Beauchemin, the contractor ?

A. Yes, the proprietor of the railway, I think.

Q. And the government have passed an Act of Parliament in connection with that bridge to pay 15 per cent of the amount of the cost ?

A. Yes.

Q. That order was presented to you to pay 15 per cent on $210,000. Have you that order still ?

A. I think I have.

Q. Will you bring that here ?

A. Oh, certainly.

Q. When that order was presented you refused to pay it because you saw that the estimate was out of proportion to your idea of what was the cost.

A. Yes.

Q. You sent an engineer ?
A. Yes.
Q. And he reported $100,000.
A. $110,000, he said would be large enough.
Q. Then you applied to Mr. Schreiber to ask him how this could be when he had said that it would cost $210,000.
A. I asked him what was the estimate of his engineer, and he sent me a statement showing that the cost would be $98,000.
Q. You have that statement ?
A. I think I have.
Q. Will you bring that statement ?
A. Oh, yes—they are printed in the report. I have it printed in the report and can point it out to you.
Q. Then you applied to Mr. Schreiber and you asked him how that report came by Order in Council authorizing you to pay $210,000.
A. I do not know that it was with reference to that very case, but when I did ask him how it was that he himself was taking part in the putting through of an application making payment on a basis of this increased cost generally with reference to that and with reference to the Davis matter——
Q. What was his reply ?
A. His reply was that there was an Order in Council on the subject dealing with the price, that he did what the Order in Council said, that he followed the directions of the Order in Council.
Q. So that you inferred from his statement that this Order in Council was passed granting payment at 15 per cent on $210,000 without having consulted him at all, that the minister had put it through ?
A. I do not know whether the minister did—I do not know how it was done ; I did not know that he wanted to be free from the charge of having made that recommendation.
Q. You inferred from what you said that this Order in Council was passed in Council without a recommendation from him ?
Mr. Fielding.—The order will speak for itself.

By Mr. Taylor:

Q. Have you the Order in Council ?
A. Yes.
Q. Will you bring that down ?
A. Yes.

By Mr. Stewart (Ottawa):

Q. I understood you to go further than Mr. Taylor's question ; I understood you some time ago to say that Mr. Schreiber, Deputy Minister of Railways and Canals, told you that he always did what the government told him to do with regard to matters of this kind ?
A. I do not mean to say that he said the government always told him to do something that was incorrect, I do not mean that, but if the government did do it, he accepted what the government told him to do with reference to the value of the thing. Of course under his own authority if he chose to exercise it.
Q. The question was regarding the certificate from the chief engineer, from Mr. Schreiber, and the question was asked, and I understood you to answer that the deputy minister told you that he did not know of his own idea, but that he took the figures that the government gave him ?
A. Yes, in this case.

By Mr. Fielding :

Q. We have been dealing with the Sorel bridge in a fragmentary way. This matter occurred two or three years ago ?

A. Yes.

Q. You reported the facts at the time, in detail in your report—it was all reported in detail in your report to parliament at the time ?

A. Yes.

By Mr. Stewart (Ottawa):

Q. I understood you to say in regard to that, in a general way that the Deputy Minister of Railways and Canals told you that he always did what the government told him to do ?

A. Not always, I have no cases in my mind now except the Sorel bridge and the Davis case.

By Mr. Lennox:

Q. I think I can call your attention to another case probably, do you remember the Farren's Point Canal contract ?

A. I know of it.

Q. I will ask you when you come to the committee again to look into that matter, with this view particularly, that there are instances in which the government before it comes to deal with the report of the engineer ties its hands up by committing themselves to a certain course. In the Farran's Point Canal case, as I recollect it, you urged that the Department of Justice should give you an opinion as to the original legality of the transaction, but the Department of Justice evaded the point as I recollect it, persistently evaded it, by saying : 'We do not propose to answer as to the original liability, but having regard to what took place between a minister of the Crown and the contractor, subsequently to the contract, the liability is complete.' I want you to look up that case.

A. Yes.

Q. Showing that the officer in charge, the engineer, is hampered and controlled in many instances by the action of the department ?

A. I will look it up.

By Mr. Bergeron:

Q. One word more about the Sorel bridge. I understand that after all that has been said here, about the facts that we very nearly paid upon $210,000 when as a matter of fact the bridge only cost $98,000, the Minister of Finance asked you if it was not brought before the Public Accounts Committee, and you replied 'yes.' His meaning was that the case was passed over by the committee and was accepted as correct.

Mr. Fielding.—Please do not tell me what I mean.

Mr. Bergeron.—That was what I draw from your question. I understand, Mr. McDougall, that you have the right, according to the Act, to send an architect or an engineer to examine any work in the country where you deem it necessary, and that you have a fund for that purpose ?

A. I have,—not a very large one.

Q. But you have a fund for the purpose, and that you can, if you want to do so, before you pay out any public money to the contractor, send a man to examine the work. Do you do that often,—I think it is a good thing that you should do it—and if you do not do it often why do you not do it often ? Is there anything in the way?

A. I have sent Mr. Keefer to other places, like this Davis case, but of course——

Q. These are two cases, there must be a good many others ?

A. Yes, I sent a man the other day to Mr. Oliver's constituency, to examine on the spot the charges made by people who are engaged in conducting the elections,

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and in such things as that I sometimes send persons in cases that appear to require examination.

Q. When shall we have the pleasure of reading the report on that case ?

A. I do not know. It is my duty to do so, and under the law I can examine anybody under oath with regard to any account.

Q. I think that is very proper.

A. I can send another person instead of myself, and he has power also to do the same thing.

Q. You send a man in whom you have confidence ?

A. Quite so.

Q. To find out whether the public money is spent as it should be ?

A. Yes.

Q. And to see that it is not a useless expenditure ?

A. Quite so.

By Mr. Fielding:

Q. You have all that power now to exercise whenever you deem it necessary to do so?

A. Yes.

By Mr. Campbell:

Q. Have you been exercising that power ?

A. Occasionally.

Q. For long ?

A. Since the beginning, I do not do it very often.

Q. Did you ever do it in connection with the Curran bridge in Montreal ?

A. I think that was fully investigated here.

Q. But not before the payment was made ?

A. No, I seldom do that except, of course, it is difficult to get a person—you can see, you have to do your work in connection with people when you do not see in advance the irregularities you cannot do that with every account, that is you cannot send a man of capacity with reference to every work.

By Mr. Fielding :

Q. You stated that you had not a large fund for that purpose ?

A. No, I have not.

Q. Have you as large a fund as you have asked for ?

A. Yes, $500 or $600.

Q. But you have not sought any more ?

A. No.

By Mr. Lennox:

Q. In that connection you have expended $500 or $600 in that way ?

A. Yes.

Q. What is the appropriation available for the purpose ?

A. That is about $500 or $600 a year.

Q. That includes the occasional cost of consulting a lawyer ?

A. Yes.

Q. The fee to counsel for an opinion ?

A. Yes.

Q. And occasionally for sending out an architect or an engineer, or some one of that description ?

A. Yes.

Q. An occasionally you get some evidence in defence of their report ?

A. Yes.

Q. It does not strike me that you can do much of that kind of work on that amount ?

A. No.

Q. Can you tell me what the system is in the United States or do you know ?

A. I do not konw.

Q. Is it not a fact that the Auditor General of the United States——

A. The Comptroller he is there.

Q. Well, the Comptroller, or whatever he is called there, has he not a permanent staff employed in the supervising the accounts ?

A. Yes.

Q. Do you think that is necessary in this country ?

A. Oh, I think it will be very advisable, particularly when the Grand Trunk Pacific work goes on.

Q. We are extending our operations and vastly increasing our expenditure and you think a few permanent officers in conneection with the Audit Office would be productive of a saving of money to the country ?

A. Oh, yes.

Q. But all you have as a matter of fact is $500 or $600 which you can employ for casual service ?

A. Yes.

Q. Do you know anything about the expenditure of the United States in reference to that particular matter ?

A. I do not know.

Q. But in England they have——

A. Of course they have a great many officials in connection with their department in the United States.

Q. But in England they have a sub-committee of Public Accounts, which appears to be a permanent committee, I think ?

A. Yes.

Q. And controls the expenditure to some extent between the sessions of parliament ?

A. No, I do not know that. I know that it sits pretty continuously during the session.

Q. And from time to time, as I see from the reports I have obtained, makes a report of such facts as they think ought to be reported on under the law ?

A. Yes. But they look at and review every difficulty between the Auditor General and the Treasury Board.

Q. All those differences are investigated by this quasi permanent committee ?

A. Yes.

Q. With your experience of more than a quarter of a century do you think that, with profit, we could have something of that kind in Canada ?

A. Well, you could if you would make it a small committee. It seems to me that what is everybody's business seems to be looked upon as nobody's.

Q. That is what I notice, and you think a small permanent committee would be of advantage ?

A. Oh the same class of men that have been in under one government would probably be in under another.

Q. Would not that probably get away with the difficulty, to some extent, that we are constantly having, of a constant conflict between the Auditor and the Treasury Board ?

A. Of course there is nothing I know of that will do that, but if——

Q. So far as the Treasury Board are concerned, we have this difficulty that the men are judging their own case to a large extent.

A. Yes. If I speak of England it is not that they are any better there than we are here, but there is a difference in our committee when a man is one of many. They

talk about this in a political way, but when these men are put to deal with it, just a few men, they know that each man's views on it are known, he knows that his intelligence and character are at stake, just as a lawyer may fight for his clients, but when he becomes a judge and sits on a case he is a different kind of a man.

Q. But from your experience you think that a small permanent committee would be a decided improvement in the law ?

A. Oh, a great improvement.

By Mr. Fielding :

Q. How are you going to guarantee the election of the same men every time ?

A. If they are not elected they will appoint some others in their places.

By Mr. Lennox:

Q. Then, as to a few officials, a few officers, for instance an engineer and an architect, some men who could supervise, connected with the Auditor's department, you think that would be an improvement ?

A. I am quite sure it would be.

Q. And you think it will be more than compensated for by the benefit to the country in the matter of expenditure ?

A. Yes.

Q. Would it not as a matter of fact, exercise a salutary influence, so that enormous claims would be prevented if the contractor knew that this supervision would be constantly exercised ?

A. Of course.

Q. That would be self-evident ?

A. Yes.

By Mr. Stewart (Ottawa):

Q. With this sub-committee that is spoken of, if a difference of opinion arises between the Auditor General and sub-committee, what better position would we be in?

A. If the sub-committee said that he need not do this, he would not need to do it any more. I think he has work enough to do without that. I am not pretending to be on a par with parliament. That is the reason I say that I know how parliament feels about that, and if they say, 'we will do nothing for you,' I say: 'good-bye.'

Mr. BERGERON.—And then the people of this country would know how things are going on.

By Mr. Fielding :

Q. Are you sure that there is a sub-committee appointed in England for that purpose ?

A. Oh, no, a committee.

Q. The Committee of Public Accounts ?

A. Yes, ten or twelve members.

Q. It is a committee ?

A. Yes, it is 15 out of 600.

Q. It is not a sub-committee, it is only a Committee on Public Accounts ?

A. Yes. It makes no difference whether it is a committee or a sub-committee.

Q. It can only meet during the session ?

A. Yes.

By Mr. Lennox:

Q. As a matter of fact, whether it is a sub-committee or a committee, it is a permanent committee ?

A. Yes.

Q. And reports from time to time during the session ?
A. Yes, perhaps four reports a year, or it may be three or four or five.
Q. During the year ?
A. Yes.
Q. And these reports are printed from time to time during the year ?
A. Yes.

By Mr. Fielding :

Q. You do not know whether it sits during the interim or not ?
A. No, I think it does not. Mr. Lennox thought it did, but I do not think it does sit between sessions.

By Mr. Lennox:

Q. What is your recollection ?
A. That it does not.
Q. But as a matter of fact it reports four or five times during the year ?
A. Yes.
Q. And because parliament there sits almost permanently, which we are approaching, but then parliament get the reports very frequently ?
A. Yes.

By Mr. Fielding :

Q. You talk about the permanency of the committee. In what respect are they permanent, that is, this committee ?
A. It seems to me they are the same committee each year. They appoint a committee of about three or two per cent of their membership. We appoint a committee of about 40 per cent.
Q. What has that to do with the question of permanency ?
A. It has to do with this question, as a matter of business if a few men feel that they have this business on their shoulders instead of having two or three committees to attend to, whereas men who have several committees to attend to, as we have it here, do not attend to any. They only give one man one committee to look after, and this is an important committee.

By Mr. Bergeron:

Q. They are better than we are over here in that respect ?
A. That is all right, but we are going to get better, we are not going to stop where we are.

By Mr. Fielding :

Q. You have not quite answered my question. 'In what respect can their committee have more permanence than this committee appointed in the same manner every session by parliament as this committee is.' Are they not both on the same basis ?
A. Yes, except this that as I understand it, men who have been there before are considered to be the men that should go on the same committee every time.
Q. Is not that the case here ?
A. No.
Q. Mr. Barker has been a member of this committee every session ?
A. I cannot go over the committee now.
Q. I think it is a fact that it is composed of the same men year after year ?

Mr. Bergeron:

Q. What Mr. McDougall means is that we have a large number of members on the committee and sometimes have no quorum as we had the other day ?

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By Mr. Fielding :

Q. Let us come to that, they have you say, fifteen members ?
A. Twelve to fifteen.
Q. Out of a membership, I think, of 620.
A. Yes.

By Mr. Sinclair:

Q. Therefore we have just about one half the British House and our proportion on that amount would be five, and therefore all the rest of these gentlemen are wasting their time here. We want a small committee of five, is that what you mean ?

A. No, I do not say that. I do not mean five, as a matter of fact they have about two or three per cent on the committee. I am not asking that there should be five members, but for a small committee.

Q. How many would you like ?

A. It is not a question of my liking, but it should be small enough to be successful.

Q. I understand you to mean that the Public Accounts Committee in England is appointed in the same manner as our committee, they have the same powers and make reports in the same manner as our committee and they deal with the public business, and the only difference between us is that the English committee is small and ours is large, is that what you mean ?

A. Yes.

Q. Would you kindly suggest what sized committee you want ?

A. I would say about the same size as they have there, fifteen, but you do not need to take my suggestion.

By Mr. Lennox:

Q. Let us clear the matter up if we can. You give us the case of England as an illustration of a small committee working seemingly efficiently ?

A. Yes.

Q. Never mind how they are appointed in England, say nothing of that, do you believe from your experience that a committee of fifteen or twenty men as a sub-committee of the Public Accounts Committee here would be an improvement ?

A. Yes—well, I mean a smaller committee, whether it is a sub-committee or a committee, but I would of course suppose it would be a sub-committee for the end of this session.

Q. Would it not be that a sub-committee which would be particularly charged with certain matters would be a benefit here ?

A. Yes, or any small committee.

Q. And you think that it should be a permanent committee ?

A. Well, as far as you can make it permanent, as far as the tenure of office as members of parliament would permit. I do not argue that you should have men outside of parliament.

Q. But permanent for the parliament rather than for the session ?

A. Yes, that would be my idea.

Q. And that these men would be expected to devote themselves particularly to such matters as might arise, and that the Auditor General would have to consult them. He would have to refer to them ?

A. Yes.

Q. And they would report, they would be specially charged with the duty of reporting that matter to parliament ?

A. Yes.

Q. Immediately ?

A. Certainly.

By Mr. Johnston (Cape Breton):

Q. Is not that the duty, the very exact duty of this Public Accounts Committee ?
A. That is now meeting here ?
Q. Yes ?
A. Yes, but they never perform it.

By Mr. Fielding :

Q. I do not think Mr. McDougall ought to reproach us in that way now ?
A. Oh, we are just having a friendly talk here.

By Mr. Lancaster:

Q. Do I understand you correctly that you think there is a benefit and a permanency in the smallness of the committee, which of necessity, would have to sit every day, and therefore be in full knowledge of all that is going on all the time, so to speak, that is giving their attention to that particular matter, and in that sense there would be a permanency because of the responsibility on the individual which the small number of the committee places ?

A. Yes, if they are any longer than one session on the committee,—it is sitting from day to day.

By Mr. Fielding :

Q. As a matter of fact they are sitting from day to day, it is a busy committee sitting from day to day ?

A. But they sit every day when there is any work to do, so far as I can see.

By Mr. Bergeron:

Q. Mr. McDougall, I imagine what you mean is this that we will understand very well that you mean to say you are an employee of the House of Commons, you are not an employee of the government. You stand between the government who are administering the affairs of the country and the public. Do you follow me ?

A. Yes.

Q. And when you mean you would like to have a committee here like they have in England, it is to be of the same number if possible, that you can say you have that committee to deal with instead of the Treasury Board ?

A. No, after the Treasury Board. You see the Treasury Board has power to overrule me, and I want that I should be in a position afterwards to say that this particular question came before that committee, and that the committee dealt with it, and it has been reoprted to the House and that the House has decided that I am wrong about it. Therefore I need not do anything more in the matter.

Q. You mean to say that in going before the Treasury Board you are going before a tribunal that is not impartial. While if you are going before a committee of the House of Commons, you are going before a committee that should be impartial, because it has to stand like you, between the government and the public.

A. Yes, but first I say this, that every time the Treasury Board has to deal with anything it is probably on a statement either of a member of the Treasury Board or of a colleague of these gentlemen, and I say that there is naturally in human nature a tendency to lean towards their colleague, but if they see that this is going to come up in the committee and in the House and going to be dealt with by the House and by parliament, then there will be a decision on that point in view of that possibility.

Q. That is one of your suggestions ?

A. Yes.

Q. You will put all these suggestions on a piece of paper or in a way to be put before the committee. I do not know if you have any more to say, if you have we will call the committee again to hear you ?

A. Yes, I have more to say.

Mr. FIELDING.—I want to say to the committee on behalf of Mr. Courtney that Mr. McDougall, whether he intended it or not in speaking of these allowances for travelling expenses, conveyed the impression that in reality it was in addition to salary. I want to say on behalf of Mr. Courtney that there is nothing to justify that impression at all. I venture to say that Mr. Courtney never spent a day abroad that it did not cost him more than the allowance that was made to him. I say that in justice to Mr. Courtney. Of course if any one desired to live in a cheap way in a boarding house he could save a little money, but I would like to point out that it is only the higher class of officials to whom this allowance is made. I want to do justice to Mr. McDougall, and say that he, himself, has brought to our notice these arrearages. If any given branches of our business can be referred to a sub-committee I think it is all right, but the idea that you can consolidate the work of the whole committee in one small committee, I cannot concur in. They would have to sit day after day and do nothing else, but I think the members would want to take part in the business of the House. Therefore it does not seem practicable.

The committee adjourned.

HOUSE OF COMMONS,
COMMITTEE ROOM 32,
WEDNESDAY, June 28, 1905.

The Select Standing Committee on Public Accounts met this morning at 11 o'clock, Mr. Colin McIsaac, chairman, presiding.

Mr. J. LORNE MCDOUGALL, Auditor General, again appeared before the committee for examination, anent certain amendments proposed by him to the Audit Act.

WITNESS.—Mr. Fielding at one of the meetings took the ground, as I understood him, that the government should make practically any expenditure it liked at any time and that afterwards they were to receive the treatment that the electors thought they had a right to get for what they had done.

Mr. FIELDING.—I did not say so, but I do not object to you proceeding on that basis.

WITNESS.—I want to be careful because there is no use in raising things to knock them down again, but that was the view I took of what Mr. Fielding said. I do not want, of course, to put words into any person's mouth that are not what he meant.

By Mr. Bergeron:

Q. Did he act at all in that way according to you ?

A. That was my view, but I do not want to have it understood at all that I have any right to put views not his in any one's mouth—I want to deal with real difficulties so far as I am concerned—I want to show what my view of it is from the best knowledge I can find, and I am acting according to the best view I have of things, in presenting cases before the committee. I want to explain at once that so far as I am concerned there are certain things with which I have no right to interfere. I recognize the fact that the government, supported by parliament, has a policy to adopt. That is to say in a case like the building of the Grand Trunk Pacific railway or when they send people on travelling expeditions. I have not a word to say as to the style of building or of living, for instance, of any man who travels for them—it is not for me to say what it should be.

Q. I imagine what you mean is this : that when parliament has voted an amount of money, say $50,000 ?

A. Yes.

Q. To build a post office ?

A. Yes.

Q. If that money has been spent to build bridges you would come in and say : 'It is not the intention of parliament that that money should be spent in that way ?'

A. Yes.

By Mr. Fielding :

Q. Have you known of such a case where the government took a vote for a post office and spent it on a bridge ?

A. No, but what is more in point——

By Mr. Bergeron:

Q. It is the principle ?

A. It is the principle. The point I have in view is this : If the Grand Trunk Pacific is to be built, then I have not one word to say about the building of it—how it is to be built—as long as they keep within parliamentary sanction, but when they say there is to be more money paid for a particular part of the work than it appears to me ought to be paid under the regulations and under what is fair and just, then I do think that I come in.

By Mr. Fielding :

Q. I agree with that.

A. Yes, now that is a point. In the same way with reference to travelling. I have been appealed to, for instance by Sir Wilfrid Laurier's secretary. He said on one occasion : 'I had to go to Montreal. It was late and I was accompanying the Prime Minister. There was no ordinary berth for me to go in. I had to take what they call, I think, the bridal chamber, and I had to take that because there was no other place vacant.' I said, 'You need not come to me about that.' He said: 'I suppose I have to settle that myself.' I said : No, you have not. You get your certificate from the Prime Minister. If he approves of it it is not for me to say that you are not to have the accommodation: I can never do that.'

By Mr. Bergeron:

Q. Is that a rule that when the minister of a department approves of the expenses of an employee that you will sanction it ?

A. That is public money that has been spent. My duty as I interpret it, extends only to finding out whether the money has been actually expended. In the same way other things are on the identical footing. Supposing we had to send somebody to Washington on international affairs. If we have not the right to appear as an agent we can do so with the approval of Great Britain. Well then if our representative has something to do it is not for me to dictate what he shall incur in the way of expenses ; the country's interests cannot be starved. But what I have to do, as I take it, is to see that the money has really been expended. That is my view of the case. The reason I mention that at this particular time is that so far as I can see under the practice in the United States and in Great Britain such a case as the Davis case which has given me much trouble both while it was going on and in anticipation of future expenditure, could not have happened. In that case there was a renewal of the contract the work having been done without a ripple of objection by the contractor so far as I could see under the first contract. The contractor not complaining that he was badly treated under the first contract and having done the work gets a new and distinct basis of remuneration under a second contract. Now, seeing that Mr. Fielding takes the same ground as I do, as to the right of interference by the government as to re-

nuneration, let me give some evidence as to the practice in the United States. I will read from the decisions of the Comptroller and Acting Comptroller of the Treasury in the United States. He says : 'The power vested in the head of an executive department to make contracts for work or services does not imply a power to rescind or alter such contracts when made unless the change is for the benefit of the government,' manifestly meaning for the benefit of the country.

Q. Do you propose that in your amendments ?

A. Yes, I want that power so that it may be clear for the future that if work is done under a contract the contract cannot be amended after the work has been done.

Q. Except for the interests of the country ?

A. For the interests of the country.

By Mr. Piché :

Q. Who is to be the judge ?

A. I would make you the judge, if you will allow me, so far as this particular case, the Davis case, is concerned. You will be the judge. So far as I could see this work was done under a carefully arranged contract, and as I told you I am not now mentioning the Davis case for the purpose of interfering with it. I only cite it as an——

Q. As an example ?

A. As an example of what is to be avoided in the future.

Q. Of what is not to be done in the future ?

A. Of what is not to be done in the future, after the work has been performed. In that case without any complaint, as far as I understood, that the contractor was badly treated even, a new contract was made which differed from the other contract, so far as I can see, perhaps in a prolongation of it, but not at all in getting any more work or any advantage to the government of Canada.

By Mr. Piché :

Q. Was not that Davis contract pronounced to be for the benefit of Canada by parliament ?

A. In the beginning ?

Q. In the beginning ?

A. Oh, yes.

Q. Then after the deal was over was it not passed upon by parliament again ?

A. After the second deal ?

Q. Yes.

Q. No, I think not. It has been since.

Q. It has been since ?

A. It has been since.

Q. Well, if it has been settled by parliament and declared all right what is the use of coming over it again ?

A. I am as an official of parliament coming to you to assist in preventing so bad a case so far as the interests of the people are concerned from ever recurring.

By Mr. Campbell:

Q. Have you got the contract ?

A. No, but it is in some of my papers.

Q. Will you read it ?

A. Yes, I will be glad to, but if you will allow me to get through this particular part of my evidence I will then read anything that is wanted.

By Mr. Bergeron:

Q. Go on with your evidence on that particular part.

A. So far as the United States is concerned their practice is as I have read. The authority from which I have quoted mentions the decisions which I have not here.

By Mr. McKenzie (Cape Breton):

Q. Before you read that it would be well to know whether the Audit Act in the United States is the same as ours ?

A. Yes.

Q. I presume you are reading the decisions in the United States ?

A. On their work in the United States.

Q. I want to know whether the statute there is the same as ours otherwise those decisions will not be of any service to us?

A. As to the decisions it is quite right that one should probe this to the bottom and know everything about it. I am not suggesting anything, I am merely reading what appears to be their practice because it is mentioned in the decisions.

Q. You are about to give certain decisions under certain laws in the United States, but in order to enable us to consider that and to understand it we should be informed whether the statutes are the same ?

A. Anything that I can give to members of the committee I will be only too glad to give.

By Mr. Bergeron:

Q. I understand you have something on the English practice ?

A. Yes, I will read it.

Q. You have just read the American practice ?

A. So far as I could find.

Mr. McKenzie.—The American Act will be useful to us.

By Mr. Bergeron:

Q. Tell Mr. McKenzie where he can see the American Act ?

A. It is in the Revised Statutes, they have it in the library.

Q. In the suggested Audit Act which you have prepared, have you taken the American and the British practice into consideration ?

