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REPORT

OF THE

SELECT STANDING COMMITTEE

ON

AGRICULTURE AND COLONIZATION

FOURTH SESSION, TENTH PARLIAMENT

1907-8

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

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1909

[App. No. 2—1908.]

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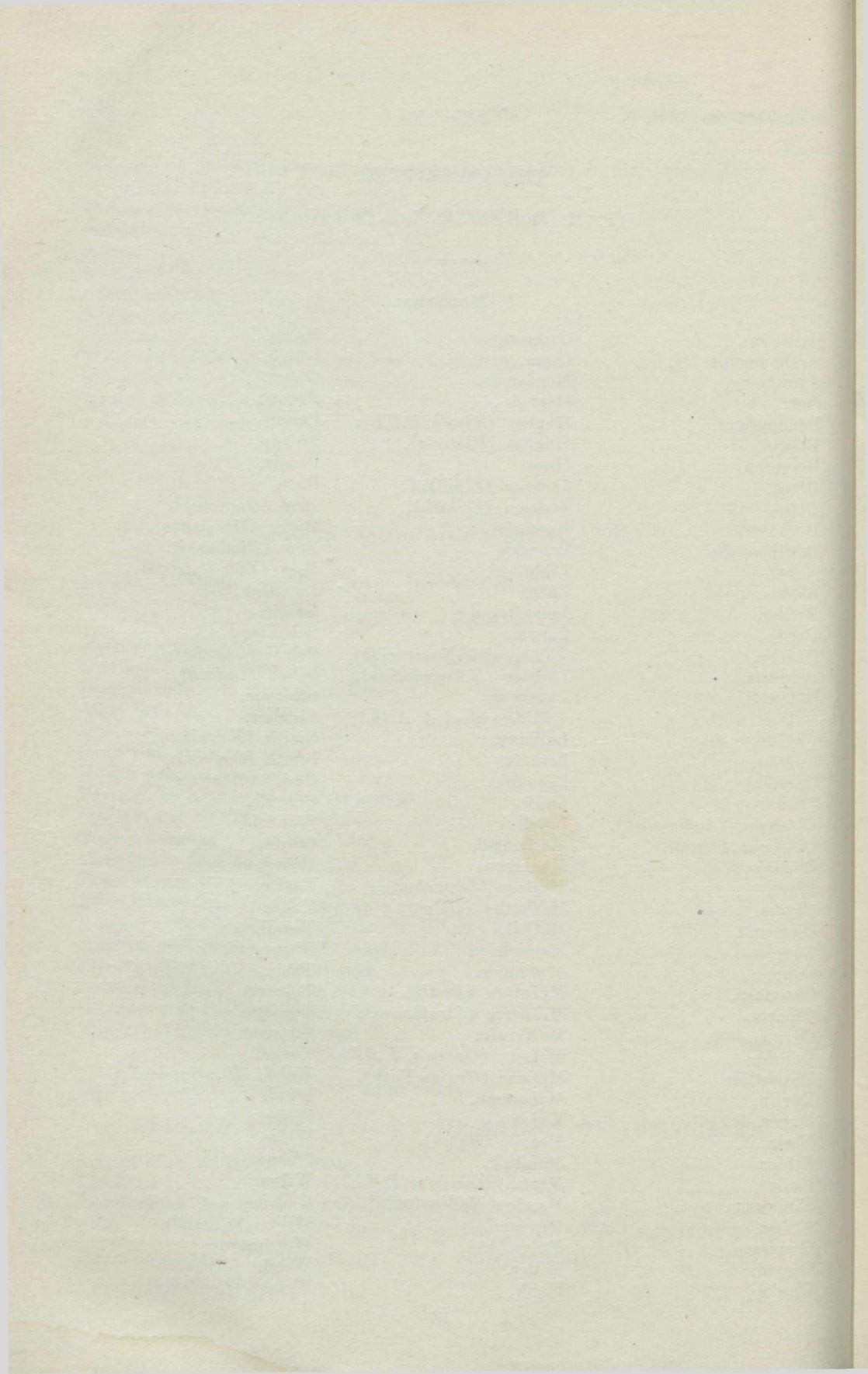
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THE COMMITTEE.

(P. H. McKENZIE, Esq., *Chairman.*)

Messieurs :

Adamson,	Greenway,	Morin,
Archambault,	Gunn,	Oliver,
Armstrong,	Henderson,	Owen,
Barr,	Herron,	Paquet,
Beauparlant,	Hughes (<i>King's P.E.I.</i>),	Parent,
Béland,	Hughes (<i>Victoria</i>),	Pickup,
Bergeron,	Hunt,	Proulx,
Black,	Jackson (<i>Elgin</i>),	Ratz,
Blain,	Jackson (<i>Selkirk</i>),	Reid (<i>Grenville</i>),
Bourassa,	Kennedy,	Roche (<i>Marquette</i>),
Bourbonnais,	Knowles,	Ross (<i>Rimouski</i>),
Boyer,	Lachance,	Ross (<i>Yale-Cariboo</i>),
Brabazon,	Lake,	Rousseau,
Broder,	Lalor,	Savoie,
Brown,	Lanctot	Schaffner,
Bureau,	(<i>Laprairie-Napierville</i>),	Schell (<i>Glengarry</i>),
Burrows,	Laurier (<i>L'Assomption</i>),	Schell (<i>Oxford</i>),
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Chisholm (<i>Antigonish</i>),	Lovell,	Stanfield,
Chisholm (<i>Huron</i>),	Macdonald,	Staples,
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Elson,	Marcile (<i>Bagot</i>),	White,
Ethier,	Marshall,	Wilmot,
Finlay,	Martin (<i>Queen's, P.E.I.</i>),	Wilson
Finlayson,	Martin (<i>Wellington</i>),	(<i>Lennox & Addington</i>),
Fisher,	Mayrand,	Wilson (<i>Russell</i>),
Gauvreau,	Meigs,	Worthington,
Girard,	Miller,	Wright (<i>Muskoka</i>),
Gordon,	Monk,	Wright (<i>Renfrew</i>),



REPORT.