A. Yes, I have. This is the report of the Select Committee on National Expenditure in Great Britain, with the proceedings of the committee. The report opens with the statement : 'The Select Committee appointed to inquire whether any plan can be advantageously adopted for enabling the House, by select committee or otherwise, more effectively to make an examination, not involving criticisms of policy, into the details of National Expenditure.' Remember this is a committee which was appointed to go farther than I am speaking of doing, a committee composed of very prominent and important men of the Imperial Parliament. The report continues: 'Have agreed to the following report—your committee were first appointed on May 28th, 1902, and were reappointed on April 1, of the present session.

'Since beginning their deliberations the following changes have been made in the composition of the committee :—Mr. Austen Chamberlain was discharged on the 21st October, 1902, and Mr. Hayes Fisher was added ; and on the reappointment of the committee in the present session, Mr. Arthur Elliot served in the place of Sir John Dorington. Your committee have examined important witnesses and from several of these have received valuable papers which are printed in the appendix.

'Your committee while mainly directing their attention to elucidating some method of making the control of the House of Commons more effective, have considered some suggestions which were put forward for increasing the powers of supervision exercised by the Treasury and by the Comptroller and Auditor General in the interest of the House of Commons.

'Your committee and the witness whom they have examined have constantly borne in mind the limitations imposed upon any recommendations they might make by the proviso 'Not involving criticisms of policy.'

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'Your committee while agreeing with many witnesses that 'expenditure must mainly depend on policy, and policy must be, and can only be, elaborated and proposed by the government of the day, and on its proposal accepted or rejected by parliament,' nevertheless are convinced that in expending the money necessary to carry out that policy, there is a large field for the vigilence of the House of Commons in combining the most efficient with the most economic methods.

'All control of expenditure from the preparation and examination of estimates to the final audit of accounts may be conveniently classified under the following heads: (1) Departmental ; (2) Extra Departmental.

'Departmental—Your committee learn from Mr. Blain and other witnesses that in each department there is one or more accounting officers who is responsible for seeing that the money voted by parliament is properly spent, and whose duty it would be to call attention to expenditure which had become obsolete.

'In the great spending departments of the War Office and the Admiralty there is an Accountant General who revises and controls all expenditure.

'Sir R. Awdry, the Accountant General of the Navy, told us that he considered himself responsible for pointing out the financial results of all proposals, for indicating the relative importance of various works where there was insufficient money to carry them all out, and for enforcing economy in the navy to the best of his ability. Mr. Marzails, the Accountant General of the Army, took the same view of his position and functions.

'All financial and economic objections raised within a department by accounting officers are of course, subject to be overruled on the ground of policy by the minister responsible for that department. As Lord Welby pointed out, the responsibility rests with the Chancellor of the Exchequer and utimately with the Cabinet.'

Mr. Fielding.—Hear, hear.

Witness.—That is to say about the policy.

By Mr. Bergeron:

Q. Was that report by a sub-committee of the Public Accounts Committee in England ?

A. No, it was a special committee appointed to look into this matter. Why I am reading this is to show you that in England the government is concerned with its policy and nobody interferes with that policy.

Q. Quite right.

A. As long as you follow the policy of the government you are supposed to control the expenditure, the public officials generally and the Auditor General, in every way that you can. The government, as I take it, are supposed to have nothing to do with raising the expenditure when it can be kept down legitimately. That is why I am reading this. These gentlemen were appointed with a limitation, that is to say they could not interfere with the government's policy, but in every other way they were to find out how they could keep down the expenditure.

Q. Do you know that the suggestions were carried out ?

A. I really do not know.

By Mr. Hughes (P.E.I.):

Q. Read the latter part of the report ?

A. What I read before ? Well, I am not reading all of it. I am simply reading the points that bear upon my opinion.

By Mr. Foster :

Q. Get those out ?

A. In connection with the action of the Comptroller and the Auditor General.

By Mr. Johnston (Cape Breton):

Q. It would be very interesting for the committee to get the whole thing ?

A. I will give you any information you want. This report will be handed in so that anybody can see it. Let me go on to quote from the report: 'Under the Exchequer and Audit Act of 1866 this officer (who is completely independent of all departments including the treasury, and whose tenure of office is similar to that of a judge) was appointed not only to see that no money was issued without authority, but also to examine on behalf of the House of Commons the accounts of the expenditure of the Grants in Supply and to report to parliament. The Comptroller and Auditor General in examination before us stated that he conceived his functions to go beyond mere audit, and that encouraged by the Public Accounts Committee he entered also into the merits of expenditure. In answer to Question No. 756 he said: 'I should say that my duty is to examine the accounts of the expenditure of the Grants in Supply on behalf of the House of Commons—that is to say, I am a parliamentary officer whose duty it is not only to certify to the correctness of the accounts as rendered, but further I am directed by the Act to report to parliament. As regards reporting, I conceive I have something of a free hand. There are some points which I am obviously to report, such as any excess over a grant of parliament, any clear irregularity, and so forth; but I have also a duty to report on the accounts; and availing myself of that opportunity, I think it my duty to report anything which, in my judgment, falling within my proper functions, it concerns the House of Commons to know. In the first instance, my object is to report in such a way as to assist the House of Commons in making its way through what may be a very bulky volume of accounts ; but beyond that I do not feel myself debarred from calling attention to anything which has occurred in the course of my audit during the year, which indicates loss or waste, or anything of that kind which I think it is well that parliament should know.'

By Mr. Piché :

Q. Have you not got the very same power now as to that point ?

A. Perhaps I have. This says what power the Auditor General has in England.

Q. But if you have got it yourself what is the use of your looking into that matter ?

A. Well I differ—you certainly would not value what my opinions are, I suppose, in regard to that. But I do hunger after a report from the House of Commons. The House of Commons is really my master, don't you see, to say 'Well done, good and faithful servant.'

By Mr. Fielding :

Q. What you have been reading now is as to your authority and power to make a report ?

A. Yes.

Q. And the officer whose words you are quoting said that he deemed it his power and authority not only to pass as to the accuracy of the accounts but to report on all matters that might arise relating to them in his judgment ?

A. Yes.

Q. That is what you have read ?

A. Yes.

Q. Have you not the same power to-day in Canada and do you not exercise it without any restriction ? That is what I want to find out ?

A. Yes, I know.

Q. Please answer the question.

A. Well, I have the power and I dare say I exercise it.

Q. It is not what you dare say, it is more than that. You have the power now. I will put another question. Do you not exercise it as in your judgment may be deemed best and without interference ?

A. Yes, wherever I can.

Q. What do you means by 'whatever you can' ? Is there any restriction ?

A. So far as reporting.

Q. We are dealing entirely with the question of reporting because it is a report you have been reading. You say you have the same power ?

A. Yes.

Q. Now, I will repeat the question in another form. Do you not exercise that power as freely as your own judgment might suggest ?

A. Yes.

Q. You say you do ?

A. Yes.

By Mr. Piché :

Q. Have you been restricted in exercising that power ?

A. Well, I have been restricted as I think. If you would really stay here and hear me out.

By Mr. Fielding :

Q. In what manner ?

A. I want to say that we are getting towards the end of the session, if you will allow me to say so. This gentleman (Mr. Piche) of course attends the meetings regularly although I have not noticed him before. I am in sight of this thing if I am to do any good. I do not object at all, I have no right to object in any way probably, and I must answer what I am asked, but I want to read this report, it is not long, and if you will allow me to read this through you can then ask me anything you wish.

By Mr. Foster:

Q. I think that is the better way.

A. To continue reading the reply of the Comptroller and Auditor General in England to the Parliamentary Committee: 'In the first instance my object is to report in such a way as to assist the House of Commons in making its way through what may be a very bulky volume of accounts; but beyond that I do not feel myself debarred from calling attention to anything which has occurred in the course of my audit during the year, which indicates loss or waste, or anything of that kind which I think it is well that parliament should know. Of course, in doing so I have to act with great care and discretion. It is not for me to criticise administrative action as such ; the departments are responsible for their own actions as regards general administration——

By Mr. Bergeron:

Q. Who is speaking there ?

A. This is the report of the Select Committee of the Imperial parliament. I am quoting what the Auditor General says.

Q. This is what he says, the Auditor General in England ?

A. Yes. Let me go on: 'It is not for me to criticise administrative action as such ; the departments are responsible for their own actions as regards general administration ; but if I find the result of administrative action has been a loss or a wastefulness of in public money then I think it is not going beyond my duty of reporting as an officer of the House of Commons if I call specific attention to matters of that kind, even though the account itself would not disclose the facts.' This is what the committee say now: 'Your committee consider that this retrospective examination both by the Comptroller and Auditor General and by the Public Accounts Committee has been well done, and they recommend the Public Accounts Committee, even more than in the past, to encourage the Comptroller and Auditor General to

scrutinize and criticise improper or wasteful expenditure and to indicate where censure is in his opinion required. Your committee recommend that the departments endeavour to place the Comptroller and Auditor General in possession of their accounts at an earlier date in order that he may have more time to draw up his report.

ACTION OF THE HOUSE OF COMMONS EXERCISED THROUGH:

(a.) The Public Accounts Committee.

'Every witness bore testimony to the increasing value of this committee as a check on wasteful expenditure. The Comptroller and Auditor General told us he "valued its services very highly in maintaining due regard for economy in the public departments." Mr. T. G. Bowles, who served on this committee for many years, said in answer to Question No. 1017.

'As a check upon, not merely extravagant or unauthorized expenditure, but also upon unwise methods of management, this committee is probably more effectual than the House of Commons itself. There is indeed ground for believing that the spending departments stand more in awe of the Public Accounts Committee than of the House itself, probably because there is less chance of escaping its close scrutiny.' Well, that is as far as it appears to me I need read. I will, if I am asked to, read the rest of it.

By the Chairman:

Q. I think that is the desire.

A. That I should read it ?

By Mr. Bergeron:

Q. One moment, Mr. McDougall, I am satisfied because I understand this is all going to be reported. Are the suggestions that you have embodied in your suggested Audit Act based upon the report from which you have been reading ? Do you suggest anything of that sort for the parliament of Canada or for the Auditor General of Canada ?

A. Well, it is an evidence as to the value of having a committee like they have in England. That is one point in connection with it. I thought it bore very strongly on the largest point in the whole business—that is to say that a contract having been once made it should remain intact unless the interests of Canada require otherwise. Of course I do not mean to say that the interests of Canada require that the contractor should be lost sight of.

Q. Do you mean to say that when the contract is given the policy of the government is finished with it ?

A. That is my opinion.

Q. It is then outside ?

A. That is it.

Q. Then the contract should be supervised by the Auditor General of Canada ?

A. Yes.

Q. To see that no money is expended uselessly, and if there is a change in the contract it should be in the interest of Canada and not against it ?

A. That is my opinion.

Q. Now, as a matter of fact is it not the case that most of the contracts which are given are altered after they are made and invariably against the interest of Canada ?

A. Well, I will not say that invariably they are or that most of the contracts are.

By Mr. Fielding :

Q. Do you know of one such contract which has caused a loss to the country ?

A. No, I say that I know they are altered when they go to the Exchequer Court.

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Q. What are ? Most of them are ?

A. I say that contracts are, some of the contracts are.

Q. Will you explain that, please ? What do you mean by 'some of the contracts are' ? Will you be good enough to explain in what manner and under what circumstances ?

A. You have only to refer to the records of the Exchequer Court.

Mr. FIELDING.—It is not convenient for us to have them here to-day.

By Mr. Campbell:

Q. Are they altered in the interests of the country ?

A. No.

By Mr. Lennox:

Q. Take the Farran's Point Canal. I will read a letter so that it will recall the matter to your mind: This is from Mr. E. L. Newcombe, Deputy Minister of Justice to L. K. Jones, Secretary of the Department of Railways and Canals.

'OTTAWA, September 11, 1900.

'SIR,—I have the honour to acknowledge the receipt of your letter of the 6th inst. in reply to my letter of the same date respecting the claim of the Canadian Construction Co., in connection with their contracts for Farran's Point Canal.

'You state that the terms of the Order in Council have been communicated to the company, which has agreed to accept the amount mentioned therein in full settlement of all its claim in the matter, but that neither the communication nor the acceptance are in writing. It appears that the contractors submitted claims for extras or damages sustained owing to delays aggregating $89,457.34—that these claims were considered by His Excellency in Council and that by the Order in Council of February 5 last the Minister of Railways and Canals was authorized to pay on account thereof, $70,307.24. It also appears that the minister has decided to pay this amount and that the company has agreed to accept it. In these circumstances, and having regard to the further facts disclosed by the papers, I am of the opinion that the government must be held legally liable to pay the amount so agreed upon, but upon paying the same I would advise you to obtain from the company a written receipt in full of their claim as submitted. I return the papers.

'I have the honour to be, &c.'

Now the Deputy Minister here advised that having regard to the negotiations that had taken place, and to the facts disclosed in the papers, that the government are liable. You point out this in reply :

'OTTAWA, September 17, 1900.

'SIR,—I beg to acknowledge the receipt of your letter of the 12th inst. in reference to mine of the 17th ultimo regarding the claim for damages by the Canadian Construction Company in connection with the work at Farran's Point.

'When I mentioned what appeared the necessity of learning from the Justice Department the legal liability of the government, it did not occur to me to point out that it was the liability of the government directly under the contract which I thought ought to be known. As I gather from the letter of the Justice Department inclosed in yours to me we are liable because an Order in Council has been passed sanctioning the payment of a certain sum, and the substance of the Order in Council has been communicated to the Construction Company. Now, as I say above, what I desire to know was what was the liability of the government before the Order in Council was passed, that is on the merits of the case.

'I shall, therefore, before deciding as to the course which I should take with reference to your application for payment, get outside advice on the case on the assumption that an admission of indebtedness has not been made by the government.

'You don't say what ground the government had, when the contract was made, for the view that they had the right to use the St. Lawrence on front of Kerr Bros. property as a spoil ground and what it was which convinced them that they had not the right.

'Please answer fully the second paragraph of my letter. You appear to have overlooked it.

I have the honour to be,
&c.'

A. That is right.

Q. In that case were you ever able to get back to the merits of the matter ?

A. No, I was overruled.

By Mr. Bergeron:

Q. By whom ?

A. By the Treasury Board.

By Mr. Lennox:

Q. The Justice Department did not advise upon the liability under the original contract but only upon the circumstances here set out ?

A. Yes. That letter is——

By Mr. Fielding :

Q. We are not investigating the events of five years ago and therefore any remarks made here can only be by way of illustration. I understand from Mr. Lennox's question that these facts occurred five years ago, in the year 1900 ?

A. It was in my report of 1901-02.

Q. The correspondence was dated 1900 ?

A. Yes, 1900.

Q. And it was reported to parliament the following session ?

A. Yes, in 1901-02.

Q. And this is a matter which parliament has been seized of for five years and it has been disposed of ?

A. It has not been disposed of, it has been before parliament.

Q. Well then parliament has had a full report on the fact for five years and in parliament's own judgement it has seen fit to do nothing ?

A. Yes.

Q. That is correct ?

A. That is correct.

By Mr. Lennox:

Q. The fact I want to bring out more clearly is this : You wanted the Department of Justice to advise upon the original liability ?

A. Yes.

Q. Asking that the government on the one hand and the contractor on the other should stand by the contract ?

A. Yes.

Q. They refused to decide on that saying that there had been negotiations between them and that an Order in Council had passed and by reason of that at all events, the government was liable ?

A. Yes, that is the substance of it.

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By Mr. Fielding :

Q. I wish to call attention to the fact that we are not investigating the Farran's Point matter. It is five years old and any passing reference to facts of five years ago with which the committee is not acquainted can easily create an erroneous impression. I think the public and the committee are bound to believe that the facts of five years ago were disposed of to the satisfaction of parliament. I want to ask Mr. McDougall one question ?

A. I understood Mr. Fielding to ask me if there was any case in which the country had suffered by a changed contract.

Q. I did not use the word 'suffered' at all.

A. But you used something equivalent.

Q. Mr. McDougall made a broad statement which he afterwards qualified, that some contracts had been changed ?

A. This is one that has been changed I think.

Q. My own knowledge of the case is from Mr. Lennox's reading of the report. Is it not a fact that the government were advised by the Departemnt of Justice that they were legally liable to pay that claim ?

A. Yes, after the government had changed the contract.

Q. Then you take the ground, Mr. McDougall, that no change can be made in the contract ? Let me give you an illustration : Suppose a contract is made for a given piece of work and as the work progresses the engineer decides that he wants to make some change in the plans, and that with the knowledge and approval of his minister, perhaps with an Order in Council even behind it, he sees fit to revise and determines to so change the plans, as to better carry out the intention of parliament in the judgment of the engineer, and thereby extras are called for. You would not allow that to be done ?

A. Oh, yes. That is not what I complain of.

Q. But it is a changed contract ?

A. Yes. But I mean a change of contract without benefit to the country. That is what I am contending against most strongly.

By Mr. Geoffrion:

Q. Who is to be the judge of what is for the benefit of the country ?

A. I am not asking to be the judge. You have got plenty of ability to see it. You are a lawyer. If you would only stay here and see us get on with this matter it would be better. What I am contending is that it is as great a crime against the country to ask a contractor to give any more to the country than he agrees to give with his eyes open, as it is to deal unfairly with the country.

By Mr. Fielding :

Q. Then you are speaking now of changes that may be made against the interests of the contractor ?

A. Yes. There is no change at all as there was in the Davis contract and yet you gave him more money and he was not taken at any disadvantage. Nobody could say that he was asleep. He knew what he had to do and yet he was to get more money. That is what I am fighting against.

By Mr. Bristol:

Q. Can you cite any specific case or cases of what you are talking about in the way of contracts during the past year or the past two years ?

A. Yes, I have the Davis case.

By Mr. Fielding :

Q. When was that ?

A. Well——

By Mr. Bristol:

Q. That is not the way to deal with the matter. If there are any cases it is in the interest of the country that it should know them. If there is only one case we should know it. It is not sufficient to say there are cases and then come back to the one which we have heard ?

A. I know that, but if we are going to build a work which is estimated to cost $150,000,000, and if we had a contract with a man under which he plainly had to do, certain work for which he was to be paid $1,000,000, he did no more, and he was to be paid $1,000,000 more money for this work would you ask me now if I am to be in that position for the future, that of looking after this $150,000,000 expenditure, having a certain responsibility. Would you ask me to begin this work of doing what I have been doing before, in connection with this other large work, would you ask me to do it with that law which I say no single man will venture to say can be done honestly in the interests of the people of Canada ? Would you as honest men ask me to remain or leave ? I do not desire to stay here, if you do not want me. I come before you and ask that if you do want me to stay here you will change this law under which I was asked to adopt this second Davis contract as a legitimate transaction.

By Mr. Bristol :

Q. What I am trying to get at, is if there are any more instances than the Davis case ?

A. Does not that satisfy you, if there is more than 1,000?

Q. It is quite possible to have a specific instance. You are making a statement of great public interest and I would like to know one specific instance?

A. I did not say that there are a great many, but there are several instances, and Mr. Lennox read a case, and there are more.

Q. We are entitled to it as a matter of courtesy.

A. I hope I am speaking courteously, but I feel strongly.

Q. If there are instances apart from what you have given us, it is a matter of interest to know it; give them to us. I want to get the facts. I want an additional instance, on the line of Mr. Bergeron's question, if you can give a specific case ?

A. If you will let me get them——

By Mr. Bergeron:

Q. Most of the contracts that are given are altered ?

Q. I will not say most of them.

Q. If we are to judge by the supplementary estimates they are. I want to know of any case where the figures of the contract have been changed, if it was less than the money voted by parliament and if it was in the interests of the country to change it?

A. No, I do not remember any. Very naturally the man would be there to look after his own interests.

By Mr. Fielding :

Q. If there are any such cases in the past year let Mr. McDougall produce them. We have no right to investigate them, but Mr. McDougall can bring them here ?

A. Yes.

By Mr. Lennox:

Q. As I understand this matter, we are investigating whether the Auditor General has proper facilities to work out the public accounts in the interests of the country, and he has mentioned this one case. You have been reporting from time to time to parliament in reference to difficulties of this kind and other kinds.

A. Yes.

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Q. Parliament has passed upon them ; at least it has done so in the sense that it has not done anything.

A. That is all I know of.

Q. Give another instance if you can recall it—in reference to the Trent Valley Canal work, the contract with Corry & Laverdure—do you remember that ?

A. I remember the contract.

Q. Do you remember any of the circumstances of difficulty ?

A. There are so many cases happen in a year———

Q. It is a matter of every day experience that usually the contracts provide that the question of extras, we will say, is to be determined by the Chief Engineer ?

A. Yes.

Q. And that was so in that case ?

A. Yes.

Q. Do you recollect that the Chief Engineer instead of deciding himself and being the sole judge appointed two subordinates.

A. Three, I think ; I remember that.

Q. That report was adopted as being equivalent to the report of the Chief Engineer——

A. Yes.

Q.——who was deputy minister as well.

A. Yes.

Q. You objected strenuously ?

A. Yes, I did.

Q. You pointed out that it was contrary to law ?

A. Yes.

Q. You objected as strenuously as you could ?

A. Yes.

Q. You could not get relief ?

A. No.

Q. You were overruled?

A. Yes. I think in that case though, Mr. Aylesworth had the same opinion I had.

Q. Yes, he had. You were overruled and Mr. Aylesworth was to the same extent overruled ?

A. Yes. On the point of law he took that ground.

Q. And extra moneys were paid ?

A. Yes.

Q. Do you recollect that interest was allowed as well ? May be you don't ?

A. Yes, but was not the interest allowed by Act of Parliament afterwards ?

Q. No, the interest was by a side wind, that I will not go into at present. But interest was allowed anyway ?

A. Yes.

Q. That was another instance ?

A. Yes.

Q. But there are reports from year to year—I see there are things of that kind. I mean, every year there is something ?

A. Yes, but I do not want to speak positively about these cases.

By Mr. Bergeron:

Q. We should have a report from your department as to these cases ?

A. Yes.

By Mr. Lennox:

Q. Do you know of any other cases at the moment ? We have had three cases, Corry & Laverdure, Farran's Point, and the Davis contract—very recent——

By Mr. Bergeron:

Q. The Soulanges canal ?
A. Yes.

By Mr. Lennox:

Q. Can you not make an memorandum of some of the most important cases ?
A. Yes I will be glad to do it.

By Mr. Foster:

Q. I did not get it quite clear yet as to your exact contention about these contracts. In the first place, you hold that the parliamentary vote directs into what channel the expenditure shall go, and that you have the right to supervise that in so far as seeing that it goes into that channel and no other ?

A. Yes.

Q. In the case of a public work, when a tender is called for and a contract is finally made and made sure by Order in Council, and the contractor begins work under that, your contention is that that should not be altered ?

A. Yes.

Q. In any way at all ?

A. Oh, well, except you mean so far——

Q. Is it your contention that that should not be altered in so far as that public work is concerned, that is, that the terms shall not be altered so far as putting the money on that public work is concerned ?

A. It should be confined to that particular work, certainly.

Q. You do not contend that if in the course of that work it is found out that subsidiary works are necessary, involving expense, that a contract shall be entered into by the contractor for the completion of such additions.

A. No.

Q. And that he shall be paid ?

A. What I say is, that he ought to be paid for anything he does outside of his contract.

Q. Do you require that an additional contract shall be made ?

A. No, the engineer deals with that when he has ordered these additional things.

Q. He deals with that and you will pay upon the Order in Council ?

A. Yes, and the report of the engineers as to the amount that the contractor should get.

Q. Yes. Where do you come in in the case of an objection to a change in a contract ?

A. Except this.—What I mean is, if he has had to do no new work, and yet there is more money given.

Q. Subsidiary work is new work ?

A. It may be, yes.

Q. You do not object, however, to that ?

A. No.

By Mr. Barker:

Q. The contracts usually provide for extras and subsidiary works ?

A. Yes.

Q. According to the kind of work ?

A. Yes.

Q. There are certain provisions in all contracts as to how they can be done to the order of the Chief Engineer ?

A. Yes.

Q. You allow them ?

A. I have nothing to say.

Q. You object to anything being done outside of that without some authority other than the original contract ? For instance, supposing a building is going up and there are provisions for extras, changes, alterations by the architect, which involve increased work, and the engineer is there to judge of all this work ; but supposing there is to be another building put up by the same man on another lot, you say that should not be done without another contract ?

A. That is not where my difficulty comes in, but with the payments. I say this, as I view it, the contractor has the right to know all that he has to do from the beginning. If the engineer of the government is neglectful or incompetent and does not indicate to the man what he has to do, it would be an outrage to make him do the work and not pay him for it. You cannot hold him responsible for our incompetent man. That is my view of this. Therefore, I would prefer, so far as these things are concerned, that we had what they call the unitary method in the United States, so that we would pay for what we get.

By Mr. Bergeron:

Q. That is not a bad rule.

A. Why should a man come here and be ruined doing anything for the government ?

By Mr. Fielding:

Q. You are now speaking of injury to the contractor not to the public ?

A. Not at all. I say you will do an injury to the public unless you act honestly with everybody, and you will get an effort made among all honest people to try to pay the contractor for whatever he has been obliged to do from any incompetency of the servants of the public. That is my argument.

Q. Are you representing that in some instances contractors have been injured by the government not paying them enough ?

A. I do, yes—I do not know, unless they happen to be friends of the party in power.

Q. It has not been invariably to the disadvantage of the public ?

A. I do not think I am here for the purpose of seeing that the public get money only every time they can scrape the money up for the other man.

By Mr. Bergeron:

Q. You will lose your time if you are doing that, because they are not making it up that way.

A. That is the reason. You will see what happens at any rate, and according to my opinion the fact that a man is badly treated though is the reason why he comes and why he perhaps does not pay much attention to the men who are out of power, but he pays a great deal of attention to the men who are in, no matter what side they are on. I take it, if there is a man usually on the other side, no matter what side it is, or even if he has no side at all, that he should get paid for his work, and I say that even the public will suffer in that case if he does not get paid for all the work he does. That is my notion.

By Mr. Foster:

Q. I yet am thick-headed on that.

A. All right, ask me plenty of questions. Let me explain.

Q. I wish you would tell me a particular case where a public work was contemplated and money voted therefor and the contract entered into, and in which the contract was changed contrary to your views of the rights of the case. Give us one instance so that we can follow you and know where you draw the line as to changing of a contract?

A. As I understand you, you mean where it has been changed in any way, not merely with regard to the work.

Q. You have an objection to the changing of a contract ?

A. Yes, I have a great objection to changes in the contracts where there is no change whatever except in the amount of money the man is to get.

Q. Show one ?

A. I take the Davis contract. I say it was not changed in any single way so far as the work to be done was concerned, but it was changed so far as the amount of money that was to be paid.

Q. That is, your objection to a change of contract, is that a contract specifies its conditions, and when it specifies the payments on these conditions, that when these are all fulfilled, the government gives more money than the contract calls for on those specifications and conditions ?

A. Yes.

Q. That is my point.

A. That is my point.

Q. But if changes are made as allowed in the contract by the engineer or anything of that kind, you do not object to that ?

A. No.

Q. Or changes and conditions which are the recommendation of the engineer or the like of that—you do not object to payment for that ?

A. No.

Q. But for the work which is specified and for that alone, if more money than is specified in the contract is paid by the government, that is what you object to ?

A. Yes.

By Mr. Fielding:

Q. You cite the Davis case as an illustration ?

A. Yes, as an illustration.

Q. Is it not a fact that all the moneys that were paid in the Davis case were paid upon the report of the Minister of Justice, that they were legally due under the contract ?

A. Any that were paid ?

Q. Yes.

A. No, that is not the way the payments were made at all.

Q. I think that is a fair question.

A. Yes it is a fair question.

Q. Is it not fair to say that the payments that were made in the Davis case were made upon the report of the Department of Justice that they were legally due under the contract ?

A. No.

Q. You say no ?

A. I say no, because I say they were not paid, but I was in a position to pay them.

Q. Is it not a fact that when the Treasury Board passed the minute to which you referred the other day, but which is not in your report, being a matter of the previous year, is it not a fact that at that time the Department of Justice made a report that there was an obligation to Davis to that exent?

A. Yes.

Q. Therefore, what the board proposed to do at that time although it was not ultimately carried out, was done under the report of the Minister of Justice as the sum due to Davis under the contract.

A. Yes.

By Mr. Lennox:

Q. I want to call your attention to the order of the Treasury Board. It was made on November 13, 1902.

A. Yes.

Q. Do you know that ?

A. I have a copy here myself.

Q. Is it not a fact that on that same day the Department of Justice advised the Treasury Board or advised the department—I suppose it would be the board—that they were legally bound to pay the money ?

A. I do not know that.

Q. Then, I will read a letter from Mr. Newcombe.

By Mr. Fielding:

Q. What money are you speaking of ?

By Mr. Lennox:

Q. The claim made by Davis for lighting and energy, and his contention was between the department and the Auditor General as to whether that money should be paid. The Auditor General thought the money should not be paid. The matter was submitted to the Department of Justice as to the question of legal liability, and the Deputy Minister of Justice wrote :

' Ottawa, November 13, 1902.

' Sir,—I have the honour to acknowledge receipt of your letter of the 5th instant,' and so on—part of it I need not read.

' And you ask me to advise the Treasury Board upon certain points as to which my opinion is desired. The points are numbered (a), (b), (c), (d), (e) and (f), and I will take them up seriatim, appending to each a statement of my views thereon.

' (a) Can the Chief Engineer direct Mr. Davis during any day or week or other period named by him, to shut off the current from all the lamps on the canal ? '

That was one of the points that you were discussing with the department as to whether the department had power to prevent him getting the whole 250 lights. The Deputy Minister says :

' I am of opinion that he can so direct. Under the lease to Mr. Davis of June 25, 1898, he undoubtedly could do so. The contract of October 19, 1900, varied the provisions of the lease only as is specified or provided thereby, and so far as this point is concerned all that that agreement specified or provides is that it is agreed between the Crown, represented by the minister, and Mr. Davis, that the latter shall under the lease supply and work electric direct current arc lights not less at any one time than 250 lights nor, without the consent of the lessor, more than 270 lights. Under the lease itself no minimum or maximum was fixed, but the lessee was bound to provide any number of lights which the Chief Engineer deemed necessary. The Chief Engineer might require any number great or small, or he might require none. I am of opinion that under the lease as varied by the agreement it is still competent for the engineer to dispense altogether with lights for any period named by him.'

A. I never saw that.

Q. Yes, but I remember we got an examination of the papers last session and we eliminated this from the bundle.

' I may point out,' the letter goes on, ' that if the proper construction,'—that is one of the points, that he could give more or less, as he thought fit. This is sustaining your contention.

A. Yes.

Q. You never knew that ?

A. No.

Q. That was the same date as the decision was made. Then, the next point to which I have been calling your attention is that Mr. Aylesworth pointed out there is a variation between the lease on the Order in Council which invalidated the lease, that the lease could not go further than the Order in Council.

'I may point out,' the Deputy Minister says, 'that if the proper construction is what Mr. Davis contends for, it is clear that the Minister of Railways in entering into the contract of October 19 exceeded the authority under which he was, and expressed himself to be, acting, for the Order in Council of October 9, 1900, plainly intended that lights should be paid for only "for each night during which light is required and supplied," and the contract, upon proper proceedings being taken, would in my opinion be reformed by the court accordingly.' You never knew of that letter ?

A. No.

By Mr. Fielding:

Q. You have a certain minute of the Treasury Board which was passed in relation to the Davis matter ?

A. Yes.

Q. Subsequently, by understanding with you, that minute was withdrawn and cancelled; is that correct ?

A. Yes.

Q. Well, it has further been referred to in your reports and in the discussions of this committee.

A. Yes, here it is (producing the document).

Q. It was referred to just now by Mr. Lennox.

A. Yes.

Q. You have got a copy which you obtained from my department ?

A. Yes.

Q. Would you read it, so that we will have it on record ?

A. Yes. (Reads.)

Extract of Minute of Treasury Board meeting held at Ottawa on the 13th day of November, 1902.

Railways and Canals :—

The board had under consideration a letter under date of July 2, 1902, from the Secretary of the Department of Railways and Canals to the Secretary of the Treasury Board, informing him, by direction, that objections had been raised by the Auditor General to the issue of a cheque in favour of Mr. M. P. Davis under contracts entered into with him for the lighting of and provision of electrical energy on the Cornwall canal as applied for by the Department of Railways and Canals ; inclosing the several papers in the case and requesting that a ruling of the board be obtained on the point whether the objections of the Auditor General should be sustained or overruled.

The objections of the Auditor General were taken under subsections (a) and (c), of section 32 of the Consolidated Revenue and Audit Act, and the board had under consideration a letter under date of July 15, 1902, from the Acting Deputy Minister of Justice, stating that the Minister of Justice is of opinion that there is parliamentary authority in the Appropriation Act for the payments as to which the Auditor has refused to certify for the issue of cheques; reports from the Deputy Minister of Finance unler date of July 15, October 17 and November 13, 1902, submitted in accordance with said subsection (c); and letters from the Auditor General, the Deputy Minister of Railways and Canals and the Deputy Minister of Justice in the matter subsequent to July 2, 1902, as well as the correspondence transmitted with the letter above referred to from the secretary of the Department of Railways and Canals.

The board, after fully considering the papers and correspondence in the case and the advice of the Department of Justice, are of opinion that the Dominion is legally liable to pay Mr. Davis under the contracts with him for the supply of electric light and energy on the Cornwall canal the amounts for which application has been made by the Department of Railways and Canals to the Auditor General. They, therefore, direct that the objections of the Auditor General to the payment of the amounts so applied for, and now before him for his certificate, be overruled and that such amounts be paid.

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The board observe that the Auditor General has raised questions as to the economy of the arrangement made between the government and Mr. Davis. These questions should be the subject of inquiry as to the future, but they in no way affect the obligations of the government to make payment for the services rendered under the existing contracts.

(Sgd.) J. M. COURTNEY,
Secretary.

Extract from Minutes of Treasury Board meeting held on seventh day of March, 1903.

Railways and Canals—

With reference to the Minute of the Treasury Board of the 13th November, 1902, overruling the action of the Auditor General in the case of the claim of Mr. M. P. Davis for electric light and energy on the Cornwall canal, such minute not having been acted upon and steps having been taken, immediately after the passing of such minute, under arrangements with the Auditor General, for the further inquiry into the whole matter, the board direct that the said minute be, and the same is hereby cancelled, and the whole subject left open for further consideration.

(Sgd.) J. M. COURTNEY,
Secretary.

By Mr. Lennox:

Q. Now, the overruling that you have just read points out on the 13th November that they have had the advice of the Department of Justice and are still of opinion that the government is legally liable to pay.

A. Yes, of course, that is what——

Q. Notwithstanding the letter that I have just read which is of the same date.

A. What they really did say in the statement is——

Q. They say then in the minute just read :—

'The board, after fully considering the papers and correspondence in the case and the advice of the Department of Justice, are of opinion that the Dominion is legally liable to pay Mr. Davis under the contracts with him for the supply of electric light and energy on the Cornwall canal the amounts for which application has been made by the Department of Railways and Canals to the Auditor General.'

That is, the full amount, of course.

A. Oh, yes, the full amount belonging to the expired time.

Q. The full claim that was made ?

A. Yes.

Q. (Reads.) 'They, therefore, direct that the objections of the Auditor General to the payments of the amounts so applied for and now before him for his certificate, be overruled and that such amounts be paid.'

A. Yes.

Q. That was their judgment ?

A. Yes.

By Mr. Fielding:

Q. For the amount up to date ?

A. Oh, yes, up to date.

By Mr. Lennox:

Q. They were claiming up to date then for the 250 arc lights and the full amount of energy ?

A. Yes.

Q. (Read). 'The board observe that the Auditor General has raised questions as to the economy of the arrangement made between the government and Mr. Davis. These questions should be the subject of inquiry as to the future, but they in no way affect the obligations of the government to make payment for the services rendered under the existing contracts.' Can you account for that in any way that the board made that ruling, reciting the advice of the Minister of Justice, made that ruling with that letter before them that I have just read ? Can you account for it in any way ?

A. I cannot understand it.

Q. In order to make this point clearer, I want to refer to the letter of Mr. Aylesworth which was in the Auditor General's Report on page 13.

A. Now, that bears on my case.

Q. The Auditor General takes outside advice——

A. That I think bears on the case I am citing.

Q. This letter from Mr. Aylesworth was printed in your report.

A. Yes.

Q. The letter says :—

TORONTO, June 25, 1902.

'DEAR SIR,—I have been out of town this week until to-day but on returning find your favour of 23rd inst., inclosing the file of papers connected with this contract and copy of the lease of June 25, 1896.

'I have examined this lease carefully, but find in it little or no assistance upon the point in question. I find, however, in again examining the Order in Council of October 9, 1900, language which seems to make the matter clear.

'You will observe on reference to this Order in Council that the lights are to be 'paid for at 30 cents per lamp for each night during which light is required and supplied.' If this language were incorporated into the contract itself, it would seem to me reasonably clear that payment could not be asked in respect of any nights during which light was not 'required and supplied.' Unfortunately the contract of 1900 has not, in terms, followed the language of the Order in Council in this respect, but I suppose it may be said that the Minister of Railways and Canals had no authority to enter into contract other than that which the Order in Council authorizes ,and in any event it would seem the just and sensible interpretation of the contract as it stands, that where the obligation of the contractor under the original lease of 1896 was to supply and work electric lights at such points along the canal, and in such number as the Chief Engineer should from time to time deem necessary, running all night whenever so required, at '30 cents per light per night,' payment was to be made only in respect of such number of lights as were actually required by the Chief Engineer and supplied by the contractor.'

Mr. FIELDING.—As Mr. Lennox has not read the last paragraph of Mr. Newcombe's letter, I will read the whole of the letter and ask that it go on record. The letter is as follows :—

DEPARTMENT OF JUSTICE,
OTTAWA, November 13, 1902.

SIR,—I have the honour to acknowledge receipt of your letter of the 5th instant, with which were inclosed the papers relating to the appeal made to the Treasury Board by the Department of Railways and Canals, representing the objection raised by the Auditor General to the issue of cheques applied for by that department in favour of Mr. M. P. Davis, for services in the lighting of, and the provision of electrical energy on the Cornwall Canal. With the papers is a report by yourself to the Treasury Board, dated July 15 last, giving a synopsis of the facts of the case, and you asked me to advise the Treasury Board upon certain points as to which my opinion is desired. The points are numbered (a), (b), (c), (d), (e), and (f), and I will take them up seriatum appending to each a statement of my views thereon.

APPENDIX No. 3g

(a) Can the Chief Engineer direct Mr. Davis during any day or week or other period named by him to shut off the current from all the lamps on the canal ?

I am of opinion that he can so direct. Under the lease to Mr. Davis of June 15, 1898, he undoubtedly could do so. The contract of October 19, 1900, varied the provisions of the lease only as is specified or provided thereby, and so far as this point is concerned all that that agreement specifies or provides is that it is agreed between the Crown, represented by the minister and Mr. Davis, that the latter shall under the lease supply and work electric direct current arc lights not less at any one time than 250 lights, nor, without the consent of the lessor, more than 270 lights. Under the lease itself no minimum or maximum was fixed, but the lessee was bound to provide any number of lights which the Chief Engineer deemed necessary. The Chief Engineer might require any number great or small, or he might require none. I am of opinion that under the lease as varied by the agreement it is still competent for the engineer to dispense altogether with lights for any period named by him.

'I may point out that if the proper construction is what Mr. Davis contends for, it is clear that the Minister of Railways in entering into the contract of October 19 exceeded the authority under which he was, and expressed himself to be, acting, for the Order in Council of October 9, 1900, plainly intended that lights should be paid for only "for each night during which light is required and supplied," and the contract, upon proper proceedings being taken, would in my opinion be reformed by the court accordingly.

'(b) Can the Chief Engineer direct Mr. Davis to operate during similar periods more than one lamp, but less than 250 lamps ?

'I think that he can so direct, but that if fewer than 250 lamps are required the minimum number of 250 must nevertheless be paid for, unless as has been the case heretofore, the lessee is not in a position to furnish that number.

'(c) Can the Chief Engineer direct Mr. Davis to operate the lights all night or for any shorter time each night that he may deem necessary ?

'I think he can so direct.

'(d) Can the Governor in Council direct Mr. Davis to install and operate, should they be required, more than 270 lights, or by what method should this result be effected ?

'I am of opinion that the lessee may be required to furnish more than 270 lights at the price stipulated. The method of so requiring him would be by notice under Article 22 of the General Conditions to which the lease is subject.

'(e) What liability attaches to the government for payment for the supply of electric power for the working of the locks during the time when navigation is closed and the locks are not used ?

'$65 a year is the payment per horse-power per annum for however long or short a time during the year the power is used, but in my opinion the minimum rental is to be calculated upon a basis of 400 horse-power if that quantity is available.

'(f) How is the contract affected by the failure on the part of the contractor to carry out the terms of his contract of October 19, 1900, to supply by May 1, 1901 (extended to November 15, 1901), not less than 250 arc lights ?

'I am of opinion that this failure of Mr. Davis, if he was duly notified of the requirements of the department, and called upon to supply them, rendered him liable to a forfeiture of his lease for breach of condition. A less number than 250, however, having been furnished and accepted by the department, I am of opinion that they must be paid for.

'I have, &c.,

'(Sd.) E. L. NEWCOMBE.

'*D.M.G.*'

By Mr. Bergeron:

Q. Do you remember a case, particularly I want to give this as an example, where a contract was given for dredging, it was for $150,000 by tender. There were difficulties

in regard to the tenders, that may bring the case to your mind, where two or three of the tenderers had amalgamated and the contract was ultimately given after all to the highest tenderer. Then it was enlarged to work amounting to $750,000 without any more tenders being given. What do you think of work like that ?

A. I do not remember the circumstances.

Q. That was done in the port of St. John, the contract was given in 1897 or 1898, and was enlarged afterwards to a big contract to some $750,000. I am asking you your opinion on the principle of the thing ?

A. I would rather not give an opinion.

Mr. FIELDING objected that it was unnecessary for purpose of establishing the principal to make a statement purporting to be a statement of fact which might be very damaging.

By Mr. Geoffrion:

Q. The Auditor General spoke a moment ago and gave his opinion about contracts which should not be changed after the policy of the government has been established, in granting any contract, except when it was in the interests of the country to do so ?

A. That is what I say.

Q. I might say that I am now taking a case, I say that the department has taken certain steps in that respect and I am asking the Auditor General whether he remembers that particular case I alluded to ?

A. I do not remember, but I would be glad to look up the facts.

Q. I wish you would. That is in the case of a contract to Connolley at the port of St. John, New Brunswick ?

A. Yes, I will look it up.

By Mr. Fielding:

Q. Mr. Bergeron, not only with reference to that matter, but with reference to contracts generally, frequently used the expression that the contracts should not be changed except it was in the interests of the country ?

A. Yes.

Q. Who, in your judgment, is the proper person to judge what is in the interests of the country ?

A. It is generally a pretty self-evident thing.

Q. But, if it is not self-evident, if two human beings differ as to what is in the interests of the country, who ought to decide ?

A. I think the Engineer ought to be the man.

Q. The Engineer should be the judge ?

A. I think he is.

Q. You do not think the government has anything to do with it ?

A. Of course they ought to be the judges as to whether they will build the Grand Trunk Pacific or not, that is not for the engineer, but I mean ordinary work that is being constructed, it appears to me that the engineer would be the person who ought to decide in that case.

Q. The question of the shape of a bridge or a canal bank, or anything of that kind would be a question for an engineer, another question which might arise would be one of law, and that should be decided by the legal advisor, but neither of these cases are as broad as the general interests of the country, but taking in all things, having had engineering testimony where it is an engineering point, and having had legal advice where it is a legal question, having all these, who is to judge what is in the interests of the country ?

A. Oh, I should think that the government would naturally be the persons to judge if they have the money voted.

Q. Except in that case you mentioned they would be the proper persons to judge?

A. Yes.

Q. Mr. Barker put a question a moment ago, he was trying to ascertain the difference between the kind of contract that might be changed and the kind of contract that might not be changed, and he gave you this question which I think was an unfair question, he said : 'If money is not voted to put up a public building or a postoffice and the contract is made, and if the government without any further authority proceeds to extend that contract so as to give the man the right to put up another public building, in or about the same place, that is the same thing, you cannot object to that.' That was Mr. Barker's question ?

A. I would not object to that, not from my point of view.

Q. Well, I would ?

A. You would ?

Q. But what I want to ask you was, you are not aware of any such case as that are you ?

A. No, I am not aware of any such case. Perhaps we do not understand one another. I say I have nothing to do with a case where under the appropriation, the government has made a contract with a man, the man does his work, but if the government wants to make an addition to the work, the government takes the proper means of getting the work done. It is subsidiary, I do not think we are confined to doing that work, if they alter it during the time, but what I am objecting to is plainly within my right.

Q. As an official dealing with the business it is your duty to see that the contract has not been altered at all so far as certain things are concerned. I do not mean to say that you have changed it, after the work, that is the case with the contract in Montreal, because you added to it, to the work that is under contract, you pay a man what you agree to pay him, that seems to me very simple and plain, for doing that work.

Q. And if for any reason the government should say that in their judgment the public interests require an additional payment to him ?

A. An additional work, not an additional payment.

Q. I will put it in your own way then, even supposing I am going to take the very worst form, if for causes satisfactory to the government, causes which in their judgment call for an additional allowance to that man, if they have an appropriation by parliament to do it——

A. Yes.

Q. And if they wish to do that, subject to their responsibility to parliament, you think they should not be allowed to do that ?

A. I think they should not be allowed to do it, unless you give me the circumstances that justify it. I would like you to quote an instance where it is possible——

Q. I do not think it is possible, I am frankly telling that I am quoting the worst case under which the government could do it.

A. I think we will leave that to the new Auditor General if you do not object.

Q. You read from a very interesting report of the sub-committee of the Select Committee of the Imperial House of Commons, a passage——

By an hon. member:

Q. What date is that please ?

Mr. Fielding.—It was ordered by the House of Commons to be printed on July 7, 1903. What I am going to read now Mr. McDougall himself read, but I merely want to call attention to the fact that the passage which Mr. McDougall read and emphasized had to do with the question of examination and scrutiny, and entirely so?

A. Yes.

Q. And the conclusion that you had reached when something diverted us into another subject was as follows :—

'Your committee consider that this retrospective examination both by the Comptroller and Auditor General and by the Public Accounts Committee has been well done, and they recommend the Public Accounts Committee even more than in the past, to encourage the Comptroller and Auditor General to scrutinize and criticise improper or wasteful expenditure, and to indicate where censure is in his opinion required.'

Have you not under the present Audit Act full power to do all that the committee refers to there ?

A. Yes.

Q. Therefore all that that committee recommended to be done as the work of the Auditor General can be done under the present Audit Act ?

A. Yes, except that there is this conclusion that can be taken from that that it is only a question of policy on which the government is invulnerable. That is to say, that the cases with which they can deal, as I take it, they cannot as long as the policy is carried out they cannot pay $2 for a thing that cost $1.

Q. Does that report deal with the question of whether they pay $2 for what they should pay $1 ?

A. No, it does not.

Q. Does it not deal entirely with the question of matters coming under the Audit Act entirely; with the power to scrutinize and report.

A. It does not. I have read that mainly for the purpose of showing that the government cannot pay anything more than a thing is worth, that the government can do all that parliament says they are to do, that is to say determine the work, but after they establish the mode of conducting the business the Auditor General has nothing whatever to say with regard to it. I might give you one instance where I might consider that a thing was expensive, but it was not my business to consider it, but I have to pay for it, whatever it is. That is my main reason for reading this report.

Q. But that is not dealt with in that report ?

A. Well, it is, as I take it, that is reading between the lines.

Q. Oh, I see, it is between the lines, not in the report ?

A. Yes, sir, I am reading between the lines and you are quite capable of reading between the lines, no man is more capable of doing so, I mean in a true and proper sense.

By Mr. Bergeron:

Q. You have been overruled very often by the Treasury Board ?

A. Yes.

Q. Were there always good reasons given for the overruling ?

A. I think you ought not to ask me—of course I thought they were not.

Q. But the reasons were always given were they ?

A. No reasons were given you see.

Q. Did you bring down all the matters connected with the Sorel bridge ?

A. Yes, and the Farran's Point Canal also.

Q. Is the information all here ?

A. Yes, it is here.

Q. Will you leave it here for the next meeting and also all information in connection with the St. John harbour, the Connolly contract to dig in St. John harbour in 1897 or 1898 ?

Mr. Fielding.—In connection with the Sorel bridge matter, I am authorized to say that the Order in Council was based upon a report by Mr. Schreiber and that there could be no Order in Council of that nature made without a report from the proper officer ?

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A. I have the Order in Council here and I will read it if you like.

Q. Is it or is it not a fact that there was a report from the Chief Engineer of the department ? That is the question here. Of course it was before Mr. Emmerson became minister, but the Order in Council was founded on a report by Mr. Schreiber?

A. The Order in Council is dated January 16th, 1900, and it is as follows :—

'On a memo. dated January 6th, 1900, from the Minister of Railways and Canals, representing that under date of 6th January, 1900, the Chief Engineer of the Department of Railways and Canals, has furnished a report showing the completion of the bridge over the river Richedieu at Sorel, on the line of the South Shore Railway towards the construction of which a subsidy of 15 per cent upon the amount expended thereon not exceeding $35,000, was authorized by the Subsidy Act of 1899, chapter 7, a contract having been duly entered into with the company for this work.

'The minister further represents that an examination has been made of the books and accounts of the company, with the view to ascertain the cost of the said bridge, named by the company to amount to $243,148.52. Of this amount, however, the sum of $25,374.79 applies to expenditure upon the approaches, and this has been admitted by the company, reducing the amount applicable to the bridge proper, to $217,773.73. From this, however, should be deducted certain sums expended for the purchas of land, &c., and the cost of the bridge is set down by the officer of the Department of Railways and Canals who examines the vouchers, at $205,192, to this the Chief Engineer states that he considers it right to add a charge of $5,000 for superintendence which has been deducted by the said officer, thus making the total cost $210,192. Of this amount the subsidy of 15 per cent aggregates $31,528.80, which sum the Chief Engineer stated appears to have been earned. He adds that the vouchers of expenditure produced, and certificates of the company's engineer have been sworn to as correct by the persons giving them.

'The minister recommends that authority be given for payment to the company of the said sum of $31,528.80.

'The committee advise that the requisite authority be granted.'

That is signed by J. J. McGee, C.P.C.

Mr. Fielding.—The minister referred to in the Order in Council, will be the minister of the day, whoever he was.

By Mr. Barker:

Q. The engineer says he does not certify as to the cost of the bridge, except from the documents and vouchers of the company ?

A. If you will allow me then, this is my point, I wrote to him on the 22nd of February, 1900, and said :—

'In further discussion of the subsidy of the Sorel Railway bridge, I would like you to affix what you consider reasonable rates to the quantities given below, for work similar to this bridge :—

1. First class bridge masonry, 1,535 c.y.
2. Concrete in foundations, including timber and iron in caissons, 1,425 c.y.
3. Timber in foundations, 75,000 feet B.M.
4. Piling in foundations of piers and rest-piers, 21,600 l. ft.
5. Rest-piers, total quantity including timber, stone filling and iron, 1,800 c.y.
6. Rip-rap around river-piers, pivot-pier and rest-piers, 5,899 c.y.
7. Earth excavations in foundations, 500 c.y.

Please let me have these figures at your early convenience.'

Then in reply Mr. Schreiber says under the date of Feb. 26th, 1900.

'I have the honour to acknowledge the recipt of your communication, of the 22nd instant, asking, in connection with the subsidy granted to the South Shore Railway Company, in aid of the construction of the bridge erected by that company across the River Richelieu at Sorel, that the department affix what it considers reasonable rates to the quantities given in your letter.

'In reply, I inclose herewith a copy of the said quantities, to which I have applied what I consider fair and liberal prices as desired by you.'

That is signed by Mr. Schreiber, the Deputy Minister of Railways and Canals. The total estimate of the value of the work of construction of the bridge based on the quantities I gave him was $98,171.75.