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

The Committee have had mainly under consideration in the current Session of Parliament, matters pertaining to the interest of practical agriculture in Eastern Canada, and the areas available for colonization by agriculturists in the Great West and Northwest Provinces and Territories of the Dominion.

EXPLORATIONS IN 1907.

Under the head of scientific explorations in the last year, the Committee have had evidence submitted by Mr. William McInnes, Geologist, of the Geological Survey Branch of the Dominion Government, Department of Interior, of his personal exploration of the large area lying to the south of the Saskatchewan River and the Canadian Northern Railway Company's Prince Albert branch line, and of the great expanse of country lying immediately to the south of the Saskatchewan, and drained by the Carrot and Pasquia Rivers, a region of which, the witness says, that it contains excellent lands for the purpose of general agriculture.

To Mr. McInnes' evidence is appended a valuable record kept by himself, of temperatures in the regions explored by him in 1906 and 1907; those tables are valuable indices to the capabilities of the regions indicated for wheat rising, in so far as climatic conditions are contributory to successful agriculture.

Mr. R. E. Young, Dominion Land Surveyor, and Superintendent of Railway Lands, who has spent twenty years in the West and Northwest of Canada, gave valuable evidence before the Committee on the agricultural resources and present condition of the country. He points out that wheat is successfully raised at Fort Simpson, which is 900 miles directly north of the International Boundary, and 500 miles north of Edmonton. To this Mr. Young naively adds the remark, 'We are in a position to show that the Dominion has broadened considerably from what it was twenty years ago.'

Mr. Thompson, M.P., for the Yukon Territory, presented for examination by the Committee, a sample of white oats of the crop of 1907, grown on a farm in 63 degrees north latitude, in the Valley of the Yukon River. This sample was submitted for analysis to Mr. Clark, Seed Commissioner of the Department of Agriculture, who reports as follows:—'I have, as requested, made a careful test to determine the natural weight per given volume of these oats and find it 46 pounds to the bushel. I consider this an exceptionally fine sample of white oats of superior milling qualities.'

EASTERN CANADA.

The Committee had an exhaustive investigation into the industry of tobacco leaf cultivation in Canada. This branch of agricultural production is mainly confined to the southwest peninsula of Ontario and to the central portions of the Province of Quebec.

The evidence submitted to the Committee was by experts in the growing and curing of various species of tobacco leaf, each distinguished by a specific name and distinguished for its adaptability to some of the various manufactured products such as smoking tobacco, chewing tobacco, &c., &c.

These are claimed by the several witnesses examined to be quite equal in quality to the corresponding names of imported tobacco leaf from any part of the United States and adapted to the various manufactured tobacco products.

The total amount of Canadian tobacco leaf manufactured in Canada is placed at 4,000,000 pounds and the total consumption of manufactured tobacco in Canada is variously estimated at from 15,000,000 to 20,000,000 pounds, that is, the total consumption, and it is claimed that the whole of this could be more than produced from Canadian soil, with a large surplus to spare for export. There is a peculiar feature in regard to the consumption of native grown tobacco in Canada, that is, a large quantity of it is consumed in the raw leaf, of which there is no accounting or estimate.

The evidence submitted at this investigation is of much interest to either actual or prospective growers, to manufacturers, and as a speculative study, as to what the tobacco production in Canada may show as an asset amongst the agricultural productions of the country, in the near future.

THE DAIRY INDUSTRY.

Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, gave evidence before the Committee on the progress and present status of the dairying industry in Canada. The dairying industry is well established in every province of the Dominion, but Ontario and Quebec continue to be the great centre of this important branch of farming. The settlers of Northern Alberta appear to be developing the dairy industry to a greater extent than those of any other western province, and this section promises to be a very important district in the future. The western provinces do not make enough dairy produce to supply their own needs, and draw largely from Ontario and Quebec to make up the shortage.

Good prices have ruled for butter and cheese during the past year, and except for the dry weather in certain districts and consequent shortage of feed, the season of 1907 was a very satisfactory one to the dairy farmers. The prospects continue good for the present season.

It was gratifying to the Committee to learn from Mr. Ruddick's evidence that, although the exports of dairy produce, mainly butter and cheese, have declined to the extent of over seven million dollars since 1903, in which year our exports and dairy produce reached the maximum, the increase in the consumption of milk, butter, cheese and condensed milk in Canada amounts to several million dollars more than the decline in the exports. Other figures, quoted from the recent census returns, show that the value of creamery butter and cheese only, produced in 1907, exceeded in value by over five million dollars that of 1900, and shows an increase of over two million dollars since 1905.

The total annual production of dairy produce in Canada is estimated to be nearly \$100,000,000, divided as follows:—

Creamery butter and cheese	\$36,000,000
Dairy butter	22,000,000
Condensed milk	1,000,000
Milk for direct consumption	35,000,000

Total	\$94,000,000
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The Committee was informed that the condensed milk industry is making considerable growth in Canada.

A HOPEFUL PROSPECTIVE.

The Committee regards it as matter for general congratulations that schools and colleges are multiplying for the technical and practical education of young men following the pursuit of agriculture, and for the training of young women in the practice of domestic science, in other words, in the knowledge of good housekeeping, in its multiplicity of details. Such education imparts to both sexes the dignity of profes-

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sionals in the noble employment of promoting human happiness and in augmenting all that is desirable in the physical and moral life of humanity, and this is especially true in reference to the improvements of the conditions of rural life.

The Committee had the pleasure of ocular demonstration of the hold that these two branches of education has gained in popular estimation, when on the 13th June ult., by the invitation of Dr. Robertson, C.M.G., President of the Macdonald College, Ste. Anne de Bellevue, the Committee and as many Members of Parliament as chose to avail themselves of the opportunity, paid a visit to this great institution for the teaching of agriculture and domestic science. Here the guests of the day were cordially welcomed and bounteously entertained by President Robertson personally. The college grounds are spacious, consisting of about 650 acres. The college buildings, present an almost regal appearance in their magnificent spaciousness, solidity of structure, architectural design and adaptation to the divisions of the college work. The existence of the institution, grounds, buildings and equipment, is entirely due to the philanthropical munificence of Sir William C. Macdonald, who has spent two and a half million dollars upon the completion of the college and its appurtenances. Besides which Sir William has transferred to the college trustees, two millions of dollars as an endowment fund. So much of his wealth, time and energy has Sir William C. Macdonald spent solely and without hope of personal reward, for the perpetual advancement and improvement in the conditions of rural life.