By Mr. Belcourt:

Q. Did the contract for the Sorel bridge contain a clause that the Chief Engineer of Railways and Canals should be the final judge as to the amount earned and that his certificate would be the foundation as to what the contractor had earned ?

A. That is the general requirement of the Subsidy Act, don't you see, that is to say that the prices are reasonable, fair and reasonable.

By Mr. Bergeron:

Q. And that the government should not pay any money except on the report of the Chief Engineer ?

By Mr. Belcourt:

Q. I am speaking of the contract.

A. I do not remember the exact provisions of the contract in this particular case.

Q. But the contract said that the Chief Engineer was the final arbitrator and the sole and only judge as to the value of the work ?

A. I think they say in the Order in Council that the vouchers of expenditure and certificates of the company's engineer were the basis upon which the cost of the bridge was fixed.

Q. I am asking you a plain question, if you cannot give me a plain answer say so?

A. Certainly I cannot tell you, I am saying so.

By Mr. Fielding:

Q. My main point in referring to that is to show, as Mr. McDougall himself has shown that there was a report from the Engineer of the Department of Railways. But whether that was a wise report or not is not the question at issue. You thought Mr. McDougall that the amount called for in that case was too large ?

A. To be sure.

Q. And after further discussion of the matter there was a less sum paid ?

A. Yes.

Q. In that case was there any overruling of the Treasury Board ?

A. No.

Q. There was no overruling by the Treasury Board at all ?

A. No.

Q. And by virtue of the operation of the machinery of the Audit Act there was a reduction in the sum paid ?

A. Yes.

By Mr. Bergeron:

Q. What was the amount paid ?

A. $15,000.

Q. Instead of $31,000 ?

A. Instead of $31,000.

By Mr. Fielding:

Q. Under the present machinery of the Audit Act you were able to take exception to that excessive payment and your objection prevailed ?

A. Well, my idea was that in that case I had the good fortune of not going before the Treasury Board, that is all.

Q. I would like to have Mr. McDougall's answer down there that in this case he had the good fortune not to go before the Treasury board ; I think that answer shows some of the spirit that Mr. McDougall has imported into this question.

A. No, I do not think so. I do not think I have ever been sustained by the Treasury Board. I may have been once.

By Mr. Piché:

Q. That is what you are complaining of ?

A. That is what I am complaining of, certainly.

By Mr. Fielding:

Q. In this case you, yourself, took exception to that claim and the smaller sum was paid ?

A. Yes.

Q. And all that was done under the present machinery of the Audit Act ?

A. Yes.

Q. Therefore no amendment to the Audit Act is needed to deal with this case ?

A. No.

By Mr. Bergeron:

Q. But you did not take that to the Treasury Board to deal with it ?

A. I did not take it to the Treasury Board, I will venture to say if——

By Mr. Fielding:

Q. Did you discuss it with any members of the Treasury Board ?

A. Not that I remember, I may have done so if I met any of them I would probably.

Q. If you were afraid of the Treasury Board why would you discuss it with them?

A. Oh, Mr. Fielding, you know I am afraid of the Treasury Board, and so would any other man be under the circumstances. The Treasury Board does what it would naturally—it is composed of members of the government and they know there is no appeal practically, only to the House, they govern everything. What could you do ?

Q. Why do you say there is no appeal ? Does not the machinery of the Audit Act provide an appeal ? Do you not send all the documents to the High Court of parliament ?

A. They go to the High Court of parliament, but for whatever reason——

Q. That is the business of parliament.

A. Well, I know it is, but they do not do their business that is all.

Q. Let us put Mr. McDougall's answer down, it is in the record now that parliament does not do its business.

A. Well, I know it is in.

By Mr. Bergeron:

Q. And because parliament does not do its business, that is the reason why we are spending to-day double the amount of money spent a few years ago?

By Mr. Piché:

Q. You are the only man in Canada that is doing his duty then ?

A. Well, I do not say that, but there are a good many who are not doing theirs. That is my opinion.

The committee adjourned.

HOUSE OF COMMONS,
COMMITTEE ROOM 32,
WEDNESDAY, July 5, 1905.

The Select Standing Committee on Public Accounts met here this day at 11 o'clock, a.m., the Chairman, Mr. Colin McIsaac, presiding.

Mr. BERGERON moved—'That the evidence taken respecting the suggested amendments by the Anditor General to the Audit Act be reported to the House for the information of the same, and your committee recommends that this evidence be printed.'

Mr. FIELDING.—In case it should be not convenient to have any further inquiry into these matters any references that may have been made by Mr. McDougall to these transactions, as to the merits of the question, are not to be understood as admitted at all. I do not question, at all, Mr. McDougall's intention to state the matter frankly, but any man presenting his own side of the case is apt to state it in a way that somebody else could take exception to it, and if we were to investigate these facts or alleged facts, we would be obliged perhaps to call other witnesses. But that is not the business which we are investigating—the Davis case, or the Sorel Bridge case—these are all matters that have been before parliament in past years, and they have only been alluded to here for the purpose of illustrating what Mr. McDougall thinks should be amendments to the Audit Act. I wish it distinctly understood that if we are to allow that evidence to be presented to parliament in the way proposed by Mr. Bergeron, it is not to be presumed that the statements on the merits of the case are accepted as they are there, but if there had to be further investigation we would challenge some of those statements. As, however, we are not investigating the statements in question it will not be necessary to go on and call witnesses. The farran's Point, the Sorel bridge, and the Davis cases are all matters of history of former years which we have no power to investigate now, unless a special investigation be ordered by the House. What I want to guard against is that when the committee's report comes before the House that it is to be assumed that the statements made by Mr. McDougall cover the whole turth.

Mr. BERGERON.—I understand that what the Auditor General has said is by way of illustration. The statements he made were to illustrate his thesis.

Mr. FIELDING.—I have no objection whatever to the printing of the evidence. The point I desire to make is that it is not to be assumed for a moment that the report which the committee will present contains all the facts simply because it contains the views of Mr. McDougall, by way of illustration, as to amendments to the Audit Act. The point I want to guard against is treating this as evidence as to the facts in each case.

Mr. GEOFFRION.—There is no question about discrimination of that kind. Certain facts were alluded to which would not be admitted in any court of justice. We cannot investigate just for the sake of illustration. I would object to having Mr. McDougall's statement printed because it might be misleading to the House. The House would be in possession of statements which have not been investigated. I think the proper thing would be if any member wished to investigate a particular matter, for him to make a motion in the House, either in regard to the Sorel bridge case or anything else. Then we will investigate. But if only the testimony so far given be printed, the House will simply be in possession of Mr. McDougall's statement and we will have to explain the matter and discuss again all these things. I do not think it is a proper way to proceed at all. I think the statements made should simply be taken as the opinions of Mr. McDougall.

Mr. BERGERON.—That is understood.

Mr. FIELDING.—The idea of Mr. Geoffrion and myself is exactly the same and I would like his expression of opinion to go with my own as part of the record of this committee. It will show to the House that these statements of fact are not admitted but are accepted as an illustration to the extent of their value.

Mr. BERGERON.—I think that is understood.

Mr. FIELDING.—I have no objection under those conditions.

Mr. BERGERON agreed to change the form of his resolution and it was then submitted to the committee in the following form :—

'That the statements and suggestions of the Auditor General respecting amendments to the Audit Act, including this day's proceedings, be reported to the House with a recomendation that the same be printed.'

Objected that the report should not be presented until the Auditor General has completed his statement.

The motion was put and lost by a vote of 14 yeas to 25 nays.

Mr. McDOUGALL.—I have put the remarks that I thought it was advisable to make with reference to the last meeting's evidence, in writing, so that I would delay the committee as little as possible.

Since the last meeting of this committee I have considered the effect on what, as I understood and hoped, was the main intention with regard to the last three meetings—to determine whether profitably amendments might be made to the Audit Act and other laws of procedure and control. I must necessarily refer to what was then said by members of the committee, but I trust without giving offence.

Mr. Bristol expressed a strong desire to get instances of transactions similar to the Davis case and which had occurred since. Now, if you will put yourselves in the position which an Auditor General would naturally assume at this juncture, you will see that he would desire to keep down political bitterness, to get both parties to agree that the political evil has existed in the past, no matter which party ruled, and that in the interests of the country an effort should be made to prevent it as far as possible for the future. I have not been able to see Mr. Bristol but I have written to him to explain that every case of irregularity which occurs in the accounts of any year is fully set down in the report of that year, so that if he looks in the report last published—that of 1903-04, he will see everything that appeared to me to be irregular in those accounts.

With reference to the question put to me by Mr. Fielding on the Sorel bridge subsidy investigation :

'Were you not able under the existing law to save the country from improper expenditure in this case'? I have to criticise more what was intended to be conveyed in the question and answer, as I understood it, than what was really said. As I conclude, Mr. Fielding expected that there would be the inference in the mind of each member of the committee: 'There is nothing to complain of.' Now my conclusion is quite different. Let me remind you that if this money was saved it was because the application came through the hands of an official who was practically an ignoramus on the subject which of all was most necessary to detect the error which existed, that is on engineering.

Now, I do not want to attach any insinuation of intentional wrongdoing to Mr. Schreiber when I say that I cannot bring myself to believe that he was not fully aware that the bridge did not cost more than $100,000 when he put in papers from which council was led to believe that it cost $210,000. Then, if he did not know it, the work having been so simple a piece of engineering and he having a competent staff of engineers, and the amount to be paid by the government so considerable, he should have found out. I say then that the Chief Engineer, being the man who in every way is most capable of easily and surely preventing the country from losing its money, should have the plainest instructions that his business is not how not to do Canada's work, but how to do it. I hope then that Mr. Fielding will see that when

an official who gets his salary from the country and is for a month not sure whether sixteen thousand dollars which he knows the country ought not to pay will have to be paid or not and his attention, which otherwise would be given to other useful employment, is withdrawn from it, it seems pretty clear, might I say manifest, that Mr. Fielding will see ground for further considering the advisability of calling upon special skill to devote itself everywhere fully to saving the money of those who really employ it.

Mr. Belcourt came into the room late in the third of our meetings and asked me whether it was not part of the law of the Subsidy Act under which the Sorel bridge money was paid that it rested entirely with the Governor in Council to determine how much was to be paid. I do not so interpret the subsidy provision which seems to be the same in all the Subsidy Acts. I know that it would be a provision which, if it is legal, is contrary to the 33rd section of the Audit Act. The provision, if its interpretation is what Mr. Belcourt thinks it is——

By Mr. McDonald (Pictou):

Q. Let me ask you did you ask the opinion of the Department of Justice in regard to the legal point you are now discussing ?

A. I did not. I do not ask the opinion of the Department of Justice. I have no authority, I was told by the Department of Justice years ago.

Q. Did you get any independent legal opinion ?

A. About this ?

Q. Yes.

A. No.

Q. You did not ?

A. No.

Mr. FIELDING.—I think it will be well to let Mr. McDougall finish his statement. Any gentleman who desire to ask questions can take notes as he proceeds and put the questions to him afterwards.

WITNESS.—To proceed with my statement :

The provision, if its interpretation is what Mr. Belcourt thinks it is, has never been so regarded by this office and has never been so acted upon by the government.

The Governor in Council by himself has no means whatever of determining what ought to be paid. The Governor in Council has something higher and more important to do than add up accounts and make little calculations.

It seems plain that if the requirements of the Audit Act are good in other cases they are good with reference to railway subsidies and ought to be made to apply which could be brought about by saying in these Subsidy Acts that they are to apply, that is if what has been done has repealed these provisions for this purpose.

I think that the part taken at the committee during its last session illustrated very clearly the difficulties which arise from having very large committees when the purpose is to dispassionately arrive at the best procedure to adopt to secure right methods for future conduct.

No doubt these two gentlemen were fully engaged with other committee work or with legislative duties during the two previous sittings of the committees, but if they had been present at the earlier sittings, their objections would have been then met, or it would have been found that they were unanswerable. One can see how a committee of 80 may go on to the end of a session with an attendance of 78, with the first half of the last meetings of the session devoted, at the instance of the 79th member, to extending the number of cases to which inquiry ought to be directed and the last half, at the instance of the 80th, to determining how harmless they were.

I am not for a moment drawing attention to the advantage or disadvantage of either of these proceedings, I only say that it is not conducive to what the committee had in view when I was called as a witness. Is it not necessary to now adopt Mr. Roche's suggestion when the end of the session is so near? Is it not now plain that

the Audit Act amendments ought to be considered uninterruptedly by a small committee every member of which will attend each meeting until the close of the work ?

Mr. Foster asked me to make an explanation of my views about contracts.

I dealt with one phase of the system as practised. What occurred with the Davis Cornwall Electric Energy and Light Contract by saying that a contract made before the work was begun should be unaltered to the end if it was not found unnecessary to alter it during the progress of the work.

In my suggested alterations I dealt with this kind of case by using these words : (4) No payment shall be authorized by the Comptroller and Auditor General in excess of what the contract calls for, to any contractor who has finished his work under the contract.

With reference to contracts generally, I have taken a somewhat more ambitious attitude. It appeared to me that the greater part of our difficulties in settling with contractors arose from the contract in the first instance not having been properly viewed. It seemed to me that the officials have been misled by the apparent advantage of having the contractors in their power. Now if our whole object were to get as much work as possible for as little money as possible this method of endeavouring to get the contractors to go into work blindfold would bring us no advantage. The country would have to pay in the long run for our attempts at overreaching.

What as a matter of fact does happen, is, that if the contractor does lose and particularly if he loses because the contract did provide for the doing of work which the contractor supposed that he was not called upon to do, that a suit is entered in the Exchequer Court against the Crown and that the Crown abandons the right to certain advantages which it has under the contract.

If possible the preliminary surveys and the contracts should be so made as to prevent the necessity in the interests of fair-play to the contractor, that the provisions of the contract should be waived.

Then, if more than a short time expires after the completion of the work before paying the contractor, he should receive interest for the prolonged time, just as he should pay the Crown interest if he fails to have his work completed at the time agreed upon. This should work out by a provision in the law. On the other hand the Crown should be responsible for the acts of its employees. It should also pay by the unitary method—that is so much a yard, &c., and not by the builk sum. I fully understand that the suggested method would not be completed without a conference of the engineers of the Railways and Public Works Departments with contractors of experience aided by a representative of the Department of Justice. I send herewith two extracts from the 'Engineering News' of New York on the unitary method.

In answer to Mr. Piche's question whether I consider myself the only official who has a sense of his duty. Perhaps he will allow me to approach the subject in another way.

What should be the rules by which the Auditor General should govern himself ?

I cannot say exactly at this distance of time since I entered upon the duties of this office, twenty-seven years ago, how far the rules which I think should govern the occupant of the office arose from suggestions from those who happened to be associated with me in the course of business, whether as Ministers of the Crown, civil servants or as assistants in this office. That is really not material. Looking over back years the first thing in time which I can recollect as of special moment was that the old parliamentary friend, who is now leading the opposition in the Senate who came into the government, as Minister of Customs, after the September 17, 1878, defeat of the Mackenzie government which had appointed me, said, 'I am asked why you are doing a particular piece of business, naming it, in a different way from what you did when your own friends were in power ?' I answered, 'My Presbyterian sentiment as to predestination does not go as far as you think. I made no undertaking to do everything perfectly in the audit way from the beginning. I did what I thought was right as long as I thought it was right and when I thought it was wrong I abandoned it.

What do you do when you are in the woods and find from some sign that you are on the wrong road—do you get to the right road as soon as possible ?' He said, 'That is the proper answer. I will tell my colleagues.' My point in this connection is, where would I have been at that early day if I had been a Grit Auditor and not a Canadian one? Shortly after, I saw Sir John Macdonald with reference to an application which it seemed to me ought not to pass. I said 'I think this ought not to be allowed.' I also said 'It will do you no good.' His answer was instantaneous, 'Quite right, it will only give rascally Grits like you an opportunity of going up and down the concessions abusing us. Come to me when you think I can help in stopping such things. Your duty is to be strict.' When many of his colleagues were away for re-election and there was no meeting of council, I asked him to initial something which required the sanction of council. He answered, 'No, I am Prime Minister but I am not council.' Another time he said, 'Be strict but put all the velvet you can into the business.' Another time he said, 'Do you know why I made Bowell Minister of Customs ? Because he was able to say no.' From these early happenings you will see perhaps why I think that an Auditor General should have absolutely no politics, that he should not, if he can help it, allow money to go to any person who has not earned it, that he should treat every one who comes with a claim for a department for money as deserving the fullest explanation regarding any reasons which may appear to him (the Auditor) as existing against the payment. The Auditor General should limit himself to his named salary. He should take no kinds of favours either from the government, from any one who has dealings with the government, or is likely to have dealings with the government. I am not advocating that a man must hold himself so straight as to lean back. If he belonged to a party before he entered the service he ought to treat that party as if he never belonged to any party. Perhaps these remarks may be of some little service in dealing with the next man.

By Mr. Kemp:

Q. Where are those extracts that form part of your statement ?

A. They are here. They are engineering statements. They are statements from engineers as to what they think——

Q. Are they very lengthy ?

A. No, one of them is not.

Q. What I want to know is whether they are too lengthy to form part of the statement which you have just read to us, or not ?

A. I do not know; it is for the committee to say. I would be very glad to give them.

By Mr. Foster :

Q. There is not much use for them unless they appear in the report.

A. I will leave the statements with the reporters.

By Mr. Fielding:

Q. Oh, no. If they are to have any regard to the inquiry they must be read ?

A. Then I will read them if you will allow me. I was afraid I would tire the committee if I read them. (Reads) :

LUMP-SUM VS. UNIT-PRICE BIDDING.

A noticeable feature in the bids received for the New York Barge Canal work, which were recorded in our issue of December 22, was the rarity of lump-sum bids. Contractors were at liberty to submit either itemized bids or lump-sum bids, or both ; but, with few exceptions, they chose to bid by items. This fact has been seized upon by some as indicating the desirability of awarding contracts to lump-sum bidders only;

for it is argued the contractor who bids by items has an excellent chance to receive a final payment much greater than the total estimate at the time of letting the contract. In proof of this old Erie canal contracts are cited, also the contract for the New York subway. The latter, it is claimed, is an excellent example of the advantage of lump-sum bidding.

Now, as a matter of fact, neither the old Erie canal contracts nor the recent subway contract prove the advisability of lump-sum bidding. In reasoning the greatest errors often arise from attempts to generalize from one or two particular examples. The public, which has unfortunately suffered from the errors made by engineers in estimating the cost of great public works, has come to regard with suspicion all engineers' estimates regardless of the ability of the engineers, the character of the estimate or the time devoted to making it. When, therefore, they see a great piece of work carried through at a cost not greater than the original estimate they institute comparisons between this exceptional piece of work and the others that have preceded it. Knowing little or nothing about the engineers or their respective methods of making estimates, they reason about those self-evident features of the contracts under which the work was done. Finding that a lump-sum bidding price in the subway contract and itemized bidding prices in the old Erie contracts, the inference is made that lump-sum bidding bars out all chances for extra payments, and is, therefore, the secret of succesful performance of the work at a cost within the engineer's original estimate.

Such reasoning obviously ignores the other features of specifications, class of work, methods of estimating the cost, &c. In a word, the reasoning is fallacious, as can be redily shown even to those not familiar with engineering problems.

Let us enumerate the principal items that are found in nearly all final estimates which exceed preliminary estimates. They are : (1) Increased quantities of items originally underestimated as to quantity ; (2) new items not found in the original estimate ; and (3) increased prices allowed, (a) because of the passage of laws shortening the hours of labour, or (b) because of deceptive conditions set forth in the original plans, specifications, earth borings, &c.

With the exception of item (3a)—increased prices due to the passage of labour laws subsequent to the letting of the contract—every one of these causes is directly chargeable either to incomplete engineering study of the original conditions and plans, or to a decision altering, in whole or in part, the original project. Thus, if the engineer lacks time, money, foresight or ability, he may make a hurried survey of the work, and perhaps no survey at all of the subserface materials. In such a case the actual work is quite certain to disclose things not looked for, thus necessitating changes in plans, generally leading to increased cost. Changes of plans arising from the whims of owners, to which architects are so commonly subjected, seldom serve as excuses for engineers whose preliminary cost estimates prove to have been too low. In passing we may say, however, that the public which is quite familiar with the bills of 'extras' rendered by builders of houses, and with the proverbial excess of cost of architectural work over the original estimate, is quite apt to think that engineering work is of the same feather. But to any one who has made a study of engineer's preliminary estimates and the final cost of the structures, it is at once apparent that changes of plans resulting in increased cost have almost invariably been forced upon the engineer not by the whim of some one who holds the purse, but as the result of his own ignorance of the conditions to be encountered, and ocasionally because of his own iguorance of how to design structures to meet known conditions. This ignorance of conditions does ont necessarily imply lack of ability on the part of the engineer, for he may be, and usually is, capable of ascertaining what the conditions are if given time and money enough for making a thorough survey.

Coming back to the nine-million Erie canal work and the New York subway, an engineer familiar with the methods of making the original estimates for each sees at once that itemized bidding and lump-sum bidding were mere incidents in the performance of these two different classes of contracts. The essential difference between the

two lies in the methods of making the original estimates. Before the nine-million appropriation was made for the Erie canal deepening, two engineers were asked to submit to the legislature separate estimates of cost of the proposed work, and it has been repeatedly stated—but never denied—that less than two weeks 'time was allowed in which to submit the 'estimate' to the legislature. One 'estimate' made by an ex-state engineer was nine million dollars, the other by the then state engineer, was twelve million dollars. The legislaure adopted the lower guess of the two, and, ever since, the nine-million 'estimate' has been held up as another shining example of the inability of engineers to estimate costs with accuracy. We see that in this case there was really not survey at all—simply a guess based upon a two-weeks' 'study' of assumed conditions that were afterwards found to be grossly in error. We are not excusing the author of the guess, nor would we revive a dead issue except that its ghost still haunts every great public project in the State of New York.

On the other hand, we have the New York subway as an excellent example of how to make an estimate of cost worthy of the name estimate. Numerous borings were made along the whole route of the proposed road and local conditions were examined with the greatest care by a large corps of engineers under competent leadership. Study was made of the actual cost of subway work in Boston, and of all classes of excavation in New York itself. Upon these data an estimate was made, and we do not hesitate to say that had the work been divided into sections of moderate length, let by itemized bidding, the final cost of the work would have been even less than it was. Why? Becasue of the completeness of the original estimate and of the adequacy of the plans based upon it. Had the survey been less thorough, or the study of the problems made in haste no lump sum bidding would have saved the day. Moreover, it should be remembered that the one firm which bid upon the subway contract, was bidding not merely for work but for a fifty-year franchise. Had contracts been let after inadequate surveys, innumerable bills for 'extras' and lawsuits based upon deceptive borings would probably have resulted, following the history of both public and private contracts of magnitude where subsurface surveys have been omitted or hastily made. Bills for 'extras' are just as any other, and have always been allowed by the courts where it could be proved that plans were changed or where data furnished by the engineers were grossly deceptive. The lump-sum contract possesses just one important advantageous feature, it reduces, if it does not wholly eliminate, any claims for extra compensation based upon erroneous classification of the excavated material. The same result, however, can be accomplished in other ways, where it is deemed desirable.

Why do contractors show a preference for itemised bidding? And why would itemised bidding result in lower prices in the long run? The answer to these queries may be summarized in a list of objections to the lump-sum method bidding, as follows :—

1. To the contractor the requirements of a lump-sum bid appears on its face to be a confession of haste or carlessness in making the surveys and plans.

2. The contractor knows that in the course of a few days or weeks he cannot hope to check all the surveys made by the engineers, which may have taken monthe or years, and he resents the attempt to make him responsible for the accuracy of the engineering work. He is very apt, therefore, to add a good percentage for insurance against what appears to him to be risks, covering also the costs of possible lawsuits.

3. The contractor hesitates to bid upon work where there is uncertainty as to the amounts that he will receive on monthly estimates. Lump-sum bidding, where there is a multitude of items, leaves the size of the monthly payment almost entirely to the judgment of the engineer. On public work of magnitude there is great likelihood that the engineer who is in charge at the beginning will not be in charge at the end of the work.

4. By virtue of the foregoing, contractors of long experience on public works may not bid at all, or, if they do bid, are apt to bid so high as not to secure the work.

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5. Lump-sum bidding gives no basis for payment for extra work due to increased quantities resulting from changes of grade, alignment or designs. If the engineer's allowances for such extra work are not satisfactory, the burden of the proof in case of a lawsuit is upon the contractor. This, as well as the cost of a lawsuit, is a serious objection to the lump-sum bid, in the eyes of the contractor.

6. If extra work is done on force-account plus a percentage of profit, the contractor will have no objection, but, in view of the decreased efficiency of men on force-account work, the cost will be excessive.

7. Public work done either by force-account or under a subsidiary agreement between the engineer and the contractor often leaves charges of collusion and fraud even where there is no foundation in fact for such charges.

8. Lump-sum bidding, for reasons above enumerated, is apt to limit the competition to those local firms who know the engineers and the conditions of the work better than outside firms do. In a word, it scares away many responsible firms.

9. Finally, lump-sum bidding does not disclose what experienced contractors consider to be fair unit prices, thus perpetuating engineers' errors in estimating unit prices.

In the long run this would prove one of the most serious objections to the lump-sum method.

We see that there are many serious objections to lump-sum bidding, and that most of them are founded on the assumption that the character of the work actually done will differ from the character of the work as predicted. Now, if it turns out that the character of the work actually done does not differ from the predicted character, there is absolutely no argument left in favour of lump-sum bidding, although we still have left several arguments against it. For should there be no change of route, grade or plans, and should the materials excavated be exactly of the kind and quantity in the engineer's original quantity sheet there can be no 'extra work,' no unbalanced bids, no lawsuits, whether the contract be by lump-sum or by unit prices. On the other hand, should changes in or additions to the original plans be made, a lump-sum contract cannot save the municipality, state or government from ultimate payment of the additional costs—usually with the cost of legal expenses in addition.

In closing we may say that engineers should not seek to escape from the results of errors in their estimates of costs by attempting to put the burden upon the contractors. But they should stand firmly by their best judgment, always demanding time and money sufficient to make such surveys and studies of the engineering problems as will enable them to make accurate estimates of quantities and costs. Then, let them not hesitate to assume full responsibility for their estimates, seeking neither to excuse any error nor to saddle it upon the backs of contractors by lump-sum bidding requirements coupled with contract clauses that are often so one-sided and unjust as to make contracting almost synonymous with gambling.

That is the end of the statement.

By Mr. Carney:

Q. Who is that by ?

A. It appears in what is called 'The Engineering News.'

Q. Is it a paid article ?

A. I cannot say that. But here it is. I will be very glad to show it to any member of the committee. I presume it is very carefully written.

Q. Is there any name signed to it ?

A. No.

Q. There is no name signed to it at all ?

A. No.

By Mr. Hughes (P.E.I.):

Q. Have you any further report, Mr. McDougall ?

A. I have, yes.

Q. We will be very glad to hear them ?
A. Very good.

By Mr. Kemp:

Q. What is the date of the article you just read ?
A. January 5th, last.
Q. Is the other article very similar ?
A. It is some time since I read it myself. I do not think it is as long. No, it is just one column.

By Mr. Foster:

Q. We had better take it as read ?
A. All right.

By Mr. Kemp:

Q. Where did it appear ?
A. In the 'Engineering News,' the same periodical, of March 2nd, following.
Q. What is the title and what is the page ?
A. It is on page 238, a report referring to the advisability of accepting unit prices.

Mr. HUGHES (P.E.I.)—I think we ought to have that read for the benefit of the committee.

Mr. FIELDING.—If Mr. McDougall reads that he will not be interfered with. I do not care whether he reads it or not.

By Mr. Carney:

Q. Is there any name signed to the second article ?
A. Not at all.
Q. You do not know who the writer is
A. No.
Q. You do not know whether it is paid for or not ?
A. Not at all.

By Mr. Foster :

Q. Have you finished with your statement ?
A. That finishes my statement, yes.

By Mr. Sinclair:

Q. If we are not to have the second newspaper statement read, if Mr. McDougall thinks it is advantageous, he should give us the substance of it, briefly ?

A. This statement is much shorter than the other one. I could not give it any better than by reading it. by the way, I find that this article is signed by a man named Edward A. Bond, Chairman of the Commission. I was mistaken in my previous answer as to that.

By Mr. Carney:

Q. Is the article paid for ?

A. I have enough of auditing here without auditing that. It will take only a few minutes to read the statement which is as follows (reads) :—

A REPORT RELATING TO THE ADVISABILITY OF ACCEPTING UNIT-PRICE BIDS.

The Superintendent of Public Works of the State of New York, who is in charge of the letting of the contracts for the Barge Canal, called for bids both by lump-sum and by unit prices. Most of the contractors submitted unit-price bids only, but a

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few lump-sum bids were received, and the question arose as to whether a lump-sum bid was to be preferred to a unit-price bid or not.

To settle the matter, the Superintendent of Public Works submitted five questions to the Advisory Board of Consulting Engineers. The answers to these questions are of such general interest to engineers and contractors that we print the report of the board in full. The board, it should be stated, consists of five well-known engineers, namely, Edward A. Bond, chairman; William A. Brackenridge, Elmer L. Corthell, Alfred Brooks Fry and Thomas W. Symons. Their report follows :—

Hon. N. V. V. Franchot Superintendent of Public Works, Albany, N.Y.:—

Dear Sir,—In reply to your letter of January 31, 1905, making request of this board for advice on certain points, the board has the honour to state as follows :—

(1) As to your understanding, under the terms of the proposals for any given contract, as to the comparative advantages to the state as between the two forms of proposal.

Answer.—It is the opinion of this board that it is to the advantage of the state to let contracts under unit-price proposals rather than under lump-sum proposals. It is pertinent to add that this board has never been in favour of or recommended asking for lump-sum proposals.

(2) As to your understanding, from a technical standpoint, of what is embraced in actuality in a lump-sum proposal.

Answer.—It is the understanding of the board that a lump-sum proposal includes the work provided for and limited by the plans and specifications governing said work.

(3) To what extent final payments in equity to the contractor might be changed or affected by a change of plans for doing or progressing the work under the given contract.

Answer.—With a contract based on unit-prices, the equitable settlement with a contractor is provided for in advance of the execution of the work by the nature of the specifications, and would be simply to apply the unit prices to the amount of work actually done by the contractor. In case of a lump-sum contract, it is difficult to see how an equitable settlement with a contractor could be arrived at under conditions necessitating work beyond that required by the plans and specifications. With a lump-sum contract the contractor would get all the advantages arising from a lessening of the quantities below those required by the plans and specifications, while for all work not covered by the plans and specifications he would be in a position to demand any prices that he saw fit to charge. In order that a lump-sum contract should be equitable to both parties, unit prices for additional or diminished work should be specified, and this would make it practically a unit-price contract.

(4) In the event of a change in plans affecting the manner or method of doing the work, or changes increasing or diminishing the amount of work to be done, or calling for work not contemplated in the plans as they exist at the time of execution of contract, what basis might and does exist, or what basis might be devised for arriving at a price to be allowed to the contractor for the additional or extra work, or to the state by the contractor in the event of a reduction of work to be done ?

Answer.—The answer to this is included in the answer to question (3).

(5) As to what information, reason or argument, technical or otherwise, your board, in the capacity of advisor, may suggest, cite or furnish, which will assist me in the performance of the 'duty and discretion conferred upon' me by the statute, me, and me alone, paraphrasing the Attorney General's opinion, in determining as between a proposal under the item-price plan and a proposal under the lump-sum plan, the total of the proposals differing in amount on the face of the proposals, which of the two offers 'to do and perform the same at the lowest price to the state.'

Answer.—Responding to these questions, the board begs to state that for the kind of work included in the improvements of the state canals, it is the practically universal custom to let contracts under the unit system. In response to your request to furnish you with information on the subject, the board submits to you herewith a copy

of an editorial in the 'Engineering News' on the question of lump-sum proposals. The board also begs to state that the United States Engineers Corps has for many years been engaged in canal work and other public works of similar character in all parts of the country, and has had more experience in such work in the United States than any other body of men. Inquiry made from the officers of this corps shows that lump-sum contracts are never seriously considered for this character of work, and the universal practice is to let contracts on the unit-price system.

It is the opinion of this board that lump-sum contracts should not be made, and that all engineers of experience in public work of this character would coincide in this opinion.

It is believed to be impracticable to make lump sum contracts which would be just both to the state and to the contractor, and that such contracts would almost inevitably lead to litigation and probably large loss to the state.

In the class of kork under consideration, as between two bids exactly equal in amount, one based on unit prices and the other as a lump sum, the board believes that it would be to the advantage of the state to accept the unit-price bid.

Very truly yours,

(Sgd.) Edward A. Bond, Chairman.

Albany, N.Y., February 2, 1905.

By Mr. Foster :

Q. That finishes your statement, Mr. McDougall ?

A. Yes, that finishes my statement.

By Mr. Fielding :

Q. Mr. McDougall, you have been discussing the merits of lump-sum contracts as compared with schedule prices ?

A. Yes.

Q. Your judgment is that schedule prices are the better ?

A. Yes.

Q. Our inquiry now is with regard to the amendment of the Audit Act. Is there anything in the proposed act which insists upon lump-sum contracts ?

A. No.

Q. Is there anything to prevent schedule prices being adopted under the present Audit Act ?

A. No.

Q. There is nothing therefore in all this which has any bearing on the working of the Audit Act ?

A. Oh, yes, it has a bearing.

Q. Will you be good enough to show how it has a bearing ?

A. Of course when I mentioned the other day about this, I talked about amendments to the Audit Act and other Acts of parliament.

Q. Well is there anything in any legislation to-day which prevents the department concerned in public works making its specifications or contracts by items ?

A. Nothing.

Q. There is nothing.

A. Nothing.

Q. Therefore it does not require any amendment to the Audit Act ?

A. No, not to the Audit Act.

Q. They could do it to-day ?

A. Yes.

By Mr. Sinclair:

Q. Does the witness hold that we should pass legislation preventing a department from asking for tenders on the lump-sum system, that we should prohibit that altogether ?

A. Well, it would be my opinion. I do not say I am suggesting that but it would be my idea. I say there is no difference where a contract is to be paid for at the beginning or at the end, except that it is better to arrange at the beginning for a fair contract—what is fair to both the man who has the contract and the government—that is my opinion. When you first need a thing is the time to dispose of it. That is my view.

By Mr. Mackenzie (Cape Breton):

Q. Do I understand you to say as Auditor General that you would have a better control over the estimates of an engineer, or a better control of the engineer, under a schedule contract than under a lump-sum contract ?

A. That I would have better control ? Oh, the thing controls itself.

Q. That you could better check these statements ?

A. Well, I mean that these statements would be checked.

By Mr. Macdonald (Pictou):

Q. You would check the statements of what ?

A. In this case we are talking of.

Q. The engineer of the department that awarded the contract ?

A. Yes.

Q. Then you would propose that you shall have an engineering staff in your office for the purpose of checking, would you ?

A. I am not saying——

Q. Would you ?

A. I think it would be better.

Q. Do you think you could get along better with one ? You seem to know a great deal about engineering yourself ?

A. No, I do not, that is the worst of it.

Q. I think you do ?

A. I am afraid I do not. I think I called myself an ignoramus.

Q. That is only your natural modesty.

A. The Scotch, the Highland modesty.

By Mr. Carney:

Q. Not always ?

A. Oh, yes. Look here, when you are going to the electors——

By Mr. Macdonald (Pictou):

Q. Some of our Irish friends might be disposed to dispute that. Then your idea would be that you would have to have an engineering staff attached to your office ?

A. That is not involved at all in this thing. You see I am complaining of the Chief Engineer because I have seen evidence that he does not give his own ideas.

Q. What Chief Engineer ?

A. Mr. Schreiber. I am objecting to his work, but I am not objecting to his honesty. I instanced the Davis contract and the Sorel bridge subsidy as showing that Mr. Schreiber, who is no doubt a good engineer, and so far as I know a very pleasant man and so far as I know a well-meaning man, thinks that what I think his duty is not his duty. You may agree with him.

Q. Well, then, you have no fault to find with Mr. Schreiber's competency as an engineer ?

A. No, I have no knowledge about that.

Q. Well, then, have you any fault to find with his honesty ?

A. Well, no, I believe he is honest.

Q. Well, what do you think is the matter with him ?

A. That may be funny but still here is the fact : The Governor in Council tells

him he is to make a report in a particular way, or conveniently conceal from his own mind a certain thing. It appears to me he does not do it.

Q. You seem to be inordinately suspicious, is that one of the Scotch characteristics ?

A. No, I do not think that it is. We are not perfect.

Q. That is rather a good quality sometimes ?

A. It is.

Q. Unless it is over-developed ?

A. That is what I am complaining of in regard to that position that they ought to let me keep things right, if I can do it, without having occasion to be too suspicious. If you have a duty to perform you should perform that duty.

Q. I want to get you down as answering this particular question ?

A. I know you do, but I would like to give the answer in the way I know in your spirit of fairness you want to get it.

By Mr. McKenzie (Cape Breton):

Q. That is your answer, Mr. McDougall ?

A. I say this: That the Governor in Council—of course every one ought to have respect for the Governor in Council, ought to have the same respect that I feel for the Governor in Council—has limitations.

By Mr. Macdonald (Pictou):

Q. What limitations ?

A. Well, the limitations that he cannot, while he is deciding about the Grand Trunk Pacific, be adding up little accounts.

Q. Is this a 'he' or a 'they' ?

A. It is 'they,' I mean the Governor in Council. The Chief Engineer is presumably the most capable man in engineering in his department. A question of engineering arises as to how much work has been done. He is able to say of himself or through his subordinates. He does not need to go to a man who knows a good deal more than he does about other things or to a body. If he goes to anybody he must go to somebody who on this particular thing has the necessary knowledge. If you have a wooden house to build you get a carpenter. If you have a brick house you get a bricklayer. You do not want your bricklayer to be a carpenter or the other man to be a bricklayer necessarily.

Q. Well now do you think that is a good principle that you should apply ; that when you want to get anything you should trust the engineer of the department who is responsible to the department usually ?

A. No, he says to me openly : 'I am told by the government I am not to do it, that I am to take what they say.' I say to him you told me out of your own mouth that I am not to take your knowledge.

Q. Do you want us to believe, Mr. McDougall, that although you are not an engineer yourself, and you do not pretend to know anything about engineering, and although you say that Mr. Schreiber is both an honest man and a good engineer, that you want to exercise some supervision over him that you have not got now ?

A. No.

Q. Is not that it ?

A. No. It is not that. What I say is this——

Q. Let me ask you to answer another question ?

A. No, I won't until you let me answer the other. You must not let the questions be answered by halves. When a paper comes to me through the engineer's hands or anybody else's hands and I have reason to believe that the engineer has not done his duty, that he has left it to some what he calls higher authority, but I consider lower authority in engineerings——

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Q. Where do you get that belief ?

A. I got that belief in the Sorel bridge and in the Cornwall canal business.

Q. All right, go on.

A. Then I say 'what is the use ? Will you tell me how am I to know when you are speaking for yourself ?'

Mr. TAYLOR.—Give us the history of the Sorel bridge matter as it came to you.

By Mr. Macdonald (Pictou):

Q. Permit the gentleman to answer my question ?

A. I am quite willing to be interrupted you know on these things. Of course in the hands of a lawyer——

Q. You suggested to me a moment ago that you wanted to answer my question ?

A. I wanted to finish it because I knew you will be troubled at night on my account if any part of it was unanswered.

Q. Do you lie awake at nights thinking about some of these technical problems ?

A. I am afraid I do. Do you know that when you get as old as I am you will feel the same way on such points.

By Mr. Lennox:

Q. You complain that the Chief Engineer does not exercise his own judgment but the judgment of somebody else ?

A. Yes.

By Mr. Macdonald (Pictou):

Q. Let me ask you if this is what you want : You wish to exercise more supervision yourself personally and have great powers in dealing with the reports of the Chief Engineer of a particular department ?

A. No, that is not my first method.

Q. I do not care what is your first method, or your last method. Will you please answer my question as to whether that was your proposition at any time ?

A. Let me say I think what you want to know is—because you will say by what road has this man come to get here—I——

Q. I am not saying anything about roads. I want to submit to you that some of your propositions may seem to some gentlemen to define what you mean, but I cannot tell what you mean unless you answer a straight question. I want to know whether that is the proposition you made to this committee, yes or no.

A. It is one method, and one method which I employ now, but it is not the method I would like to have. What I want to have in the Audit Act is a statement that whenever the engineer does his work of engineering it is to be a statement made out by himself or one of his subordinates for whom he feels that he can be responsbile. That is what I want.

Q. And that you are to be the judge ?

A. Not at all, no.

Q. Excuse me.

A. I do not want to judge.

Q. You do not want to judge ?

A. No, unless it is a barefaced fraud that I find out.

Q. Then you do not want to exercise any judicial functions or reviewing functions over this Chief Engineer in future, is that what you say ?

A. If you put in the Audit Act what I suggest. By his own statement the Chief Engineer does not do it now.

Q. What is it you propose to put in the Act ?

A. I propose to put in the Audit Act—surely it is plain enough ?

Q. What is plain enough ?

A. What I am saying now. I propose to have stated in the Audit Act that the Chief Engineer is not to put in a statement that comes to him from any other authority outside his office. He is either to put in a statement that he has made himself or a statement that some subordinate of his has made out as to the quantities. Surely anybody understands that ?

By Mr. Geoffrion:

Q. You should put it in the Audit Act that the Chief Engineer must be an honest man ?

A. Not at all, that is saying too much. I say that the Chief Engineer is to certify.

By Mr. Macdonald (Pictou):

Q. You do not ask for yourself or for your office any further powers of supervision or correction than what you have now ?

A. In regard to what ?

Q. This particular matter you are speaking of ?

A. Of the Chief Engineer ?

Q. Yes.

A. Not if you put the other thing in.

Q. There is no 'if' about it.

A. There is an 'if' about it.

Q. What you said you wanted was merely a departmental rule in regard to the contracts coming from a particular department ?

A. Oh, no.

Q. I want to know definitely from you ?

A. I want it in the Audit Act ; it is partly there.

Q. Let me submit it to you. Supposing you get it in the Audit Act it does not give you any greater power ?

A. It does, yes.

Q. How does it ?

A. Because I know he has done his duty.

By Mr. Lennox:

Q. You need not pay unless this is done ?

A. Of course.

By Mr. Macdonald (Pictou):

Q. It does not give you any greater reviewing powers because you only have the signature of the Chief Engineer now ?

A. Cannot I say to him if there is any doubt about it, if he puts his certificate there what the provisions of the Audit Act are and he says that he does it under a certain clause in the Act.

Q. Now, Mr. McDougall, what you want is that the Chief Engineer of a spending department like Railways or Public Works should be compelled to give a certificate in a certain way hereafter ?

A. Yes.

Q. Other than that you do not ask any reviewing or auditing powers of a greater character than you now have for yourself, do you, other than you have already stated in this regard ?

A. No, I do not say that at all.

Q. Then you do want more power ?

A. I do. I do want more power. If you read my suggestions carefully you will see what they are.

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Q. I am not speaking of other phases, I am speaking of this particular proposition we are dealing with now. You said to me a moment ago that that was what you wanted in that regard.

A. Yes, that is right.

Q. You still hold to that ?

A. Still hold to that.

Q. And you do not want greater reviewing powers in regard to this matter at all?

A. Now, there is another business——

Q. I am speaking generally. We have got you to one definite point and I am asking you generally, do you want any greater auditing or reviewing powers ?

A. I will read my suggestion again.

Q. If you will be kind enough to read it ?

A. Certainly, of course.

By Mr. Kemp:

Q. Did you read this before to the committee ?

A. Yes, the other day.

Q. How many times ?

A. I read it once.

By Mr. Macdonald (Pictou):

Q. We want to get this point cleared up.

A. (Reads). 'No payments shall be authorized by the Comptroller and Auditor General in respect of work for which the government did not become responsible before the completion of it, unless the work was devoted to saving the property of the government or an emergency.

'No payment shall be authorized by the Comptroller and Auditor General for work, plainly provided for under a contract, in excess of the amount for which the government is liable under the contract, even if certified by an engineer or other employee as an extra.

'No payment shall be authorized by the Comptroller and Auditor General, in excess of what the contract calls for, to any contractor who has finished his work under the contract.

'If an official of any department, dealing with a claim against the government, knows that the claimant is indebted to the government, whether the indebtedness is of record in the department or not, he shall take no part in the payment of the claim against the government, except to the extent that the amount due by the government exceeds that due to it.

'The Comptroller and Auditor General many require the production of any public document connected with any expenditure which is before him for examination.'

Q. What particular part of that relates to this point that we are discussing where you want to have greater powers?

A. There is nothing here.

By Mr. Piché :

Q. So that the question is without answer ?

A. Which question ?

Q. Mr. Macdonald's.

A. No, I thought he referred to what I spoke of the Chief Engineer. I told him that I would be satisfied so far as the Chief Engineer is concerned, if it was made clearly and plainly his duty, that I could say to him, 'well, now, Mr. Schreiber,——

By Mr. Macdonald (Pictou):

Q. You have not read anything about that there ?

A. No, that is what I say.

Q. You did not make that suggestion before ?

A. I did make it, but I did not make it in these printed papers (referring to documents).

Q. You did not consider it of any great importance ?

A. Of very great importance.

Q. Why did you not put it in your formal recommendations ?

A. I made these recommendations before I thought of that.

Q. Did you think about it when you made these recommendations ?

A. I made most of these recommendations I think in 1898-9.

By Mr. Kemp:

Q. It was the Sorel bridge ?

A. Yes.

By Mr. Lennox:

Q. And the Davis contract ?

A. Yes.

By Mr. Macdonald (Pictou):

Q. You did not make this particular recommendation you are speaking of now—it was not included in the recommendations of 1897 ?

A. No.

Q. You did not have it in your mind then ?

A. No.

Q. You only developed it lately ?

A. Yes, since that Sorel bridge matter came up.

Q. Since the Sorel bridge matter came up ?

A. And I can tell you that it was not reduced a great deal after the Davis matter came up.

Q. Let me ask one or two more questions. Supposing the engineer of any particular department makes a report to the department. Now, take for instance a contract for a breakwater—and recommend that a certain amount of extras are due to the contractor who built the breakwater, and that report goes through in regular course to you, do you undertake to interfere and hold it up ?

A. Oh, well, I do what appears to me necessary to secure——

Q. Do you do it ?

A. I have done it.

Q. Do you remember having done it in regard to a certain breakwater in the maritime provinces ?

A. Yes.

Q. You had the engineer's report recommending these things ?

A. Which was the particular one to which you refer ?

Q. I think there was one at Summerside ?

A. Yes, one at Summerside.

Q. You had the engineer's report in a perfectly regular way ?

A. I do not think I had. I had a report, but I do not think it was regular.

Q. You considered it irregular from an engineering standpoint ?

A. I think if I had it to give to you up to a certain time—wait a minute—the contract was taken off the man's hands if I remember rightly. You would remember ?

Q. I do not remember. I do not remember the details. What I want to get at is. I am dealing with the case where the engineering of the department has regularly and formally made reports, making certain recommendations in regard to extras. You have dealt with cases where you have declined to recognize——

Q. Are we talking of the Summerside case now ?

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Q. No, not particularly ?

A. I would rather you would deal with a particular case.

Q. Now, I am asking you if you will tell me of any one, or can you not tell of a particular case in which you have undertaken to say that the report of the engineer of the department making certain recommendations, should not be carried out ?

A. I won't say unless you give me the case. I have a great deal of work to perform and I do not pretend to bring all the cases up here.

Q. Surely you can tell me now, a man who has been so very critical and judicious and careful as you, ought to be able to tell us now in regard to dealing with contracts.

A. I think if you were to come to this committee and wanted to ask me a question about a particular thing you might be expected and prepared to say the case that you wanted information from me about.

Q. That may be very true, but you are here dealing with most delightful general principles and you are lecturing this committee and instructing the committee what it should do.

A. Oh, no.

Q. Yes, you are. I submit, Mr. McDougall, that you are doing that and I have the right to examine you generally.

A. I do not object at all and I do not object to giving all the information I have, if you will only tell me what particular case you are dealing with and ask me whether I did a particular thing in connection with that. I am not ashamed to tell you if I remember it, but I will tell you the truth when I know it.

Q. Tell me if you remember of any case or cases in which you have undertaken to withhold payments to contractors where the reports have been made by the engineers of the department regularly recommending the payment of these accounts.

A. Well, certainly, I have made no objection to taking——

Q. Will you state a case ?

A. Well, stop, I want to answer that question so that you will understand.

Q. You want to make a speech of ten minutes length, and we are anxious to expedite the proceedings of this committee.

A. Perhaps I do, but I am anxious—I have gone for 27 years without a lawyer being able to put one black mark against me when either party was in.

Q. What do you mean by that ?

A. I mean by that, I have been here 27 years and I believe that I have a good record, and I do not want anything said which would interfere and take it from me without anything being done.

Q. Your inordinately suspicious mind is at work again ?

A. Perhaps it is. It is what it will be when you get another auditor.

Q. The country will expect him to be a business man and that he will leave his suspicions at home.

A. Lawyers have weaknesses, you can't help it.

The CHAIRMAN.—You had better put your question.

By Mr. Macdonald (Pictou):

Q. I am anxious to get an answer to a question ?

A. Tell me what you want. You want to know if ever I did something in 27 years. You tell me to mention a particular time.

Q. We will take it within ten years, or five years ; take it within two years.

A. I ask you to tell me the particular case that you want. Tell me what the case is and what you want to know about it.

Q. I want to ask you—you have lectured us here to endeavour——

Mr. FOSTER objects to witness being told that he was lecturing the committee.

By Mr. Macdonald (Pictou):

Q. I tell you that my impression was a perfectly legitimate one. My friend over there may have understood it as referring to the Auditor as wanting to lecture and in-

struct the committee. What I intended to refer to was that this gentleman had been making speeches to the committee continuously dealing with general principles. When I want to ask about general principles he wants to get away from me. He has been talking of what engineers should do and should not do. I want to ask him the straight question whether or not in the last three years that he has declined to honour a report that the engineer of a department made in a perfectly legitimate way recommending the payment of extras to contractors and public works ?

A. I want to tell you this, that the only case I have in mind is the Summerside case to which you referred, and I did object to that and I am willing to tell you all that I recollect about it.

Q. I do not know enough about the Summerside case to examine you about it.

A. Don't you know about something else ? If you do not know anything about the Summerside case perhaps you know some other one.

Q. Can you tell me of any other instance in which you declined to recognize the report of the engineer of the departemnt made in the regular way ?

A. The Department of——

Q. Public Works, say ?

A. And if there was an appropriation ?

Q. Yes ?

A. Well, I can tell you that I do not recollect it.

Q. You cannot recollect ?

A. No, I can tell you that if you tell me any particular case about which you want to get information I will be glad to come here at any time.

Q. I am not dealing with any particular case ; I am dealing with general principles. I want to know as to whether or not——

A. Mr. Hayter was here a moment ago. He knows more about these things. I will be glad to refer to him. He reminds me of these particular things. You see, it is pretty difficult with an extensive business like we have to remember everything that goes through. I do not know of any such instance, but I will be glad if you will tell me of a particular instance to get you the information.

Q. I have already intimated that I am discussing the question on general principles. I want to get at what you really want to have done. You do not seem to be very clear about it.

A. Yes, about what I want to have done.

Q. And would you mind stating again what you would like to have done ?

A. About this engineer ?

Q. Yes.

A. Well, then, if there is anybody else in the room that says he cannot understand it I will be very glad to do so.

Q. The reason I am asking you to do it is, I understood you to say you never made any recommendation in writing on this point. You never put in concrete shape exactly what you want to have done.