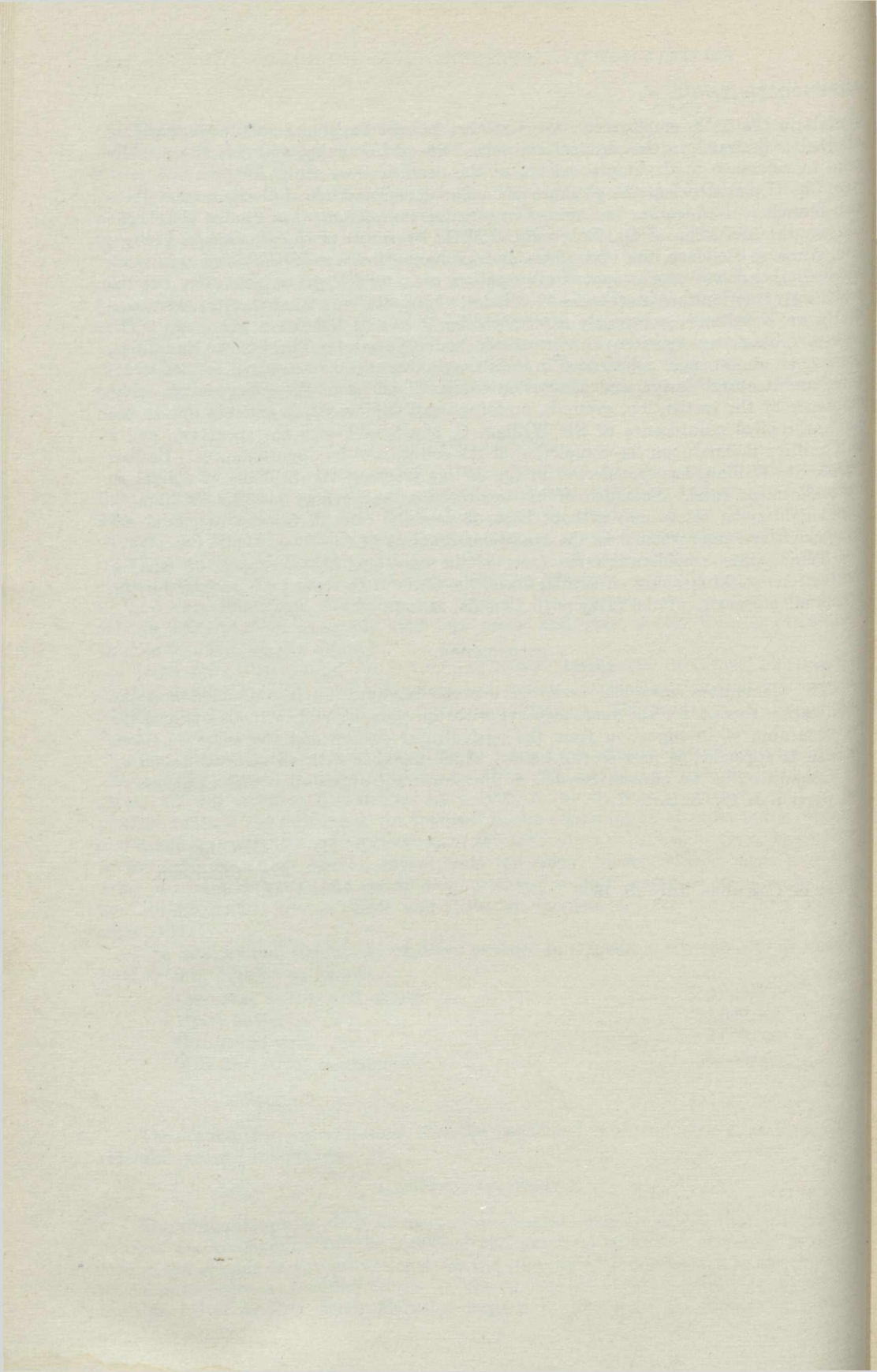
Taking into consideration the facts of the case, and the existence of smaller institutions working along on similar lines, the Committee regard the outlook for the perpetual prosperity of the farmers in Canada, as assured.

COLONIZATION.

The Committee have had under review the immigration into Canada and the colonization thereof for the year, together with the agencies and methods pursued for the obtaining of immigration from the agricultural classes, and the evidence taken thereon is appended as part second hereto, which together with all evidence taken by the Committee in the current Session of Parliament is appended hereto as an essential portion of the Report.

P. H. MCKENZIE,
Chairman.

HOUSE OF COMMONS, July 18, 1908.



CANADIAN TOBACCO PRODUCTS.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

WEDNESDAY, March 25, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock a.m., Mr. McKenzie, chairman, presiding.

THE CHAIRMAN.—The business before the committee to-day is the consideration of the tobacco industry in this country. The growth and manufacture of tobacco is a comparatively new industry in Canada and it is one that from all appearances can be made a success. The Department of Agriculture has so considered and has been devoting considerable attention to the matter. In order to develop the industry Mr. Charlan was put in charge of that work for the Dominion. That gentleman is with us to-day. Gentlemen interested in the tobacco industry are also present from the western part of the province of Ontario and also from the province of Quebec. They will place before you statements as to what is being done, and what ought to be done, in the interest of the development of tobacco growing in Canada. I have very much pleasure in introducing to the committee Mr. Felix Charlan, Chief of the Tobacco division, Department of Agriculture, who will address the committee in French, after which a translation into English of his evidence will be furnished by the official translator of the department.

MR. CHAIRMAN AND GENTLEMEN,—Last year I had the honour to lay before you the situation of the tobacco industry in Canada, and I endeavoured to give you an idea of the probable future of this industry.

With the results obtained at our various experimental fields, during the year 1907, in spite of unfavourable weather conditions, I am now in a better position to say what course should be followed in order to insure a speedy development of our industry.

VARIETIES OF TOBACCO.