A. No, I did not. It seems to me so simple.

Q. Then, it is not a matter of sufficient importance to put it in writing ?

A. It is a matter of very great importance if we are going to get anything done. What is the use of filling reams of paper if nothing can be done now. I will be very glad if anybody says we should do it.

Q. You came before this committee and did not expect to have anything done.

A. Did not.

Q. You thought you were a voice crying in the wilderness.

A. Yes, I did. I did not expect, but I thought it was my duty to do what I could.

Q. You did not fancy the members of any political party would do it ?

A. No, I do not say that. I was talking about what would be done.

Q. You did not fancy that anybody here would pay very serious attention to you?

A. Oh, no, I do not say that.

Mr. FOSTER obects to the form of the question.

By Mr. Macdonald (Pictou):

Q. I would like to get down to something definite. Mr. McDougall you talk about serious questions but it lies with yourself to get down to something sensible and definite.

A. I do not say that. I understood this gentleman to ask me whether I expected to get what I desired. I said I did not expect it.

By Mr. Geoffrion:

Q. That is not the question at all. He asks you regarding what you want ?

A. I have told you a great many things. There is one particular thing that you say I did not tell you in my papers. I say that I tell you now with the greatest pleasure. There is a tremendous injury to this gentleman somewhere but I cannot find it out.

By Mr. Lennox:

Q. Mr. McDougall, you say that you did not put that in your printed statement because the matter had not been prominently brought to your mind until a later day ?

A. Yes.

Q. By things that had subsequently arisen ?

A. Yes.

Q. That is the strongest impression upon your mind ?

A. Yes, the Sorel bridge and this other matter.

Q. You think now the matter is of very great importance ?

A. Yes. I am quite willing to repeat it.

By Mr. Sinclair:

Q. I understand you to say that you wish some amendment to the Audit Act and instanced a case of the Engineer of Railways and Canals ?

A. Yes.

Q. And you tell us that this gentleman was making the reports not of his own motion but under the advice of somebody else ?

A. Of course——

Q. And that you intended to condemn ?

A. Yes.

Q. Does the Engineer of Railways and Canals send you written reports—are they in writing ?

A. Yes.

Q. The reports are always in writing ?

A. Yes.

Q. Are they signed by him ?

A. Yes.

Q, Is there anything in them to indicate that they are not his own views, that they are the opinion of some one else ?

A. No, but they are not his views.

Q. There is nothing ?

A. There is not. But they are not his views, but the opinion of somebody else in some cases.

Q. You think they are, but there is nothing on the face of it to show ?

A. Oh, but if I had the Sorel bridge and the Cornwall canal papers here I would read them to you.

Q. These are simple questions.

A. Yes, I know they are simple and I am answering you simply.

Q. I understand you also to say there is nothing on the face of them to indicate that any person has given him advice ?

A. Yes.

Q. Provided you had this Act passed that you speak of and the reports were sent to you under the new Act from the Engineer of Railways and Canals would you be in any better position ?

A. Yes.

Q. Would you know ?

A. He could not possibly say—for instance, he made a report——

Q. He would give you the same kind of report signed by himself and apparently recommending in the same manner, recommending what he thought ought to be done?

A. Not in the same manner as he will now.

Q. Why not ?

A. Because he will say that this has been done by himself and that these are the items—and all the rest of it.

Q. And will you suggest to me what kind of legislation you think we could pass that would prevent the Engineer of Railways and Canals going to anybody else to ask advice ?

A. Oh, advice, of course.

Q. He has done it ?

A. Yes.

Q. You would make it criminal?

A. Not necessarily criminal. I would make it necessary under the Audit Act that the statement would be one made out by himself, from his own knowledge or from the knowledge of a subordinate engineer.

Q. Have you any reason to believe——

A. I have every reason to believe you are a sensible man and if I read to you what is in this Sorel bridge and in the Cornwall canal matter, that you would say what I am saying.

By Mr. Lennox:

Q. And in the Corry & Laverdure contract ?

A. Yes.

By Mr. Sinclair:

Q. I think we should have the Engineer of Railways and Canals here to say what he thinks about it ?

A. All right, certainly.

Q. Do you think he is doing his duty?

A. His duty, no, I am not saying that he is not, but if he is doing his duty——

Q. The object of your Act would be to make him understand his duty better ?

A. Better—more fully

By Mr. Geoffrion:

Q. Mr. Schreiber is an intelligent man, is he not ?

A. I suppose he is.

Q. He is able to understand his duty ?

A. No, not according to my opinion.

Q. He is not able to understand his duty as an engineer ?

A. I do not say that. I say, when he sends to me a statement that does not come from himself as to items that are engineering items, that he does not do his duty if we are dealing with prices.

Q. Do I understand you to say when he does not do his duty it is because he does not know it ?

APPENDIX No. 3g

A. He does not know it.
Q. Then he is not an intelligent man ?
A. Oh, now, that is—I suppose he is.
Q. That is a question you ought to answer ?
A. I think not.
Q. Then, if you do not answer it, it is because you do not want to.
A. No, it is not.
Q. It is a fair question.
A. It may be a fair question.
Q. I say this, I asked if you thought Mr. Schreiber is an intelligent man, and you said he was.
A. Yes, generally intelligent.
Q. Then, he must know his duty ?
A. No, he does not know his duty.
Q. He does not know his duty ?
A. I do not know my duty. You do not know your duty.
Q. Yes, I think I do know my duty.
A. I think you do know a part of it, I do not mean anything offensive to you. I say it because I do not know all of my duty.
Q. Mr. Schreiber is a very competent engineer ?
A. I think he is.
Q. But you think as an engineer he ought to know his duty ?
A. Well, you asked me a question, and I say I will bring the facts that will prove that he did not know his duty.
Q. I thought Mr. Schreiber was an honest man, a straightforward man ?
A. Well, he and I are friendly.
Q. Well, now, what you are saying here, Mr. McDougall, is throwing some very bad insinuations on Mr. Schreiber ?
A. He must take them if they are and I must take them if they are.
Q. As a public servant ?
A. Yes, as a public servant.
Q. Mr. Schreiber is a good engineer, a competent man and an honest man ?
A. Yes.
Q. And if he has done what you are trying to insinuate in your report he is not an honest man ?
A. Perhaps, if it is so—if you can prove it. I am not saying it. You say it.
Q. Well, then, about that Sorel matter that you referred to. Did you have any talk with him about it ?
A. I think I did.
Q. Well, did you differ with him about the matter or were you of the same opinion ?
A. As——
Q. Did he speak of his own motion, of his own views ?
A. No, he did not.
Q. He did not ? What did he say ?
A. He said that the bridge that he reported for $210,000 cost $98,000.
Q. Did he say that he had made a false report ?
A. I do not care what he said.
Q. Well, now,——
A. I have got it there over his own signature.
Q. I have got to ask your answer. It is a fair question. He made a report ?
A. Yes.
Q. Did he make a false report ?
A. I say he made a report in which $210,000 was given as the cost and I say that he afterwards sent a report in that it cost $98,000.

By Mr. Blain:

Q. How much did you say ?
A. $98,000.

By Mr. Fielding:

Q. You are now referring to a written document ?
A. Yes.
Q. You say that he has given in a report in which he said that it cost $98,000.
A. I say yes.
Q. These are your words, will you be good enough to produce that report ?
A. I will.

Mr. FIELDING.—I have had occasion to look at page 35 of the proceedings of a former day with the intention of perhaps putting some questions to Mr. McDougall. There is not time for that now, but I notice an error which I would like the committee to permit me to correct. The report shows that the committee was considering the question of the manner in which a minister makes his reports to council, respecting estimates on contracts. The point was whether the minister acted independently in such a case or had the report of his Chief Engineer to fortify him. Mr. Emmerson's question showed that this was the point that was raised. I am reported as interjecting a remark that a minister never sent in his report. That conveys an erroneous impression. There was no question as to the minister sending in a report. The point was whether he would send in a report of that kind without founding it on the report of the Chief Engineer. What I said was that a minister never made a report of that kind without having the engineer's report to support him.

Mr. FOSTER.—That is correct.

The committee then adjourned.

HOUSE OF COMMONS,
COMMITTEE ROOM 32,
FRIDAY, July 7, 1905.

The Select Standing Committee on Public Accounts met this day at 11 o'clock a.m., Mr. Colin McIsaac, Chairman, presiding.

Mr. J. LORNE MCDOUGALL, Auditor General, again appeared before the committee in connection with certain amendments proposed by him to the Audit Act.

The CHAIRMAN.—I understand, Mr. McDougall, that you have some statement to make.

Mr. MCDOUGALL.—Yesterday there was a little passage between Mr. Fielding and Mr. Foster, concerning myself, which ended in Mr. Fielding saying that I was still going to be the auditor. One of them spoke about what the Auditor General would do and the other said : 'Oh, you do not mean the present Auditor General,' and Mr. Fielding said he did. These are not the actual words which passed, but they are the effect of what was said. I stated early in the session that last year at a certain time I had asked for superannuation because I thought I was not able to do the work of the country; because I thought I would not be able to do the work of the country in, to me, a satisfactory manner. My superannuation was not granted and I remained. When the parliament was dissolved I thought that this was to be referred to the people —I mean to their representatives—and I thinght it was my duty to remain until the new session took place, I would be in the hands of the representatives of the people, and if at the end of the session my recommendations had not been considered that I

would again ask for superannuation, coupled, however, with the fact that if I did not get it, I would go any way. I made no pretence that that was suitable to my circumstances. I thought that what came first was the doing of the work that I had to do in the manner that I considered the peoples' interests required that it should be done. I am still of that view. I would not of course have forced myself upon the committee in this respect now except that I could not understand anything to be possible, according to Mr. Fielding's statement, except the evidence that I would remain. I am not for a moment thinking that I am at all a necessity to this position—of course the position is to remain—but I look upon it at this stage of the session, from anything that has been made known to me, that there is not to be anything like a pretence of giving any real consideration to what appears to me to be necessary, and therefore, I am now about to put in my application for superannuation, combined, as I say, with the fact that if it is not granted I will go any way. I think that possibly this has been misunderstood in view of what Mr. Fielding said yesterday. There may be of course an explanation of Mr. Fielding's remarks that I do not understand at all, but I do not know how I could pass this over. Being given by the kindness of the Chairman of the committee such opportunities of making general explanations, I thought it quite proper for me to explain this. However, you quite understand that if I had got what I thought was necessary, and if the country or the House thought that I was of any service at all or likely to be of service even for a short time, I would be very much pleased to remain. I would consider it my duty, and be very glad to do it. I am only making this explanation for fear of being misunderstood. Perhaps there is something that one can get at once to show that I was not thought of in the way I supposed.

Mr. FIELDING.—I have no hesitation in saying what I had in my mind, was that I believed Mr. McDougall did not intend to resign. My reason for that was that some considerable time ago, Mr. McDougall stated his intention to resign, but he did not carry it out. I do not dispute his right to change his mind and I simply thought he had changed his mind.

Mr. MCDOUGALL.—I never talked of resignation until after the House, at its first session, had an opportunity of saying 'Now, we will consider these things.' I never thought of resignation before that.

Mr. FIELDING.—I do not know that any good will result from Mr. McDougall and myself having differences of opinion. I can only say that before the present session opened and on the eve of my departure for Europe, Mr. McDougall called to see me and he stated that he had decided to resign, it was only a question whether he should do it at once or wait until his report was placed before parliament. He asked my opinion on the matter and I said : 'Certainly he had better put his report before parliament.' He did not resign and I thought he had changed his mind. That was the meaning of the remark I made the other day. I can only say this : There need be no misunderstanding. The view of the government is that Mr. McDougall's conception of his duties is a mistaken one. We do not question Mr. McDougall's good intentions, but we think his conception of his duties is an erroneous one which is not to the advantage of public business, therefore we are not able to garee upon the amendments he desires. That is the whole story in a nutshell.

Mr. MCDOUGALL.—It is a misunderstanding according to my recollection, but it does not make a bit of difference. As Mr. Fielding says we had a meeting. I am not saying that Mr. Fielding's statement of what occurred is not his recollection. I say that it is not as I intended. I remember meeting him very well, but I recollect nothing about that meeting except this : I remember perfectly Mr. Fielding said there would be no amendments to the Audit Act. He said that whenever I applied for superannuation I would get it and he added ; 'Will you apply for it now ?' Well my idea of my position, being a parliamentary officer, was that I should not resign behind the back of parliament, or that I should not apply for superannuation in view of the fact that I felt that there was a large expenditure that required the control of a man of experience and that therefore if I got such things as appeared to be necessary to enable me to

do the work I would be very glad to remain, but that I would not remain under any circumstances unless these recommendations made by me were considered. I quite remember Mr. Fielding mentioning that because I did not think that any man in my position ought to consider it, that was my view. It is all right now.

By Mr. Fielding:

You thought, Mr. McDougall, that you ought not to resign at that stage ?

A. Yes.

Q. Well, you had resigned before ?

A. No, I had not. I asked for superannuation before the dissolution of parliament.

Q. Was that not a resignation ?

A. It was not, except in this sense : We were getting under the control of parliament and it was out of the hands of the government then, the doing of this thing as I thought. It may be right or wrong, but I said 'it is in the hands of the people of Canada to determine what parliament will do.' I thought my position was a logical one. I thought I could not get it as things were but parliament could give them to me. I asked for certain powers and parliament could give them or not. I put in my application for superannuation in that view, and the matter is now before parliament.

By the Chairman:

Q. Do you wish to make any further statement ?

A. I understood Mr. Fielding to say that I had resigned before, and I might resign again, and that that was his reason for supposing that I would remain as Auditor General hereafter.

Mr. FIELDING.—I did not add the last words. I said you had resigned before.

Mr. MCDOUGALL.—And therefore you assumed because I did so that I was going to remain here. It could only be because you——

Mr. FIELDING.—What I meant to say was that you had on several occasions stated your intention to resign. One of them I have already referred to.

Mr. MCDOUGALL.—You mean the last time you and I spoke ?

Mr. FIELDING.—Yes, and in your Blue-book on a number of occasions you stated your intention to resign and you had not carried it out. What I meant was I thought you had changed your mind and did not wish to resign. I do not know whether I was right or not, you know best.

Mr. MCDOUGALL.—I gather from what you have said that your opinion was this: that I had resigned before and did not carry it out and therefore you assumed I would not carry out my intention now.

Mr. FIELDING.—That is hardly correct.

Mr. MCDOUGALL.—What did you assume ? You assumed I would be here.

Mr. FIELDING.—Certainly. I stated and I want to repeat it again : When Mr. Foster said, 'You will not have any Auditor General.' I said 'there would be an Auditor General.' 'Not the present Auditor General,' remarked Mr. Foster, and I answered in the affirmative. What was in my mind was that Mr. McDougall on several occasions announced his intention to resign but did not do so. He had announced it on two or three occasions in his Blue-book if my memory serves me right.

Mr. MCDOUGALL.—On one occasion I did.

Mr. FIELDING.—Perhaps you are right.

Mr. MCDOUGALL.—And at that time I wanted to get superannuation.

Mr. FIELDING.—Mr. McDougall, also published his intention in a document within the past month. In view of all these things, and Mr. McDougall not having resigned, I concluded he had changed his mind.

Mr. MCDOUGALL.—That is just what I want to explain so that it will be quite understood. In my first report I drew attention to the fact of this tremendous Davis

contract, as I thought it to be, and I said, 'Well, now, I cannot continue in this work unless I am given powers to prevent this in the future.' It was decided that I could not prevent it, that I was obliged to pay that amount—that is to say the increased amount on a certain contract given after the work was done when there was no evidence that the first did not pay and when there was no evidence that the contractor having done part of the work had said, 'Well, I cannot complete it now, give me the rest.' Then the government might have said 'We are going to lose money by taking in a new contract. For some reason or other he has only done part of the work, but another man would not have completed this and we must go on with it.' I was told by my lawyer, I was told by the Department of Justice that the government had a right to do that. I am not wanting anybody to form an opinion about it. That was a thing that could not be known as being the law of the country and I could not go on in my position. I then said 'I will ask for superannuation.' I asked for superannuation. I did not talk of resigning if I did not get superannuation. I withdrew my application for superannuation when the House was dissolved. I said: 'We are going to have a new parliament. The last parliament you might say is practically outside of this. It would not be done under a new parliament but as I have explained I bow to whatever they say. It was of course possible that the new parliament might decide differently. When I wrote about resigning the idea I had was of resigning at the end of the session. We are at the end of the session. I have been told by many people that I ought not resign. I have said 'That is my idea—that may be right or wrong. I am applying for superannuation, I believe I have earned superannuation. I am over the limit at which a man has the right to get superannuation and I would like to get it. If I can get it I will but I am going to go whether I get it or not. Whether I get it or do not get it that is all right. I want to say that I think I have kept my word all through this. Every man may be weak, I may be weak in other things but in this I maintain that I have not shown evidence of weakness. Mr. Fielding testified that the present Auditor General was going to remain without having any communication of any kind.

Mr. FIELDING.—I had none.

Mr. McDOUGALL.—That is what I want to be quite clear.

Mr. FIELDING.—Well I do not clearly understand what is the purport of Mr. McDougall's statement. Is it his desire to state now his resignation ?

Mr. McDOUGALL.—I wish to state that I am going to resign and hope to send my resignation in to-morrow.

Mr. FIELDING.—That is entirely for Mr. McDougall.

Mr. McDOUGALL.—If I had altered my own views I would have said so. I only want that everybody should know and that everybody will say—well, I propose to leave say, on the first of August. I will leave any earlier if I am wanted, if it is going to be an obligement to anybody, only if parliament says—I am afraid that parliament has said—I do not say that it has been authoritatively done ; with every respect to Mr. Fielding, of course he is not parliament, but I take it, and if anybody can say that it is not so—then, I have the object of desiring to be free at the earliest possible moment that it will not be any injury to the government in the conduct of its business. That is all. Of course, I have seen in the papers that there is some ill-feeling——

Mr. FIELDING.—There is none between Mr. McDougall and me. We have never had any unpleasant words anywhere. We have differed in our views——

Mr. McDOUGALL.—Yes.

Mr. FIELDING.—That is all.

Mr. McDOUGALL.—I hope that is quite understood.

Mr. FIELDING.—I only intended t convey the impression that Mr. McDougall had probably changed his mind.

Mr. McDOUGALL.—You did not say, however,—you might have said to me, seeing we were good friends : 'You have a weakness for resigning and withdrawing,' as you perhaps supposed it to be, ' and I want to know whether it is so or not.'

Mr. FIELDING.—I will tell you frankly that I was afraid if I did that Mr. McDougall would say that I was coaxing or trying to persuade him to resign. My desire is to have him follow his own course.

Mr. MCDOUGALL.—I have never done it before and I think that Mr. Fielding was withdrawing a little of his good opinion of me by assuming that that was true. It may be like the discussions here—well, people are sensitive after all. Now, that is quite understood.

Mr. FOSTER.—Suppose we say we understand this now.

Mr. MCDOUGALL.—All right.

The committee then adjourned.

HOUSE OF COMMONS,
COMMITTEE ROOM NO. 32,
MONDAY, July 10, 1905.

The Select Standing Committee on Public Accounts met this day at 11 o'clock, a.m., Mr. Colin McIsaac, chairman, presiding.

The committee resumed consideration of certain amendments proposed by the Auditor General to the Audit Act.

Mr. COLLINGWOOD SCHREIBER, Deputy Minister and Chief Engineer of Railways and Canals, called and sworn, and examined.

Mr. FIELDING.—It was in relation to some matters that arose during the examination of the Auditor General that somebody thought that it would be right or expressed a desire to have Mr. Schreiber here.

Mr. ZIMMERMAN.—It is only fair to Mr. Schreiber that he should hear the statements that were made by the Auditor General. He should be given an opportunity to state whether they are right or wrong.

Mr. FOSTER.—Well then, Mr. Schreiber, do you want to make any statement ?

Mr. SCHREIBER.—I am prepared to make a statement if it is so desired.

The CHAIRMAN.—You know what the Auditor General has already mentioned. It was in regard, I think, to the Sorel bridge. Do you wish to read over what he said from the Minutes ?

Mr. SCHREIBER.—I have read some of it, but not the whole of it. I have read the part with reference to that bridge.

Mr. MCDOUGALL.—I think all the evidence is in the Sorel bridge correspondence. It is printed in my report—everything.

Mr. FIELDING.—You might listen to what is stated and make another statement if you wish. Probably there is no special desire to examine you. You may make any statement that you wish.

Mr. SCHREIBER.—I think the best way is to make a statement. I will read it, what I want. I appears to me that it is necessary for the committee to understand the wording of the Subsidy Act in regard to this bridge. I will read it: 'Towards the construction of a bridge over the Richelieu river at Sorel, 15 per cent upon the amount expended thereon not exceeding $35,000.'

Q. Is that the present reading of the Act ?

A. Yes—not the present reading of the present Subsidy Acts. They were passed later than this. But that Act and all the other Acts read in that way ' the amount expended theron.'

APPENDIX No. 3g

By Mr. Foster:

Q. That is changed ?
A. Yes.
Q. And what is the present reading of the Act ?
A. It is the 'reasonable cost' now.
Q. In what year was it changed ?
A. This was in the year 1899.
Q. When was it changed ?
A. Well I do not remember what year it was changed in.

By Mr. Fielding :

Q. Would it not probably be at the time when what was commonly known as the double subsidy was introduced ?

A. Yes, I think it is quite possible. Yes that is right.

Q. The sliding scale. It was introduced about 1899.

A. Yes, I think that is correct. Now under that of course my duty was to ascertain, if I could, the amount expended upon that bridge, and with that object in view one of the officers out of the accounting branch of the department was sent down to examine the vouchers and the accounts of the department. He has done so and he has stated : 'I have examined and verified the vouchers which are clearly for bridge construction as follows:—Then he enumerates the items which amount to $151,395.14 and he says : 'I have omitted from the above the following items which do not appear to me to be clearly for bridge construction.' And then he gives the items some of which I think are for bridge construction. They amount to $12,591.73. He then puts these altogether and makes this the total cost of the bridge. It is $205,192. In support of his report, to make it stronger, I presume, there are the affidavits from the secretary-treasurer and auditor of the company. This is one of them. It is dated the 4th day of January, 1900.

'I, Edouard C. Lalonde, secretary-treasurer and auditor of the South Shore Railway Company of the town of Sorel in the District of Richelieu do solemnly declare :— That I know as secretary and auditor of the company aforesaid the various items mentioned in the statement of the amounts expended for the construction of the bridge over the Richelieu at Sorel, and that in the total, of $243,148.52 there is $217,783.73 for the Richelieu river bridge construction alone and $25,374.79 for the works east and west of the bridge, and which constitute the approaches to the same and are part of the bridge. And I make this solemn declaration conscientiously believing the same to be true and knowing it is of the same force and effect as if made under oath and by virtue of the Canada Evidence Act, 1893. (Sgd). Ed. C. Lalonde, Secretary and Auditor.'

By Mr. Clarke:

Q. What is the date of that ?

A. The 4th of January, 1900 ; and here is another made on the same date :

'I, Edouard C. Lalonde, Secretary-Treasurer and Auditor of the South Shore Railway Company, of the town of Sorel, in the district of Richelieu, do solemnly decare : That I know as secretary and auditor of the company aforesaid, the various items mentioned in the statement of the amount expended for the construction of the bridge over the Richelieu river at Sorel, and that item No. 11, in the said statement, and being for expenses and disbursements in connection with the expropriation of lands, fees of arbitrators and of advocates, witnesses, &c., and notarial deeds, &c., to the amount of $500 is the true amount expended in connection with the construction of the bridge over the Richelieu river.'

That is the same date as the other one, the 4th day of January. Then there is one by Joseph Misael Fortier. He says :

'In the undersigned, Joseph Misael Fortier, Tobacco Manufacturer, of Montreal, one of the members of the Tourville Syndicate, and one of the directors of the South

Shore Railway Company, do solemnly declare: That to my personal knowledge the sum of $5,000 was paid out and expended of the funds of the South Shore Railway Company to Hyacinthe Beauchemin, of Sorel, according to an agreement with him to superintend the works of trestle, pile-driving, filling in rest-piers, &c., all works connected with the construction of the Richelieu River Bridge, at Sorel, except the work of the bridge itself, which was given out by contract, and also for the purchase of timber, boulders, sand, &c., which were required to carry out these works to the satisfaction of the company, being item two hundred and sixty (260) of the detailed statement of the amount expended for the construction of said bridge, and I make this solemn declaration conscientiously believing the same to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the Canada Evidence Act, 1893.

'(Sgn.) J. M. FORTIER.'

It is dated the 9th of December, 1899.

Then Joseph Perrault makes oath as follows :—

'I, Joseph Perrault, Architect, of the city of Montreal, do solemnly further declare that on the 19th, 21st and 22nd day of November last (1899), I did examine the books and vouchers in the possession of the South Shore Railway Company, at Sorel, and relating to the amount expended for the construction of the bridge over the Richelieu river, and I found it was very difficult to ascertain the actual amount expended for said construction, as some items in said books and vouchers were for both the construction of the bridge and railway in general, and that, in taking as basis for the amount expended the various amounts charged in said books and vouchers, I might have charged as amount expended, for the construction of the bridge, items belonging to other constructions or omitted some items, and I thought advisable to take only such vouchers that were clearly relating to the construction of said bridge, and for all the other works take the necessary measurement and make the calculations and valuation of same, as usually done in bridge work, and I make this solemn declaration conscientiously believing the same to be true and knowing it to be of the same force and effect as if made under oath and by virtue of the Canada Evidence Act, 1893.

'(Signed) JOSEPH PERRAULT,
'Architect.'

By Mr. Clarke:

Q. Is he an officer of the department ?

A. No, Mr. Gleason was the man sent down by the department. Perhaps you would like to hear what Gleason said ?

Q. Who is this man you have been reading from ?

A. I stated at the outset that he was an architect.

By Mr. Fielding:

Q. He was an employee of the Bridge Company ?

A. Yes.

Q. He was not a departmental officer ?

A. No ; he was not. Here is what the departmental officer says ; do you wish to hear that ? (Reads) :

Department Railways and Canals,
Ottawa, January 5, 1900.