Our experiments dealt chiefly with varieties. In some parts of Canada, owing to prevailing climatic conditions, it is evident that we cannot grow varieties which, after being transplanted, require more than 90 days to complete their development. But these conditions are not peculiar to our country. The same conditions largely prevail in some tobacco districts of the United States (Wisconsin, for instance) which are considered, and rightly so, as the most prosperous districts of the neighbouring Republic.

EXPERIMENTS CONDUCTED IN QUEBEC, 1907.

Three varieties of tobacco were tried in the Province of Quebec in 1907. These varieties are: Comstock Spanish, Havana Seed Leaf and Connecticut Seed Leaf. The first of these—the Comstock Spanish—has been a great money maker in Wisconsin, and produces at the present time most of the binder tobacco imported into Canada. The results of the trial of this particular variety in Quebec were very satisfactory, and it is no longer doubtful that we may, in the east of Canada, put it to the same uses as in Wisconsin, that is the production binders.

In Canada the product of this variety shows good quality, the leaf has a good shape, it is firm, elastic, sometimes finer than the leaf of the same variety in Wisconsin. It is more like the Connecticut product. To make the growing of this variety as profitable as it should be we must endeavour to obtain a heavier yield per acre, and to have the products properly graded and cured in order to facilitate their sale and their uses. This we are now endeavouring to do, as will be shown later.

Good results were obtained from the variety Havana Seed Leaf. This is a variety from which the Comstock Spanish originated, and it is a difficult matter to distinguish it from the latter, as the shape of the leaf is very nearly similar. The yield is also about the same for these two varieties. In Wisconsin, the Comstock Spanish has the reputation of giving a finer quality of tissue than the Havana Seed leaf, and it is also claimed that the sweating process, with this variety, give more satisfactory results, but in the present state of our industry in Canada, we have not been able to verify these claims. Canadian growers make very little difference between these two varieties, and they are regarded by packers as very nearly equal.

As to the Connecticut Seed leaf, the plantations of this variety suffered considerably owing to the unfavourable weather conditions of the year 1907. While other varieties reach their full development, after transplanting, in 75 or 80 days, the Connecticut requires 90 or 95 days in an ordinary year. Therefore, in a cool year, the growing of Connecticut is very uncertain.

In the Province of Quebec Connecticut Seed leaf has made very slow growth, the yield being exceedingly light. The farmers of Quebec will do well to be very cautious about growing this variety until we have been able to develop an earlier strain.

The popularity of the Connecticut Seed leaf among growers comes from the heavy yields which may be obtained from this variety, in favourable years. Until recent years the weight of the leaf was considered a matter of greater importance than the quality; so, while the products of this variety in the United States are suitable for the manufacture of cigars, in Canada they can only be used for pipe purposes.

Under such circumstances, the growing of the Connecticut Seed leaf ceases to be profitable, as earlier varieties, quite as good yielders, if not superior, may be utilized for pipe smoking, such as the General Grant, Blue Pryor, some improved Ohios, or even the Big-Havana, which has a better aroma than the Connecticut.

Grown as it is at present in Canada, the Connecticut variety yields only a light proportion of 'binders', and a large proportion of thick and tasteless products, the utilization and marketing of which cannot be effected without the greatest difficulty. Such a crop leaves a very poor profit to the grower. Under similar treatment the Comstock and Havana Seed leaf are profitable, as the leaves which are too thick to be used as binders, may, when sweated be utilized as fillers, or at any rate as excellent pipe tobacco.

Small plantations of General Grant were also tried in Quebec in 1907. This variety gave good results, so far as the yield and the quality were concerned. We also had an experiment of Ohio Seed leaf, a well developed and comparatively early variety, likely to answer the needs of the growers who are after heavy yields. This variety will be experimented with on a larger scale in 1908, so that we may have definite information as to its value. If it remains as early as it is now, this variety may possibly take the place of the Connecticut.

Whatever criticisms may be made against some of the varieties at present grown in Quebec, we must not undertake to substitute better ones until our industry gets firmly established, and until we know definitely what the needs of this industry are. Meanwhile, however, we may try to do away with the most undesirable varieties or those that are not likely to meet these needs. We hope to do so with our illustration plots, and by distributing seeds of improved strains.

To conclude, the results of the experiments with Comstock Spanish, Havana Seed leaf and Connecticut show that the first two varieties are the most suitable for the

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climate of the province of Quebec. Furthermore, they are looked upon with favour by the men who are thinking of establishing some packing houses in this country. Therefore their prospects are bright.

ONTARIO.

The same varieties were tried in the province of Ontario. The results obtained were not conclusive owing to various causes. The weather was not favourable, and some errors were made by the growers in the handling of the crop, as regards topping and date of harvesting, the farmers of Essex county not being used to these varieties of tobacco. Although careful instructions were issued in due time, the plants were topped too late, and harvested also too late, when over ripe. Such mistakes can be easily avoided, and it is not likely that they will occur again.

However, the Ontario farmers who conducted these experiments have been able to ascertain that these varieties are easily grown, the recovery of the plants after transplanting was better than with the Burley, thus decreasing the expense connected with the work of setting out.

It is not possible to say from these results whether the seed leaf varieties will make as good a showing in regard to quality of tissue and aroma, in Ontario as in some parts of Quebec, but I think it is advisable to continue the experiments.

A very interesting variety is the Big Havana, imported from Cuba, which has been tried by a Leamington grower. Although a little coarse, the products are, nevertheless, very fine, and might be used as fillers if the original aroma were preserved. We will be able to get definite information if, as we hope, we succeed in having a part of this crop cured.

NOTES ON THE YIELD IN WEIGHT.

The most noteworthy fact observed in 1907 is the large variation in the yield of crop per acre with tobaccos of the same variety, in different parts of Canada. In some districts the experimental plots gave only 1,000 lbs. per acre; while in other districts the yield was as high as 1,400 to 1,500 lbs. per acre.

As the cost of growing an acre of tobacco rarely falls below \$40 or \$45 per acre, a crop of 1,000 lbs. of tobacco, sold at the average price of 8 cents per pound, does not leave much profit. It should also be noticed that this plant requires minute care during its period of growth, that the curing and the marketing of the product involve some risk.

Should these low yields be attributed to the impoverishment of the soil, or to the mode of farming, in spite of the contrary opinion of the farmers? This problem awaits solution, and offers a vast field for experiments. This work we expect to take up at once. We will experiment with the various fertilizers that can be had in Canada, and we will also try more intensive cultivation of the soil.

At the Experimental Farm, on a rather light soil, heavily manured, we have obtained with the Comstock Spanish, yields varying between 1,400 and 1,800 lbs. per acre, according to the distance between the plants. Such yields should be the average, so that the growing of the seed leaf varieties might be really profitable. Much remains to be done in this connection.

ADVANTAGE OF PRODUCING SEED IN CANADA.

We have another duty to perform: that of inducing Canadian farmers to use only pure seed. We have not the slightest means of control over the dealers in tobacco seed. Often after the plants are set out, a large proportion of them are found to be not true to type. This is a source of annoyance to the manufacturer, who often experiences considerable difficulty in getting a sufficient supply of tobacco of uniform type. It is also a great drawback for the farmer; for should he use for seeding the

seed which he has obtained from such a plantation, he will soon get nothing but products of indefinite type, unmarketable.

In order to form an opinion, by personal observation, of their reliability, I visited last year some of the seed growers' establishments from which the farmers had been getting their supplies. This is not the time nor the place to give an idea of the conditions under which these firms operate, but I came to the conclusion that it will be safer to do without these sources of supply in the future.

The farmer who produces his own seed will have to exercise care so as to protect the seed bearing plants against cross-fertilization. With such care, and with careful selection, he will then be able to improve his varieties and strains of tobacco. The effects of selection are well known and we propose to encourage the farmers to take up this practice along with the production of seeds.

We have already given information along those lines in some districts, and this year we will be able to judge whether the farmers have acted upon this information and with what results.

Seed leaf varieties easily ripen their seeds in Canada, and knowing, by actual observation that the seed obtained in some districts of Quebec yields products which cannot be distinguished—(at least during the first few generations)—from the products of American seed, I think it would be greatly to the advantage of the Canadian farmer to produce his own tobacco seed. He will thus avoid the disagreeable surprises which so often attend the use of seeds prepared and sold by careless dealers, or due to the lack of care in seed production in foreign countries, in seed farms beyond our control. This may also result in the establishment of real Canadian varieties, well adapted to our soils and climates.

Information along the above lines was given to the tobacco growers in a special series of meetings recently organized for this purpose.

What I have just said about the seed leaf varieties grown in Quebec applies with equal force to the tobacco grown in the province of Ontario, particularly the Burley. We should be able to develop, from improved strains, Canadian types, well adapted to the climatic and soil conditions of Essex and Kent.

These new types will probably differ very little from similar American tobacco, and should be in great demand by our industry; they may also find a market in foreign countries. I may say also, that, with the high reputation of the Ontario Burleys, this undertaking will be rather easy and the success seems certain.

BRITISH COLUMBIA TOBACCO.

Last year the attention of the committee was called to the growing of tobacco in British Columbia. I had the opportunity in the fall of visiting the valley of Kelowna, and of looking over the districts in which tobacco is being grown.

The tobacco I saw in Kelowna is grown from seed imported from Cuba, and renewed every third year. The quality of the products is such that they may, up to a certain extent, be compared to second class Havana. They would do splendidly as fillers for domestic cigars, which might command a relatively high price; and if—as is claimed by some opponents of Canadian tobacco—the Quebec seed leaf could never be utilized except as binders in the manufacture of cigars, the British Columbia tobacco will supply the fillers. We have now, therefore, leaving out the wrappers, which generally consists of a Sumatra or Java leaf, all the elements necessary in the cigar manufacturing industry, viz.: fillers in British Columbia, binders in Quebec (Comstock and Havana seed leaf).

It is not yet known whether this industry can be carried on profitably in British Columbia owing to the price and the scarcity of help. However, a company with rather powerful means has just organized in Kelowna for the purpose of developing the growing of tobacco on a truly rational and commercial basis, and we will soon be in a position to know what future is in store for the tobacco growing industry in the Okanagan valley proper, or on the hills of various heights which surround it, and in

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which many good soils are to be found. The irrigation will have to be studied closely, and may give very good results. The company proposes to experiment with the growing of tobacco under canvas covers, and there is hope that the latter may prove advantageous.

HOME TOBACCO AND CANADIAN INDUSTRY.

The proposed change in the legislation regulating the entry of tobacco into Canada, and in the manufactures of the country, has been the object of much discussion during the course of last year.

The question, involving as it does, chiefly the manufacturing interests, does not concern our work. However, it seems to me that it may be examined from a purely Canadian, and purely agricultural point of view, which has not been done so far. Looking at it from this point of view, we may say that the most important side of the question has been overlooked.

The annual production of tobacco in Canada has been estimated, in an approximate manner, to be about 10,000,000 of pounds. This figure seems rather high if it applies only to tobacco which is the object of a real trade and not to the tobacco sold in uncontrollable quantities on the markets of the province of Quebec by the farmers who retail their own crop to the consumers.

Until recently the production of tobacco in Canada has not been the object of careful statistics. The correctness of some estimates may be judged from the fact that in 1907 the light crop of Ontario was estimated to be 1,000,000 lbs. more than the crop of 1906, whereas as a matter of fact, it turned out to be one quarter less than the crop of 1906, owing to the limited plantations and unfavourable weather conditions. We hope to be in a position in the near future to avoid such mistakes, the Minister of Agriculture having admitted the necessity of collecting special tobacco statistics, which will give us a more correct idea as to the total production of the country.

The chief objection brought forward against the proposed change in the legislation, (increase of the duties or modification in the mode of collection of excise duty) is that any measure tending to encourage the growing of home tobacco, might prove disastrous, on account of the large proportion of products unsuitable for the manufacturing industry, and on account of the changes that would have to be effected in the management of factories.