SIR,—I have the honour to report that, in accordance with your instruction, I have examined the books and vouchers of the South Shore Railway Company, in order to ascertain the cost of their bridge over the Richelieu river.

The detailed statement prepared by the company shows the cost to be $243,148.52, this sum including $25,374.79 as being the estimated cost of the works east and west

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of the bridge and which constitute the approaches of the same, leaving a balance for construction alone of $217,783.73. This statement has been sworn to by Mr. E. C. Lalonde, secretary and auditor of the company.

I have examined and verified vouchers which are clearly for bridge construction, as follows :—

1	$	25 00
2		2 00
3		175 00
4		315 00
5		475 00
12		71 00
13		275 00
14		4 99
17		4 50
18		288 13
19		9 52
20		149,750 00
Total		151,395 14

I have omitted from the above the following items which do not appear to me to be clearly for bridge construction :—

6, to purchase of land, &c	$	4,500 00
7 "		2,000 00
8 "		125 00
9 "		23 73
10 "		293 00
11, expenses and disbursements in connection with expenditures, &c		500 00
25, two No. 5 semaphores, &c		150 00
26, to superintendence of all works except for superstructure, &c		5,000 00
		$12,591 73

The value of works represented by an amount of $53,796.86, as charged in their statement, for which no vouchers were produced, has been estimated by Mr. J. Perrault, who has made detailed statements of measurements and quantities of the materials and workmanship, with the current mercantile value of the same, and such statement being annexed to the statement of expenditure, might be verified by an engineer of the department.

The total cost of the bridge, as per voucher, appeared to be properly chargeable to the construction is, as hereinbefore stated, $151,395.14. If the estimated cost of the substructure, as furnished by the company is approved of by the engineering officers of the department, viz., $53,796.86, then the cost of the bridge, &c., would be $205,192.

I inclose a sworn declaration from Mr. Joseph Perrault with further reference to the above calculation, and two declarations from Mr. E. C. Lalonde, with reference to the total expenditure, and to an item of $500 (No. 11) respectively.

I am, sir, your obedient servant,

J. GLEASON.

The Chief Engineer,
Department of Railways and Canals,

By Mr. Emmerson :

Q. When you received that report from the official of your department whom you had sent down, what did you do ?

A. First of all I submitted the matter to the law clerk of the department to know whether it was necessary to send an engineer down, He said, no, it was the duty of the engineer to make an estimate——

Q. Under the Subsidy Act ?

A. Under the Subsidy Act it was the expenditure.

Q. Who was the law clerk ?

A. Mr. Ruel.

Q. He is not now in the department ?

A. No.

Q. Was that before the Subsidy Act was amended with respect to this particular expenditure ?

A. Yes, I think it was.

Q. What did you do ?

A. Then after that I made a report.

A. To whom ?

A. To the minister. I always make reports to the minister of these things. That is the only knowledge he can have in connection with this—from my report.

Q. And based on your report in this instance and in all instances is his report to council ?

A. Yes, that is quite correct. This is my report, if it is desired to hear it.

By Mr. Fielding:

Q. Yes, Mr. Barker has asked for it.

A. (Reads):

OFFICE OF THE DEPUTY MINISTER AND CHIEF ENGINEER,
OTTAWA, ONT., January 6, 1900.

SIR,—I have the honour to report the completion of bridge over the Richelieu river, at Sorel, on the South Shore Railway. I have further to report that the South Shore Railway Company have applied to be paid the amount of subsidy voted by 62-63 Victoria, chapter 7, in aid of the construction of this bridge, and with the view of ascertaining its cost Mr. Gleason, an officer of this department, was sent down to examine the books and accounts of the company. The company claims the bridge cost $243,148.52, but it appears to be clear that this sum includes $25,574.79, which is applicable to the approaches to the bridge. This, the company, I understand, now admits, which will make the sum of the claim as applicable to the bridge, $217,773.73. However, Mr. Gleason makes the amount as far as he is able from the accounts and engineer's estimate to be $205,192. And 'assuming the items covered by this amount to be correct' I think it would be right to add the charge made for superintendence of the construction, amounting to $5,000 which, added to the $205,192 amounts to $210,192. Fifteen per cent on the sum of $210,192 amounts to $31,528.80, which sum appears to have been earned. It is only right, however, to state that the cost of the bridge is made up from vouchers produced of the expenditure and from the certificate of Engineer Perrault, all of which are sworn to as to their correctness by the persons whose names appear on the affidavit accompanying the accounts attached to Gleason's report. No payment has as yet been made on account of the subsidy towards the construction of this bridge. Therefore the amount now payable 'appears' to be $31,528.80.

I have the honour to be, your obedient servant,

COLLINGWOOD SCHREIBER.

L. K. JONES,
Secretary Department of Railways and Canals.

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By Mr. Emmerson :

Q. Well, Mr. Schreiber, Mr. Blair was then Minister of Railways ?

A. Yes, he was.

Q. His report to council was based on that ?

A. His report to council, as invariably I think is the case, mentioned the report upon which it was based, you know.

Q. His report appears in the printed papers ?

A. Oh, yes, here it is (referring to papers). Do you want me to read it ?

Q. Yes.

A. (Reads) :

ORDER IN COUNCIL, January 16, 1900.

On a memo., dated January 6, 1900, from the Minister of Railways and Canals, representing that under date the 6th January, 1900, the Chief Engineer of the Department of Railways and Canals has furnished a report showing the completion of the bridge over the River Richelieu, at Sorel, on the line of the South Shore Railway towards the construction of which a subsidy of 15 per cent 'upon the amount expended thereon' not exceeding $35,000 was authorized by the Subsidy Acts of 1899, chapter 7, a contract having been duly entered into with the company for this work.

The minister further represents that an examination has been made of the books and accounts of the company, with a view to ascertain the cost of the said bridge, claimed by the company to amount to $243,148.52. Of this amount, however, the sum of $25,374.79 applies to expenditure upon the approaches, and this has been admitted by the company, reducing the amount applicable to the bridge proper to $217,773.73. From this, however, should be deducted certain sums expended for the purchase of land, &c., and the cost of the bridge is set down by the officer of the Department of Railways and Canals who examined these vouchers, at $205,192, to this the Chief Engineer states that he considers it right to add a charge of $5,000 for superintendence which has been deducted by the said officer, thus making the total cost $210,192. Of this amount the subsidy of 15 per cent aggregates $31,528.80, which sum the Chief Engineer states appears to have been earned. He adds that the vouchers of expenditure produced and certificates of the company's engineers have been sworn to as correct by the persons giving them.

The minister recommends that authority be given for payment to the company of the said sum of $31,528.80.

The committee advise that the requisite authority be granted.

J. J. McGEE, C.P.C.

By Mr. Emmerson :

Q. Now, Mr. Schreiber, having reference to this, Mr. McDougall, the Auditor General in giving his evidence the other day, which you did not hear, I believe——

A. No, no.

Q. Makes the following statement. He is referring to clause, or section 33 of the Audit Act, I think.

A. Yes.

Q. And he goes on to say as follows. 'With reference to that, I labour under this difficulty that although the Chief Engineer, who is perfectly capable and who is friendly with me, more friendly perhaps than I deserve, made with reference to the contract that was made by Davis with the Government of Canada before 1896 what I thought a capable and honest certificate. Now when we come to deal with the subsequent contract that was made in 1900.' Then the question is asked : 'under the new administration ?'—His answer is 'yes, I thought he did not, what I argue is that the engineer takes or should take no directions from anybody. As an engineer he makes a statement of the facts.'

By Mr. Barker:

Q. That is with reference to the Sorel business ?

Mr. EMMERSON.—No.

Mr. SCHREIBER.—With regard to the contracts, I know that the Auditor General disagrees with me in that regard. He thinks that I do not fully comply with my duty. But what I say is that when a contract is put in my hands it is my duty to see it carried out. He thinks I should go back of the contract. I say I have no right to go back of it. My business is to see that the contract is carried out.

By Mr. Emmerson :

Q. Are you governed by directions from somebody else or by the contract under consideration ?

A. I am governed by the contract and any amount I give I certify to, and as the Order in Council is based upon that the minister knows nothing at all about that amount until it is put before him in a report to Council.

Q. Now he goes on further to say this. Mr. McDougall is saying this of you. 'He takes the ground first in the case of the Sorel bridge, he sent to me a statement that the bridge cost $210,000 and it would in fact bring to the contractor 15 per cent on the cost, which would make as you see about $31,000 odd. When it came to me I looked at some details. I happened to have had a little to do with lumber at one time and I saw a good round sum charged for piles, $1 a foot, and some elements in the superstructure and all that. At any rate I thought it advisable for me to send a man to find out what the bridge cost. I did, and he said 'I will make it sufficiently large. It cost $110,000 at the outside.' That is one hundred thousand dollars ($100,000) less than the charge through the Railway Department. When I got that opinion I wrote to Mr. Schreiber asking if he would be good enough to say what his engineer said it cost. He sent me a statement that it cost $98,000. I passed the subsidy on that basis, about $15,000 only. The engineer was possibly perfectly conscientious so far as he was concerned, but he held that if the government told him the cost was so much he was bound to say so. In other words he is bound to certify not what he knows, but what another person told him.' Now I want to know from you, as to the correctness of that ?

A. Well now I can answer all that. In the first place in regard to that $98,000. I have never made an estimate on that bridge, I do not think that Mr. McDougall intends to make me appear wrong. He sent me over the quantities and asked me to apply prices to them. That I did, but whether these quantities are correct or not I know nothing about it. He sent me over the schedule of quantities.

Q. I want to ask particularly in respect to the statement regarding yourself. He says that you contended as far as you are concerned that if the government told you that the cost was so much you were bound to say so. Is that correct ?

A. No, I deny that most emphatically, and I cannot think that Mr. McDougall intended to say that. No such statement could possibly emanate from me, for the simple reason that the minister never knows what the amounts are until they appear before him in a report to Council, in the form of a report from me. Then he asks to see the papers from the office. I do not think Mr. McDougall could have intended to make the statement in that way.

Q. He says you are bound to certify not what you know but what another person tells you ?

A. Not at all so, beyond the fact that if an engineer is reporting to me upon the value ; if an engineer goes down, if we send an engineer down to value a certain work it would be his figures that I would act upon of course.

Q. Apparently it is that you are bound to certify not what you know, but what the minister tells you to certify.

A. Such a statement could not possibly emanate from me. I say so because he never knows what the amount is until he hears from me.

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Q. Are you ever directed by the minister to go and certify as to contracts, this, that and the other ? You are simply asked for a report, are you not ?

A. Well, I have served under nine ministers and never had one of them dictate to me what the amount should be.

By Mr. Foster:

Q. Nor if he did would you follow the directions ?

A. Not if he was wrong.

Q. No, certainly.

A. It is this, I want to state this, to make it clear, what I think Mr. McDougall must have reference to. It was his taking exception to my acting on the contract. He says that I should look behind a contract. While I say I have nothing to do with that. The contract is put in my hands and that is what I work upon.

By Mr. Hughes (King's).

Q. Has that always been the rule of the department ?

A. It has always been the rule of the department, and as I tell you I have served under nine ministers and it has always been the same.

By Mr. Emmerson:

Q. Mr. Fielding is examining Mr. McDougall and he asks him 'What do you mean by 'direction of the government of Canada?'

A. If they pass and Order in Council.

Q. Is not it a fact that the government have passed these Orders in Council, all Orders in Council upon the recommendations of their officials.

A. We will find what has been done in this case anyway. Mr. Schreiber, when I asked him, sent me a statement. I said to him : 'you have sent me a statement that the cost was $98,000 after you first sent me an application to pay on $210,000.' Well, now what have you to say in respect of that ?

A. Well, my letter answers that somewhere. Do you remember, Mr. McDougall, what the date of that letter was ?

Mr. McDougall.—Yes, it is February 26, 1900.

Witness.—It was February, 26, 1900. (Reads):—

Department of Railways and Canals,
Ottawa, Februray 26, 1900.

Sir,—I have the honour to acknowledge the receipt of your communication of the 22nd instant, asking, in connection with the subsidy granted to the South Shore Railway Company in aid of the construction of the bridge erected by that company across the River Richelieu, at Sorel, that the department affix what it considers reasonable rates to the quantities given in your letter.

In reply, I inclose herewith a copy of the said quantities, to which I have applied what I consider fair and liberal prices, as desired by you.

I am, sir, your obedient servant,
COLLINGWOOD SCHREIBER, D.M.

The Auditor General.

By Mr. Emmerson :

Q. You were making prices for quantities he had furnished ?

A. Yes.

Q. And the first report was based upon the actual expenditure in so far as you could ascertain it by the vouchers and accounts ?

A. That is it.

Q. Mr. McDougall goes a little further and he is asked to sign that application. He answers—I think he had reference to yourself——

A. What application is that ?

Q. That is the application to pay on $210,000.

A. I did undoubtedly.

Q. Mr. McDougall says 'it is a very extraordinary case. He must have relied upon somebody else. He did not go there himself.'

A. That is true.

Q. He says further, 'All he tells me, is "I am told by the government and I do it."'

A. No, I never said anything of the kind to anyone. There is no question about that.

Q. You do not act under the government ?

A. Certainly not, most emphatically no.

Q. (Reads). 'He did not go there, his officials went there. His contention is that he must do what the government says. If the government say that four and five make twelve—it is not true and everybody knows that it is not true—the government cannot make it true.' Now, is that your custom in dealing with these matters ?

A. My custom is in a case under the present subsidies, I send an engineer down and he endeavours to get at the quantities and make an estimate of them. I also send down an officer of the accounting branch of the department. I get reports from both and it is upon these reports that I make my report to the minister and the minister knows nothing about it until he gets my report.

Q. Do you contend that you must do as the government say, even if it is to the extent that five and four make twelve ?

A. No, I have nothing whatever to do with the government telling me to do anything wrong in any way, but when the minister puts a contract into my hands, I feel I have to carry it out, and I do it to the best of my ability.

Q. The Auditor General is asked this question by Mr. Bergeron : 'Do you say that the Chief Engineer of the Railways and Canals Department claims he cannot give a certificate respecting any account except under the direction of the government ?' He answers, 'Oh, no, not at all.' That is the question put to him ?

A. Yes, I think there must be some misunderstanding about that.

By Mr. Macdonald (Pictou):

Q. In this case the statute under which the work was done provided for the payment of a certain percentage upon the amount actually expended ?

A. Exactly.

Q. Would it have been possible for you in an ordinary engineering work to ascertain what the actual amount was that was expended on that bridge by simply making an examination of the bridge itself ?

A. No, I think I could make an approximate estimate of the cost, but no engineer could go down and ascertain what was in the foundation of that bridge. A very large portion of it is under water. There would have to be some one there from the commencement to finish, to be able to get at it accurately.

Q. It would require a person to be actually there to inspect every step of the bridge to tell from an engineering standpoint what it would cost ?

A. Certainly.

Q. The only way to arrive at it would be to examine the vouchers of the amount expended ?

A. That is it.

Q. That course you adopted in that very case ?

A. Yes.

Q. And your report in regard to the matter was based upon the accountant's report verifying these vouchers ?

A. And sworn statements.

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Q. And sworn statements of the officers of the company.

A. Yes.

Q. In this particular instance Mr. McDougall makes some recommendation to the department in regard to the facts that should be obtained by the department before reports should be made.

A. Yes, I do not know what he has said.

Q. Can you tell us as to whether he did not do so—have you a file there ?

A. As to what was done in what respect ?

Q. He made some recommendations in regard to certain evidence that should be obtained before a report should be made ?

A. Is that not in the printed papers ?

Mr. McDougall.—What are they ? I do not quite understand what Mr. Macdonald is after.

Mr. Macdonald.—You make some general recommendations to the department as to certain information they should have before making a report.

Mr. McDougall.—The Railway Department in particular ?

Mr. Macdonald.—Yes, in regard to bridges where subsidies were paid.

Mr.McDougall.—I made certain recommendations for the House to adopt, yes. I have not got them here unless they are in that report (referring to papers).

Mr. Macdonald.—Did you not write to the department recommending that they should obtain certain information as to whether there was an amount expended, where a subsidy contract of that kind had been made ?

Mr. McDougall.—I do not remember that, but I will bring whatever you want. Tell me what you want.

By Mr. Fielding:

Q. I want to ask Mr. Schreiber one question following up Mr. Emmerson. Mr. Emmerson read from Mr. McDougall's statement some words, the substance of which I have taken down 'He (Mr. Schreiber) sent me (Mr. McDougall) a statement that the cost of the bridge was $98,000 but he had first sent in a report saying that the apparent cost was $210,000.'

A. Yes.

Q. Mr. McDougall then states, after some discussion, 'he sent me a statement that the cost of the bridge was $98,000.' Did you ever send any such statement ?

A. Mr. McDougall is entirely mistaken about making that statement. I never did anything of that kind. I applied prices for the quantities that were stated.

Mr. McDougall.—Quantities which another engineer gave me for this very bridge.

Witness.—Of course I do not know anything about that.

Committee adjourned.

HOUSE OF COMMONS,
COMMITTEE ROOM 32,
WEDNESDAY, July 12, 1905.

The Select Committee on Public Accounts met this day at 10 o'clock a.m., Mr. Colin McIsaac, Chairman, presiding.

The committee resumed the consideration of the payment of the subsidy on the Sorel bridge.

Mr. Collingwood Schreiber, Deputy Minister and Chief Engineer of Railways and Canals, was recalled.

By Mr. Barker:

Q. Mr. Schreiber, I may say at once that I do not propose to ask you any questions about the matter that was discussed on the last day as to a misunderstanding between you and Mr. McDougall about your having said that you would be guided by the minister's statement. For my part, I accept your version of it. I think it is a reasonable one, and I think Mr. McDougall made a mistake, that is all. Now, I understand, that in your inquiry into the cost of this bridge you placed some stress upon the fact that the Act at that time required that you were to inquire into the amount expended, not into the value or cost of the bridge?

A. That is correct.

Q. Do you think, Mr. Schreiber, that to inquire into the amount expended involved only an examination of the company's books ?

A. And vouchers.

Q. And vouchers. You think it required nothing more than that ?

A. Well, I do not know what else one could do unless one was to see the cheques that were returned from the bank after being paid.

Q. Supposing you found on examining the books that the apparent expenditure according to the books far exceeded your judgment as to the value of the work ; would you then have accepted the books ?

A. Well, I think I should have questioned it.

Q. You would have questioned it ?

A. Yes, I think so.

Q. Then you would not have considered the books and vouchers as conclusive ?

A. Well, I would have to have taken legal advice on that as to what 'expenditure' meant.

Q. I may say, I would rather have your opinion as to what was right there than the opinion of the law clerk ?

A. I think 'expended' certainly means the expenditure. At the same time, I think it should be reasonable expenditure.

Q. And actual expenditure ?

A. And, undoubtedly actual expenditure.

Q. Reasonable and actual.

A. That is right.

Q. Would you think that it was doing justice to the government that the mere vouchers of the company should be accepted regardless of any inquiry into the reasonableness or the actuality of the expenditure ?

A. Well, that I submitted to the law clerk of the department at the time as to whether I should send an engineer, and he said no, it was the expenditure. That was Mr. Ruel.

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Q. I may say that the very fact that you submitted that to the law clerk makes me think that you had some other reasons for it. I cannot help thinking that you were conscious that there should be something more done ?

A. I considered that I had gone as far as I could, and that the Auditor General had very much larger powers than I had. He could take evidence on oath, which I could not.

Q. I mean, before you sent to the Auditor General, when you were acting in your own department, you were not then considering what the Auditor General would do ?

A. No, I was not, except that I made my report, which you will see.

Q. It appears on the papers that the contractor for the bridge was the president of the company ?

A. So it appears. I did not know it at the time.

Q. Did that not appear on the papers that were dealt with ?

A. I did not notice it.

Q. What is his name—Mr. Beauchemin?

A. That fact would have lent a suspicion in my mind.

Q. If you had known that the president of the company was the contractor for the bridge, that would have induced further inquiry ?

A. I think it would have created a doubt in my mind.

Q. A doubt which would have caused further inquiry ?

A. Possibly so.

Q. You don't recall that you did see the name of Beauchemin ?

A. Not at the time, I do not think so. My attention was called to it afterwards.

Q. There is a man by the name of Beauchemin received $5,000 for supervising the work. Is that the same man ?

A. I suppose it is.

Q. He was the contractor and is allowed $5,000 for supervising the work.

Mr. FOSTER.—And was president of the company ?

By Mr. Barker:

Q. President of the company and took his profit on the contract of course. Was that $5,000 allowed as part of his work ?

A. Yes.

Q. That was rather liberal—the country to pay 15 per cent upon $5,000 allowed to the president of the company and the contractor of the company ?

A. Yes—well, I did not know that he was president of the company at the time. But, $5,000—I do not know—it is a matter of expenditure. They expended it, whether it was too much or too little.

Q. Under ordinary circumstances superintendence ought to be allowed, but I would not have thought—I am suggesting this for you to answer—I would not have thought that the superintendent being the contractor should have received $5,000 in addition to his profits and that you should pay a bounty on it.

A. No, it would be an unusual thing to pay a contractor for supervising his own work.

Q. If you had known it as you know it now you would not have allowed it ?

A. Oh, I think it is quite possible.

Q. You say on page 41 of your evidence the other day that your duty was to ascertain, if you could, the amount expended ?

A. Yes, I think so.

Q. Was there any real difficulty in that ? Were the books not correctly kept ?

A. I may say I have never seen the bridge nor the books.

Q. But I am putting it to you now.

A. The books are right, the true expenditure, and——

Q. Yes.

A. And Mr. Gleason, the officer of the department, examined these books.

Q. I will come to that in a moment. Is there any real difficulty on the part of the engineer in ascertaining approximately the cost of a bridge such as this.

A. Well——

Q. Apart from the books altogether ?

A. If the bridge was built exactly according to the plans originally designed there should not be, but two thirds of the work of the superstructure—more than that—is under water, and to go and examine it after the bridge is built is not so easy. You cannot set it correctly, approximately. One cannot see what it is.

Q. But you had the plans of the bridge in the department ?

A. Yes.

Q. You had the plans as designed for the bridge ?

A. I had.

Q. You then were in a position without leaving your office, through yourself or your departmental staff, to ascertain what the bridge ought to have cost ?

A. Well, yes, if it was built according to that plan.

Q. Within a very small sum ?

A. If I might make an explanation. In a later instance on a bridge on a road in Nova Scotia where the original plans upon which it was intended that the bridge should be built, it was not built. They had an immense lot of trouble, and to have made an estimate of that bridge upon the plans,—I may say that this work was not built according to the plans—would not have been the cost.

Q. But, Mr. Schreiber, when plans are submitted to your department for the purpose of subsidy from the government, if the company receiving the subsidy choose to depart from the plans, do they not submit amended plans to you and file them ?

A. No, not as regards foundations, and so forth.

Q. I do not see it on record, but do you not require further particular plans of material alterations in the structure from which you are to pay under the Act ?

A. If the plans were changed so as to interfere more with navigation than the original plans or if the plans of the bridge were made of slighter character than those submitted, then they would be submitted to us.

Q. You would not expect any material change to be made in a bridge upon which a subsidy had been granted without your concurrence ?

A. No, not in the line in which I speak of, but there might be in the foundation, as you well know—you have operated and managed railways.

Q. I have been over all that with you ?

A. You know that you make a plan for the foundation of the bridge and when you come to the cofferdam both above and under the water you find a very different state of things and a very large expenditure might arise. I am not saying that that was so in this case.

Q. You had plans filed with you as the plans of the company upon which these people were going to ask a very considerable subsidy. That plan would enable you approximately to say what the bridge cost ?

A. Yes, I think it would. It would give some idea anyway.

Q. Well, if you find that a bridge which ought to cost according to those plans $100,000 was represented to have cost $240,000 would you not be entitled to ask them for a very minute explanation of the changes, which had caused the expenditure to be more than double ?

A. Yes, I think so.

Q. I suppose in the department you had the material to check the plans ?

A. I had the original plans of the bridge.

Q. I suppose I might ask you, from your long experience, is it not a thing in no way uncommon for companies such as this or small railway companies to enter into contracts and to pay the contractor not wholly in cash but partly in cash and partly in stock ?

A. Yes, it is frequently done.

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Q. A very frequent thing. You would not be surprised to find that a contractor who is president of a company was receiving according to the books of the company a considerable sum, part only of which had been in cash ?

A. I have no knowledge, but I know that there are many instances in which contractors are paid in the way you name.

Q. Well, when you find a set of books simply showing on the books the cost to the contractor would you assume as a matter of course that that meant in cash ?

A. Well, that never entered into my head in this case.

Q. Well, do you not think that when a claim is made that the bridge cost $240,000, and you have plans in the department showing that the bridge would cost approximately $100,000 there should be a reasonable suspicion of a dicker of that kind with the president of the company ?

A. I do not think on a contract that approximately might be valued at $100,000 it would be right to expend $240,000 on it.

Q. Not in cash ?

A. No, not in cash.

Q. It would not be probable either. I observe you sent Mr. Gleason who was an accountant to make a report ? I suppose you had very able inspecting officers, engineers on your staff whom you could have sent ?

A. Yes, we have engineers, but we have not a staff. It would take a large staff to be on hand, and see after the rates and the contractors, as the work was in progress.

Q. Can you say from your recollection that you had any difficulty of that kind in your department in this case ; on January 5 when you sent Mr. Gleason ?

A. Oh, I had two inspecting engineers.

Q. You did not, however,——

A. No, I did not.

Q. I see that Mr. Gleason was sent, and in his report, page A—68, of the Auditor General's report, 1900, he makes his report on January 5, 1900. He says: 'I have the honour to report that in accordance with your instructions I have examined the books and vouchers of the South Shore Railway Company in order to ascertain the cost of their bridge over the Richelieu river.' I suppose that correctly states what he was instructed to do ? There was no engineer on the part of the government to assist Mr. Gleason, who was a mere accountant ?

A. No.

Q. Then he says further on in his report—I am not going into all the details you have got them in the evidence before you : 'The value of the works represented by an amount of $53,796.86 as charged in their statement for which no vouchers were produced, has been estimated by Mr. J. Perrault who has made detailed statements of measurements and quantities of the materials and workmanship, with the current mercantile value of the same, and such statement being annexed to the statement of expenditure, might be verified by an engineer of the department.' You received that on January 5. Did you get one of your engineers to check that $53,796.86 ?

A. Yes, there was an engineer sent by the department.

Q. That is later ?

A. Later, yes.

Q. But did you, when you got this report ?

A. No.

Q. You did not direct any engineer from the department to check that, which was suggested by Mr. Gleason ?

A. No.

Q. Who was Mr. Perrault ?

A. I could not tell you.

Q. He is not an engineer I believe ?

A. I think so, was he not ?

By Mr. Foster:

Q. Is he not an architect ?

By Mr. Barker:

Q. An architect and an engineer in Montreal.

A. I think so. I do not know.

Q. The government have nothing to do with his employment ?

A. No, not at all.

Q. He was acting for the company ?

A. Well I assume he may have been acting for the company, but this affidavit of his that I see here, was made, I imagine at the request of Mr. Gleason.

Q. Yes, but it was made in consequence of the work previously done for the company, and this examination.

A. Oh, I do not know that—that he was an employee of the company ?

By Mr. Foster:

Q. The affidavit was made on the 7th of December.

A. It is said so, that I do not know.

Q. At all events you do not know that the government employed him at all for this inspection ?

A. I do not know that they did. I think I would know if they did.

Q. You would not employ an outsider for that purpose, having your own staff ?

A. Not if our men were available.

Q. You have two ?

A. Yes, but they are not always available.

Q. Who was the engineer of this bridge ?

A. That I cannot tell you.

Q. Mr. McCarthy ?

A. That I cannot tell you.

Q. You had his plans of the bridge in your office ?

A. Yes, I think he made some calculations on the plan, but whether he was the engineer of the bridge, I do not know.

Q. I think he was, as far as the papers show.

A. At any rate he made some figures on the bridge.

Q. Perrault had not been engaged on the bridge at all ?

A. No, I do not think so.

Q. He knew nothing about the bridge or substructure or anything of the kind any more than you yourself ?

A. Not as far as I know.

Q. And probably less ?

A. I do not know about that.

Q. I see that some weight was given in the evidence on the last day to some affidavits that were taken by Mr. Gleason in support of the statement of the company as to the cost of the bridge ?

A. Yes.

Q. I have read these—I take it from the sworn testimony. Here is what the secretary and auditor of the company says.

A. It is on page A67 of the Auditor General's report.

Q. Here is what Mr. Lalonde says, that he is secretary and auditor of the South Shore Railway Company.

A. Secretary-treasurer and auditor.

Q. Secretary-treasurer and auditor of the South Shore Railway Company at Sorel. He says: 'As secretary and auditor of the company, I know the various items mentioned in the statement of the amounts expended for the construction of the bridge over the Richelieu river at Sorel.' He does not say that he knows the amounts were

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expended. He only says 'the amounts mentioned in the statement,' and he says, 'in the total of $243,148.52 there is $217,783.73 for the bridge over the Richelieu river and $25,374.79 for works east and west of said bridge, and consequent of the construction of the bridge over the river and which constitute the approaches to same and are part of the bridge, and I make this solemn declaration,' &c. There is not a word there from beginning to end that he knows that one cent was expended. He says, there is the statement of your secretary. In that statement there are so many thousand dollars for one part of the work and so many for the other. Mr. Gleason could have sworn to that as well as this gentleman did.

A. He says he knows the value of the items mentioned in the statement.

Q. Certainly he knows the items mentioned in the statement. Any man given that statement would know that. These affidavits have been very carefully drawn to swear to nothing. I have noticed the whole of them are that way. This is one of the affidavits that have been used to verify the cost of this bridge ?

A. Yes.

Q. This was the statement, however, and he says, 'I know the items in the statement,' and they consist of such and such, some really to the bridge and some really to the approaches. Mr. Gleason could have sworn to that as well as he did. Then he makes another affidavit which also was referred to at the last meeting, as verifying the accounts of the company. He says : 'I know as secretary and auditor of the company the various items mentioned in the statement of the amounts expended for the construction of the bridge over the Richelieu river at Sorel,'—again referring to the statement—'and that item, No. 11, in said statement, and being for expenses and disbursements in connection with the expropriation of lands, fees of arbitrators and of advocates, witnesses, &c., and notarial deeds, &c., to the amount of $500, as the true amount expended in connection with the construction of the bridge over the Richelieu river.' He swears to $500 out of $240,000. That is all you have got on that affidavit. Did you hear that, that all he swears is that $500 is correct and gives not a word about all the rest of the accounts ?

A. Yes.

Q. Perrault has a third affidavit that is used to verify these claims of expenditure. So far, we have got $500 expended. Perrault was a gentleman employed by the company at Montreal to go up and find how much was spent on the bridge.

'I, Joseph Perrault, architect, of Montreal, do solemnly declare that on the 19th, 21st and 22nd days of November last I did visit and examine the bridge over the Richelieu river, at Sorel, and trestle work east and west of same, and the abut rest-piers, north and south of said bridge, and that after long searches in the books, papers and receipts of the South Shore Railway Company, in their offices at Sorel, I have extracted all vouchers relating to the amount expended for the construction of said bridge, and with the plans of said works and measurements taken, I have on the 23rd, 24th, 25th, 27th, 28th and 29th day of November'—he is remarkably minute about immaterial matters——'last made all detailed statements and quantities of the materials and workmanship with the current mercantile value of same, and that said quantities and mercantile values are correct, and I make this solemn declaration,' and so on. Is there a word of that that was of the slightest value to the government?

By Mr. McKenzie (Cape Breton):

Q. It is of some value, does he not swear that he has compared the vouchers with the material put in the bridge and that the prices were reasonable ?

A. All these affidavits, reading them,—I am not a lawyer—I think they cover the end in view.

By Mr. Barker:

Q. He does not say anything, I am afraid, not a bit. He says: 'I have extracted all the vouchers relating to the amount expended for the construction of said bridge,

and with the plans of said works and measurements taken I have 'on these dates' made all detailed statements and quantities of the materials and workmanship with the current mercantile value of same, and that said quantities and mercantile values are correct.' He has gone over the figures and checked them but he does not say that one cent was expended on the bridge. He was not the engineer of the bridge. Mr. McCarthy was the man who knew what the work was. He does not seem to have been employed. This gentleman was brought from Montreal to go over the books and make up a statement, and upon this the government are satisfied. Mr. Gleason suggests that $53,000 should be checked by the department and nothing is done. Now, the claim of the company having been put in and Mr. Gleason having deducted certain amounts, and you having added something that you thought was reasonable, you finally agreed upon a sum, according to the statements, of some $210,000.

A. Yes.

Q. In round figures ? It actually was $210,192. I read that from the Order in Council on page 69 of your report ?

A. There is my report with one by the Auditor General with the statement.

Q. I am reading at present, I will look at that in a moment—I am reading from the Order in Council, wherein it is stated that the amount found due is $210,192. Now, I observe Mr. Schreiber, that while Mr. Gleason made his report on the 5th of January, suggesting as I have said, that certain checking should be done, I see that on the 6th of January, the following day, you make your report ?

A. Yes.

Q. And on the 16th of January, ten days afterwards, the Order in Council was passed. Having received that account on January 5 was there any checking, any examination of the plans of the bridge for the purpose of seeing whether this $210,000 was in anyway reasonable or whether it represented the probable actual disbursements.

A. I do not recollect, but I imagine not.

Q. You imagine not. Can you recollect why you did not act upon Mr. Gleason's suggestion that an engineer should check the $53,000.

A. No, merely for the reason that I did not think that an engineer could go there and say what that foundation should cost, but an engineer could say approximately what the cost would be if the bridge were built according to a certain plan.

Q. We will come to that in a moment on another branch of it. Can you recollect what the circumstances were that led to this report being made so quickly ?

A. No, I cannot.

Q. There was no pressure brought to bear from any quarter.

A. Not that I am aware of.

Q. I am not suggesting from the minister. Was there any at all ?

A. There was none whatever from the minister. I can say that.

Q. Was there any from any member of parliament ?

A. Not that I remember.

Q. You do not recollect any at all from the department to hurry this thing up ?

A. Not from the department, but it is usual when a subsidy is granted—there is always considerable anxiety to get the money as soon as possible.

Q. Naturally. Do you recollect any anxiety to get this one ?

A. No, I do not.

Q. This is not an ordinary, casual affair. You would remember ?

A. No I do not remember.

Q. There was a good deal of controversy between you and the Auditor General ?

A. Yes, but I have nothing from the Auditor General to say what the expenditure was.

Q. At all events you do not recollect that there was any pressure of any kind. I do not mean improper pressure, any urgency ?

A. No I understand, improper or proper, I know.

Q. I am not imputing anything improper.

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A. No I quite know that.

Q. Well now do you draft the Orders in Council ?

A. They are drafted in my office.

Q. By you as deputy ?

A. As deputy.

Q. Your handiwork ?

A. Yes, sir.

Q. It goes this way :—

'On a memo. dated January 6, 1900, from the Minister of Railways and Canals, representing that under date the 6th of January, 1900, the Chief Engineer of the Department of Railways and Canals has furnished a report showing '—I call your attention to what you show in the reoprt according to this.

A. Yes.

Q. (Reads) 'showing the completion of the bridge over the Richelieu river at Sorel on the line of the South Shore railway towards the construction of which a subsidy of 15 per cent upon the amount expended thereon, not exceeding $35,000, was expended by the Subsidy Act of 1899, Chap. 7, a contract having been duly entered into with the company for this work.' You therefore knew the terms and that a contract had been entered into. Is that contract with you ?

A. It is.

Q. It is on file in your office.

A. It is here.

Q. So far you see, you only say, you simply say that you have reported to the minister that the work is completed ?

A. Yes that is all. It was in my office.

Q. The point is that all you have told the minister up to this point is that the work is completed. It goes on, 'the minister further represents that an examination has been made of the books and accounts of the company with a view to ascertain the cost of the bridge, claimed by the company to be $243,148.57.' Then you go on with some details to show that it was reduced to $210,192.

A. Yes.

Q. Now you state in the Order in Council that the bridge has been completed. There is not a word there that you have made any investigation. The minister is speaking in this, and not the Chief Engineer. Is there any reason for that ?

A. No, go further, the reason for that, it goes on to say is that this $21,000 appears to have been earned.

Q. I am coming to that point in a moment. So far it is stated only that the work has been completed. It is the minister who is speaking. He refers to what the company had said and that certain reductions had been made, bringing it down to $210,192.

A. Which the Chief Engineer says appears to have been earned.

Q. Now is there anything in that except a calculation so far as your responsibility is concerned ?

A. I am responsible for the basis of this report to council. There is no doubt about that. Whether right or wrong I am the responsible person. There is no doubt about that.

Q. You did not say though that you were satisfied that that was the amount expended ?

A. I never looked at that in that way at all before.

Q. It is very clear you did not.

A. I do not know. I think the case is stated here quite in accordance with the reports of Mr. Gleason.

Q. You do not say that the money has been earned ?

A. Well, I think—I say 'which sum appears to have been earned.'

Q. I notice, however, that whenever you come to anything about the cost of the bridge you are very guarded Mr. Schreiber. You are positive of only the fact that the bridge has been completed ?

A. I told you this, that I had no doubt that that was extravagance. As a matter of fact nothing was found in any other sum that was expended.

Q. This is not an examination of this account. It is a matter which arose upon the statement of the Auditor General as justifying his assertions as to what he had to have power to do, and that he has saved in various ways, certain sums of money. We are not going into this account as we did into the accounts of last year. There is the fact, the positive statement made in the Order in Council, first, that the bridge was completed, then that the accounts of the company have been examined and then you say that the subsidy 'appears to have been earned'? That is all there is in that report?

A. Yes.

Q. Well, now, where is that account for the $53,790 odd?

A. Where is the account?

Q. Yes.

A. I imagine that it is here, I suppose (looks for the paper).

Q. Attached to Gleason's report?

A. This must be what you are referring to (producing document).

Q. Now, it is the account of $53,000 that he said the engineer——

A. I think it is embodied in those papers.

Q. This seems to be correct?

A. I think those were not included.

Q. This $242,000?

A. I think it is embodied there.

Q. He attaches a separate statement of that $53,000; you have not got that?

A. No, I do not think separately, I think it is in that.

Q. Yes. When did you first get this statement that is here? (Referring to document.)

A. That statement accompanied Mr. Gleason's report.

Q. He took this with him I suppose to investigate?

A. He produced that when he came back after his investigation.

Q. Had not this been sent in to you first?

A. I think I first received it with his report.

Q. It is dated November 29?

A. The first time I received it was when he came back.

Q. Surely you would have received a statement making the claim before you sent Gleason down to inquire into it?

A. No, I think not.

Q. Do you mean to say that they demanded a subsidy without giving in a statement?

A. They made application to have an inspection made. They are not in the habit of sending in statements of that character beforehand.

Q. Well, I see here—all this is given in a good deal of detail here, the quantities and everything else. Could you not have checked these quantities by the contract that had been entered into with Beauchemin and with the plans in your office?

A. I do not know. I suppose they might be checked. There may be a check.

Q. You could have checked it over and seen whether it was reasonable. For example, 4,200 lineal feet of piling at $1 a lineal foot. What do you say as to that?

A. It depends upon the circumstances altogether. The usual price is about 35 cents. There may be circumstances which would make it more.

Q. Would not $1 a lineal foot—that would be in place?

A. That would be in place?

Q. Would that not be an extraordinary price?

A. It would depend so largely upon how the piles drove and whether it was a pile in the work or whether it was a pile in the approaches.

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Q. Can you imagine now that this work, with what you know of it and the plan, that $1 a lineal foot would be a reasonable sum ?

A. It would be a little difficult for me to say. A dollar would be a large sum in the ordinary way, it would be a high price.

Q. What would be a good price per lineal foot ?

A. I could not say in this case knowing nothing about the circumstances.

Q. There have been three estimates made ?

A. Yes.

Q. One by Mr. Keefer ?

A. Yes.

Q. Of this piling—what did he say it was worth ?

A. I do not remember.

Q. You made one yourself upon the measurements ?

A. No, I made no estimate of the cost of that bridge. I merely applied prices which I thought were fair prices in the ordinary way to quantities.

Q. You made an estimate upon quantities given by Mr. McDougall. What did you put down as the price per lineal foot for piling ?

A. I do not remember. (To Mr. McDougall). Is that in your report, Mr. McDougall ?

Mr. McDougall.—Yes.

Witness.—(Referring to papers). Here it is, yes, 35 cents. That is the ordinary run of prices.

Q. Thirty-five cents ?

A. Yes, that is the ordinary run.

Q. Some two or three months afterwards, when this controversy arose, you sent Mr. Tom Ridout to make another inspection ?

A. Yes.

Q. He is an engineer ?

A. Yes.

Q. A man of very great experience ?

A. Yes.

Q. Years of experience ?

A. Yes.

Q. What did he value it at ?

A. I think he valued the whole thing at $125,000.

Q. I mean the piling ?

A. At 40 cents.

Q. Mr. Keefer made for the Auditor General an estimate which he called very little in regard to prices. What did he allow ?

A. Fifty cents.

Q. So that, there were 35 cents, 40 cents and 50 cents put down as the estimate of three engineers as against the charge of this company of $1 ?

A. Yes.

Q. That is a fact, is'nt it ?

A. That is the fact, yes.

Q. Now, having that statement on the 5th of January, do you think, Mr. Schreiber, that the department should not with proper inspection have observed that and immediately found it necessary to send down and have a thorough inspection before you recommended payment of any of the subsidy ?

A. I do not think, so far as the price is concerned, that the inspection would have any weight, because, if a person had been there and seen the piles driven he could have formed an opinion, but I do not think anyone going down when the water was in the river could have told anything more than an ordinary man.

Q. Mr. Ridout went down there ?

A. Yes.

Q. And he made an investigation himself, as an engineer ?

A. Yes.

Q. He was of opinion that 40 cents was a proper price ?

A. Yes.

Q. Well, if Ridout could have done that three months after the Order in Council was passed, why couldn't you have done it before the Order in Council was passed ?

A. It might have been done, of course.

Q. That is the point I make. I make it only as a solitary instance. There was that large considerable item for piles. Would it not naturally strike an engineer as large ?

A. It would in the ordinary way, I think. It is a large price in the ordinary way.

Q. At all events, then, with that before you, you made no investigation as to the actual expenditure or a reasonable expenditure ?

A. I think I have stated the whole case, what I did and what I did not do, as far as I understand.

Q. My question is, with that account before you you did not order any inquiry as to the actual and reasonable expenditure ?

A. It could not have been done before I had that report to Council drawn up.

Q. Notwithstanding that, I am correct in saying you did not order any further inquiry.

A. No, there was nothing more than what I have already stated.

By Mr. Fielding :

Q. You may have answered it already, but I want to put one or two general questions. In the Railway Department, in the case of application for payment of subsidies, say on railways and bridges, what is the usual practice of the minister in reporting to Council ? Does he report and recommend payment of his own motion, or does he require a report from the Chief Engineer ?

A. He has to depend on the Chief Engineer.

Q. That is the usual practice ?

A. That is the usual practice.

Q. Who was minister at the time that these transactions occurred ?

A. In 1900—Mr. Blair.

Q. Did Mr. Blair pursue the usual practice in this case in making a report to Council on the report from the Chief Engineer ?

A. He did. I prepared the report.

The Committee adjourned.

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HOUSE OF COMMONS,
COMMITTEE ROOM 32,
THURSDAY, July 13, 1905.

The Select Committee on Public Accounts met this day at 10 o'clock a.m., Mr. Colin McIsaac, Chairman, presiding.

The committee resumed the consideration of the payment of the subsidy toward the construction of the bridge over the Richelieu river at Sorel.

Mr. COLLINGWOOD SCHREIBER, the Deputy Minister and Chief Engineer of Railways and Canals, was recalled.

By Mr. Barker:

Q. What was the amount upon which the company claimed 15 per cent as a subsidy, Mr. Schreiber ?

A. It was $243,148.52 in the first place, then they came down to $217,773.73.

Q. These are the two amounts they claimed ?

A. Yes.

Q. Well, acting upon the Order in Council the Railway Department certified the subsidy, and I believe the Auditor General refused to act upon the Order in Council ?

A. The Order in Council was made on my report, which you read.

Q. Yes.

A. And all the papers were sent over to the Auditor General,my report and everything.

Q. Including your certificate.

A. Including everything, and he asked—I am speaking from recollections, he may correct me if I am wrong—he asked to have the amount split up, that is to say, the application split up into two. That was done, I think, and an amount paid on account. Again, I think he asked to have it further split up and I think another payment was made.

Q. The amount paid on account was within the amount ultimately paid ?

A. It was something like $14,000, I think that we paid for then.

Q. The amount paid was within the figures Mr. McDougall thought would probably be correct ?

A. Oh, no doubt.

Q. Upon Mr. McDougall's questioning the papers and the alleged expenditure, you are aware, I suppose, that he sent Mr. Keefer and an accountant down to investigate ?

A. I am aware of that from the copy of the report that Mr. McDougall sent to me.

Q. Mr. Keefer is a civil engineer ?

A. Yes.

Q. A man of repute ?

A. Oh, certainly.

Q. Are you aware from the correspondence how much Mr. Keefer made the reasonable expenditure on the bridge ?

A. I think he made it $112,000—I will see (refers to papers).

Q. I thing it is $112,472.50 ?

A. Yes.

Q. That included $10,000 for contingencies and superintendence ?

A. Yes.

Q. That is, apart from the contingencies and superintendence he allowed $102,472.50 ?

A. Yes.

Q. After that, did Mr. McDougall give you certain quantities and ask you to estimate according to what you would consider fair prices based on those quantities and what the probable expenditure would have been?

A. He asked me to apply what I considered fair prices to certain quantities that he sent me.

Q. Without giving you all the quantities ?

A. Quite so.

Q. He simply asked you to put fair prices upon them ?

A. Yes.

Q. I suppose his quantities were taken from Mr. Keefer's report ?

A. I really don't know, may be they are.

Q. I presume you in the course of your examination of the papers, knew that in connection with it ?

A. It is so long ago that I cannot tell you. They appeared to be some of the quantities, I think.

Q. Then upon your placing your estimate of fair prices upon Mr. Keefer's report, what did you find the cost of the bridge would be ?

A. I found $98,000.

Q. $98,171.75, I think the figures are.

A. Yes. Understand, I placed such prices on his quantities as we had been in the habit of paying. I had not seen the locality.

Q. They were only estimates, after all ?

A. Yes, that is all.

Q. You afterwards sent an engineer of your department, Mr. Ridout ?

A. Yes.

Q. And he made an independent inquiry. Will you tell me what he estimated the probable expenditure on the bridge ?

A. $101,000. I am not giving the odd dollars.

Q. $101,008. Do you know upon what sum the payment made to the bridge company was based ? The 15 per cent on your $98,171.

A. The payment was some $14,000.

Q. $14,275 ?

A. I presume it must have been on this $98,000.

Q. It is exactly that ?

A. It might be.

Q. Are you aware that the company has made no further claim, nor has any further amount been ever paid since 1900 ?

A. There has been nothing paid to our department since.

Q. They took the 15 per cent on the $98,000, and so far as you know nothing further has occurred ?

A. Yes, I have heard verbally, not by correspondence, I have heard from them that they are not satisfied.

Q. So far as you know, nothing further has been paid ?

A. No, nothing through our department, sir.

Q. Now, just give us for the notes, Mr. Schreiber, the difference between what was paid in that way and what the Order in Council authorized you to pay ?

A. $14,718 and some odd cents were paid.

Q. $14,725 ?

A. And the amount of the Order in Council was $31,528.80.

Q. Less $14,725—that is a difference of $16,803 ?

A. Between those figures, yes.

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Q. They have been paid $16,803 subsidy less than they claimed from the department ?

A. Oh, no.

Q. Less than they claimed ?

A. They claimed more than that.

Q. Originally, but it was reduced.

A. Quite so.

Q. Then $16,803 less than the smallest amount they applied for ?

A. Yes, quite so.

Q. Then, to go back to the controversy, that led to this, the refusal of Mr. McDougall to act upon the Order in Council has in that one instance at all events saved $16,803 ?

A. Well I would not say that exactly. If it was a final settlement I think it would be that.

Q. That is completed to date ?

A. Yes.

Q. If that be considered a final settlement, Mr. McDougall by refusing to act on the Order in Council, did save $16,000.

A. Yes, that is correct.

Q. And during these six years there has been nothing paid ?

A. There has been nothing paid.

Q. Five years at all events ? I think that is all I want to ask you, Mr. Schreiber.

Witness discharged.

Mr. J. Lorne McDougall.—I want to make a remark or two before Mr. Schreiber leaves the room, especially with reference to what Mr. Schreiber said in answer to Mr. Emmerson. I do not want to enter into any controversy about anything. He asked for an explanation as to the view I took, and the documents are in this paper (referring to a document in his hand) that will support my view or confound it. It may be that I came to a wrong conclusion. I want to speak with reference to Mr. Schreiber, as I supposed, knowing from the beginning the excessive nature of the expenditure. When Mr. Keefer returned from visiting Sorel, as I understood from him and understand from him now, because he is in town, he was only one day at Sorel. With his figures I sent to Mr. Schreiber the statement that appears here as to the quantities as Mr. Keefer found them, and asked for a statement of the money that he made these amounts represent. He did not confine himself to the statement that I sent, but added to that the superstructure to make this statement complete. I presume that probably you will think as I did—you may not think that—when he completed this statement he also verified the figures. I wrote to him on the 22nd, as appears here, on the 22nd of February, and he answered me on the 26th, as appears in the papers. I take it, however, that when he had these statements complete to his hand, before I sent them to him, because he could not in the meantime have found them, from any information that I supplied, he must have taken them from the plans. He took the superstructure, I suppose, from the knowledge that the engineer gave him and added that to the figure she had in hand. Then, as I say, I drew the conclusion that Mr. Schreiber knew how different the expenditure put in was from the actual cost of doing this work. I am taking that to-day to be the evidence that he did know, whether I am right or wrong. But I want everybody to understand that so far as Mr. Schreiber and I are concerned personally, we are living on the best of terms, and as I said before, I do not want to attribute that good result more to myself than to him. I think it is rather more due to him than it is probably to me that we are so

friendly, and I would be sorry if it would be interrupted in any way. I do not know how that will appear, but as I say it is a matter of no consequence so far as this examination has gone on. I do not go into it at all to accentuate any difficulty between the government and myself. After a course of years these difficulties must arise, but what I had in my mind was to endeavour to make things better, as I thought they would be better, to make the mode of dealing with these accounts better. A person who has been here as long as I have, if he has his work at heart at all, you could not prevent him from wishing to see things better. Well, the thing on which most stress was laid was that I said that the government knew this. Well, Mr. Schreiber has said that he had consulted the law clerk of his department. Well, now, you would consult the law clerk when going in there, if you were not the chief person in the department—probably, I am speaking without knowing the procedure—you would go to Council on an important matter. Mr. Schreiber said he consulted the law clerk, but I would think that this was a thing that he would naturally in the first place take to the Department of Justice. The law clerk, as I take it, has no standing at all in the law outside of the assistance that he might give to the department in ordinary work. But about determining anything else, it appears to me on a thing so far-reaching as the paying on reports on such a claim as this, that he would naturally consult his minister. Is it not fair to assume that that would be done by the deputy ?

By Mr. Sinclair:

Q. Does the witness say it is fair to assume that if Mr. Schreiber——

A. No, I withdraw that statement, if you will let me, altogether.

Q. Why should the time of this committee be taken up with assuming things that are not correct ?

A. I am freely withdrawing that.

By Mr. Barker:

Q. I understand Mr. McDougall is explaining how he happened to make that statement the other day.

A. That now turns out to be wrong. I say it is fair to assume that. I withdraw that altogether when Mr. Schreiber tells me he did not. There is the end of that so far as I am concerned. That is all I have to say.