Now, supposing that the estimate of 10,000,000 lbs. above referred to is correct, what is, out of this total, the proportion of really inferior tobacco said to be unsuitable for manufacturing purposes? Surely this qualification does not apply to the Burleys of Ontario, which form half of the total production of Canada and have made a good reputation for themselves; nor to the class of heavy Quebec products manufactured into plugs or for pipe smoking, and which were never intended to be used in the manufacture of cigars; nor to the small varieties called Canadian Canelle, Petit Rouge, intended for a special class of customers, and which are not produced in sufficient quantity to meet the demand. The only products about the quality of which there might be some doubt are the so-called cigar tobaccos, produced only in Rouville, Montcalm and Joliette counties, in quantities not exceeding 1,000,000 lbs.

If the latter products are of a very low grade of quality, they will never be utilized in the manufacture of cigars, or, in any case, only for very common cigars which could never find favour with the Canadian public, generally very critical. The growing of this tobacco will therefore have to be abandoned, in spite of any encouragement to the contrary, and the farmers will be compelled to return to the production of smoking and chewing tobaccos.

It may perhaps be claimed that these Quebec cigar tobaccos do not show as well as the products of similar varieties grown in foreign countries. But it must not be forgotten that the lack of experienced packers and of thoroughly equipped packing houses may, to a large extent, be responsible for the poor showing of these products.

Give them suitable treatment, and they may still compare favourably with some imported tobacco. There is no reason then to refuse to protect our growers. If the packing industry can alone put these tobaccos into proper shape why not encourage its establishment in Canada?

But we are also aware that a large proportion of seed leaf products, grown in Canada, may be used as binders. A conclusive proof of this is to be found in the fact that some Connecticut packers, impressed with the quality of our products, have expressed a desire to start business in Canada.

Some Canadian manufacturers have gone even further: they assert that some of the Comstock Spanish and Havana seed leaf grown in Quebec could make excellent fillers; for ordinary cigars, of course.

Leaving the question of taste aside, I am of the opinion that a large proportion of such fillers would be of as good quality as imported fillers used in the manufacture of five cent cigars. The American smoker often pays ten cents apiece for cigars manufactured with tobacco grown in Pennsylvania and Connecticut without the slightest trace of Havana. It would be quite as easy to educate the taste of the Canadian public as that of the American public. Provided that a good quality of product is used, and this product is well prepared, our domestic cigars, although different in taste from the Havana cigars, are nevertheless very agreeable and may suit a certain class of consumers.

If, however, I am taxed with exaggeration in endorsing the views of such manufacturers, let us abandon for a moment—waiting for the proof to be made later—the idea that Quebec tobacco may ever be utilized as fillers. The fact remains that this tobacco—or at least a large proportion of it—may make excellent binders, quite equal, in this respect, to the Wisconsin and Pennsylvania products.

As to the fillers, the establishment of the tobacco growing industry in British Columbia will enable us to solve this problem. I think I can say, without fear of being mistaken, that there will be two grades of this kind of tobacco; the first grade will be supplied by British Columbia, the second, of a different taste, by Quebec, and later perhaps by some parts of Ontario. On the other hand, if the object of the amendments now before the House of Commons, is to enable this tobacco of doubtful quality to compete, with some chance of success, with foreign products, we must also admit that the other $\frac{2}{3}$ of the total of the production in Canada, not considered in the discussion, will also benefit by the new measure.

That these other kinds of tobacco, representing by far the largest part of the production, are a source of great profit to the country, no one will deny. That some measure is necessary in order to protect them, and facilitate their sale by opening new markets, larger, more regular, and safer, seems equally certain. Can their interests be sacrificed because the manufacturers do not agree as to the suitability of the Canadian leaf for the manufacture of cigars, and while the growers of the latter form such an insignificant proportion?

Doubtless our home tobacco is still open to many criticisms. Its most enthusiastic partisans admit that there is still room for a great deal of improvement. But, since the function creates the organ, or rather develops it, the opening or the widening of our home markets would be the best possible stimulant to this industry, which, after so many mishaps, has, during the last few years, shown what it was able to accomplish.

Encourage the development of the tobacco manufacturing industry in Canada, and of all its different phases—packing houses and manufactures—and the growing industry, being sure of marketing its products, and having a definite object in view; that of supplying the products required by the manufacturer, will spring into new life and vigour, and will prosper on a rational basis. Prohibit, or limit the use of home tobacco in the manufactures of the country and the same state of uneasiness that has prevailed during the last few years, owing to the uncertainty of the market and the low prices

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offered, to the point of causing a congestion which I hope will only be momentary, will continue to paralyze the growing industry.

We are now working, as I said at the beginning of this report, to improve the quality of our tobaccos. This work is progressing favourably. Our products have suffered so far from the lack of grading and curing, two operations performed in the packing house. Sorting and curing experiments on a large scale were conducted in 1907. I am in a position to say that excellent results have been obtained so far, fully realizing the expectations in regard to some of our home products.

Following the results of these experiments we may hope to see a new and important industry—the packing industry—spring into life in Canada. By preparing our home grown tobacco so that it may be more readily utilized, this industry will have an important effect upon the conditions of the market, and will improve the situation of the farmers.

The duties of the Department of Agriculture will then be to encourage the production of suitable tobacco for the requirements of this industry. Recognizing the importance and the necessity of this work, the Minister of Agriculture has decided to increase the staff of the Tobacco Division in order that the latter may be in a position to devote all the attention necessary to the various and widely scattered tobacco growing districts of this immense Dominion.

I think the most fitting conclusion I can make to this evidence is to submit some samples of our home tobacco. You will thus be able to judge of the quality of the products obtained in Canada at the present time, and to say whether our hopes are justified, whether it is wise to neglect such a source of wealth, and whether this young branch of our agricultural industry does not deserve the best encouragement.

By Mr. Armstrong:

Q. I understood the gentleman to say that tobacco of the same quality that is produced in Wisconsin can be grown in Western Ontario?

A. In Eastern Canada, in Quebec.

Q. It would be well to find out the nature of that tobacco and the extent to which it is grown in Canada, if grown at all?

A. The variety of tobacco I am speaking of is the Comstock Spanish. It has given the best results in Wisconsin, and has been very successful in Canada.

Q. A gentleman present informs me that half a million pounds of this tobacco are grown in Essex. What success has been experienced in growing it in other provinces?

A. That is a mistake. There has been no Comstock Spanish tobacco grown in Essex County except in small plots.

Q. Mr. Wigle has grown it in Essex?

A. The tobacco referred to was the Havana Seed Leaf variety. The cultivation of Comstock Spanish has only been tried this year.

By Mr. Ross (Yale Cariboo):

Q. What is the proper yield per acre?

A. Of Havana Seed Leaf? About from 1,200 to 1,400 lbs.

Q. You say the yields are not sufficient to be profitable. What would you consider a sufficient quantity?

A. About 1,400 lbs. At the Experimental Farm last year on a light soil, well manured, we obtained yields of from fourteen to eighteen hundred pounds per acre, varying with the distances at which the plants were set.

By Mr. Parmalee:

Q. Where does the seed come from?

A. We do not know that. It is bought from dealers in large cities such as Montreal or Toronto.

Q. Does not the Seed Act enable you to check the sale of impure seed?

A. The Seed Act cannot control the production of seed in a foreign country, and especially the tobacco seed, which is very small and very hard to recognize. I have visited some of the farms where seed is produced in the United States, and I have come to the conclusion that the farmer should produce his own tobacco seed. Then, with selection of the proper plants, we would soon improve our varieties of tobacco.

I have brought with me samples of tobacco grown in different parts of Canada, which I shall be very glad to have inspected by the committee.

By Mr. Clarke:

Q. You spoke of there being 10,000,000 pounds of tobacco grown in Canada?

A. That is as far as we can ascertain.

Q. What proportion of that would come from the province of Quebec?

A. About one-half from Quebec and one-half from Ontario. We cannot exactly control the production in Quebec because the farmers sell most of their tobacco in the raw leaf on the market.

Q. How much of that 10,000,000 pounds would go into manufactured tobacco?

A. The greater part of the tobacco grown in Ontario is manufactured especially for chewing and plug purposes. One half of the Quebec products are also manufactured. I suppose that about three-quarters of the total production is manufactured.

Q. And the other is sold in the raw condition?

A. Yes, sold in the raw condition.

By Mr. Armstrong:

Q. Where is that grown?

A. In Quebec and sometimes in Ontario.

Q. There is none of the raw leaf exported from the country; it is all manufactured here?

A. The quantity of leaf exported now is very small. There has been some exportation, but the quantity is very small.

By Mr. Clarke:

Q. You say in your address that the Comstock Spanish grown in Quebec is a better variety than that grown in Wisconsin?

A. Yes, I was in Wisconsin last year and I never found there such tobacco as this (exhibiting a sample of Comstock Spanish grown in Quebec). This is finer than the Wisconsin tobacco.

Q. Is this a sample of tobacco grown in Joliette?

A. This was grown in Rouville county in Quebec. We can also grow it in Montcalm and Joliette counties.

Q. Are you able to say how the product in western Ontario compares with this?

A. We have not succeeded in growing the same quality of tobacco in western Ontario. The tobacco produced there of that variety is generally coarser.

Q. Of the same variety?

A. The same variety. Last year we tried some Comstock Spanish tobacco in Essex county, but it was poorer than this.

Q. How do you account for that?

A. I attribute it to the soil.

By Mr. Armstrong:

Q. Do you say that the tobacco grown in Quebec is much superior to that grown in Western Ontario?

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A. The Havana Seed Leaf, not the Burley. The Burley variety grown in Ontario cannot be produced in Quebec. What I say is that the Havana Seed Leaf of Quebec is better and finer than the same variety grown in Western Ontario.

Q. I would like to know what efforts have been made to try and induce the people of Western Ontario to grow tobacco of better quality?

A. Last year tobacco was grown on ten experimental plots of one acre each in the counties of Essex and Kent. When the tobacco was cured we found nobody to buy it.

Q. Then you established experimental plots in Western Ontario?

A. Yes.

Q. And tried to induce the people to grow a better quality of tobacco there?

A. That is to say, we have tried other varieties in order to find out what they could yield in that part of Canada.

Q. That experiment has been a failure?

A. The results were not conclusive. The experiments will be continued.

Q. Why were the results not conclusive?

A. Last year was not a good one for tobacco culture, the atmospheric conditions were very poor. We cannot succeed in experiments in tobacco culture when the weather conditions are poor.

Q. I understood from your address that the quality of tobacco grown in Canada deserves severe criticism?

A. Some varieties.

Q. I understood you to say that the quality deserves severe criticism?

A. What I said was that whatever criticism may be made of some varieties actually grown in the country it would be useless to try to replace those varieties before the needs of the manufacturing industry are exactly known.

Q. I would like to know whether there are many of these different varieties that are not satisfactory?

A. There are a large number of intercrossed varieties that should not be grown in Canada because they do not yield a satisfactory product.

By Mr. Clarke:

Q. Where were these bad varieties grown and to what extent?

A. It is especially in Quebec that those poor tobaccos are grown, but I must also say that it is in that province that the best cigar tobacco is grown.

By Mr. Clements:

Q. Can you conscientiously say, taking into consideration the climatic conditions, that better tobacco is grown in Quebec than in Ontario or British Columbia? We think we can grow better tobacco in Ontario than anywhere else. Of the 15,000,000 pounds of tobacco that we import from the United States how much could be grown in this country successfully by our Canadian farmers?

A. I suppose that is really a question for a manufacturer to answer, rather than myself. But we can grow in Quebec the same quality of binders that is grown in Wisconsin, we can use in Canada the Burley tobacco which is grown in Ontario. Then we can use the British Columbia tobacco as fillers. We have here some Canadian cigars with British Columbia fillers.

By Mr. Ross (Yale Cariboo):

Q. As I understand it there is a cigar made out of Kelowna, B.C. tobacco. The tobacco was especially selected by Mr. Charlan, who also looked after the curing and saw that the cigars were properly made. Now, as a cigar smoker of many years' experience and wonderful variety, I am bound to say that the Kelowna cigar is as well made and of as good flavour and quality as the very best Havana cigar. Perhaps I should

not say the very best; but anybody who will take that cigar will say it is as well made and of as good quality as a Havana cigar. Now that cigar, as I understand it (exhibiting cigar), is made of Canadian tobacco.

Mr. CLARKE.—Altogether?

Mr. ROSS (Yale Cariboo).—It is altogether made of Canadian tobacco.

A. The wrapper is of Sumatra Leaf, but you have a Canadian filler and a Canadian binder.

Q. If that can be done once it can be done all the time. How did you get such good results from Canadian tobacco? The cigar manufacturers tell us, or some of them do, that they cannot use Canadian tobacco. Here is a good cigar made from Canadian tobacco and I will leave it to any man to say whether it is not as good a cigar as he wants to smoke. The question is how do you get such good results?

A. By curing the tobacco properly and by sweating it in the right way. The only thing we lack in Canada is a good packing house.

Q. Will you please tell us where you got the tobacco, the kind of tobacco it is, under what conditions it was grown, what you did to see that it was cured properly, and then what was used in the making of the cigar?

A. The tobacco was grown in Kelowna, British Columbia.

Q. That is the filler?

A. Yes, the filler. The binder must be a Comstock Spanish tobacco grown in Quebec, and the wrapper is Sumatra Leaf. The filler was grown in British Columbia about four or five years ago by Mr. Holman. It was sweated by Mr. Holman in the best condition possible and was sent to a good cigar manufacturer in Montreal and the product is what we now show you. The tobacco is grown from Cuban seed. The Cuban seed is imported by the Canadian grower and grown for one year only for the production of seed. The first crop gives such a very small leaf that it would not pay; it is better to grow seed only from it. For tobacco growing the grower uses seed of the second or third year, which produces a larger leaf. After the first year he has a crop of Canadian seed, but he must change his seed about every three or four years, because as the leaf increases in size the flavour diminishes.

Q. Do you say that the filler of this cigar which we have here is grown from Cuban seed?

A. From second years' growth developed from Cuban seed.

Q. The seed originally came from Cuba?

A. Yes, from Cuba.

Q. It was planted in Kelowna?

A. Yes.

Q. And the filler was grown in Kelowna?

A. Yes.

Q. You took that tobacco for the filler down to Montreal?

A. Yes.

Q. As I understand it the principal part of the cigar is the filler. Now who made the cigar?

A. Mr. Cusson, Montreal.

Q. He used a Canadian filler, a Canadian binder and a Sumatra wrapper?

A. Yes.

Q. The result is that you got as good a cigar as anybody wants to smoke?

A. Yes, I consider this cigar is equal to any 10 cent cigar.

By Mr. Clarke:

Q. Mr. Cusson's factory is a foreign factory?

A. A foreign factory.

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Q. The reason I ask the question is that I see a black stamp on the box?

A. Mr. Cusson's factory is a foreign factory and he was selected to manufacture the cigar because he has undertaken most of the work in the Canadian tobacco industry. He made these cigars especially at our request and the stamp has no significance. We could just as well have used a red or a green stamp. In this other kind of cigars (producing cigars) the fillers are made of Comstock Spanish tobacco grown in Montcalm county. The fillers and binders were grown in Montcalm county and the only foreign leaf is the Sumatra wrapper.

By Mr. Ross (Yale Cariboo):

Q. There is no significance, you say, in the box?

A. No, the box is only to put the cigars in.

Q. It is not intended to advertise a brand of cigars?

A. No.

By Mr. Clarke:

Q. What kind of tobacco did you put in these cigars as a filler?

A. Comstock Spanish. As I said a few minutes ago we can use Comstock Spanish tobacco grown in Canada as a filler and binder.

By Mr. Parmelee:

Q. Has it a good flavour as a filler?

A. Yes.

By Mr. Clarke:

Q. Some binders have no flavour?

A. Yes, but the Comstock Spanish tobacco has got a flavour sufficient to make it a good filler or binder.

Q. You have smoked it yourself?

A. Yes.

Q. Is there not a little bitterness in taste?

A. Yes, sometimes, but you have the same bitterness in Havana cigars.

Q. You have brought here some Comstock Spanish tobacco grown in Quebec. I wish you would compare some tobacco of the same variety which has been brought down from the counties of Essex and Kent and see where the difference is?

A. Very well.

Sample of Comstock Spanish tobacco grown in the County of Essex produced by Mr. Darius Wigle and laid before the witness.

Q. Mr. Darius Wigle has produced some Comstock Spanish tobacco grown in the county of Essex. Will you please look at it and see how it compares with the sample which you have got?

A. (After examining sample.) The only thing I can tell you about it is that it has a larger leaf. The texture is not better than the Quebec tobacco.

Q. Is it as good, what difference is there?

A. I suppose it is less gummy. The trouble is that this tobacco is not sweated and we cannot judge of the quality in its present condition. The sample from Quebec is cured and ready to be used for cigar purposes. The other sample is in a raw state and we can only judge of its texture at present.

Q. The first sample which you have produced this morning has not been sweated?

A. No. It is in a green condition.

Q. What would you say about that variety of Comstock Spanish from Essex county?

A. I would say that it would make good tobacco.

By Mr. Clements:

Q. I understand from an answer which you gave this morning that so far as your experience goes, since you have been in the department, that we can produce a quality of tobacco in Canada, or a sufficient quantity of tobacco in Canada—whether it is grown in Ontario, Quebec or British Columbia—to make a good quality of cigars sufficient for the ordinary Canadian trade?

A. Yes.

Mr. CLARKE.—Or for the public of any country. There is no doubt about that?

A. No doubt whatever.

Q. I understand from the statement that you have made that one of the greatest troubles in connection with the Canadian tobacco industry is that we have not proper packing houses in Canada?

A. Yes, that is the point.

Q. Then you would strongly recommend the establishment of packing houses in Canada for the proper curing of tobacco? Of course, in order to get that we must have some encouragement in the shape of government aid or otherwise?

A. I think so.

Q. You consider that is the important need of our growers at the present time?

A. I do.

Having examined the foregoing transcript of my evidence, I testify the same to be correct.

F. CHARLAN,

*Chief of Tobacco Division,
Department of Agriculture.*

Mr. DARIUS WIGLE, Kingsville, Ontario, called.—I did not come prepared to deliver any address—I did not know that it was necessary—but I thought that I would be expected to answer questions.

The CHAIRMAN.—We do not expect an address. Make your remarks as brief as possible. No doubt the committee are anxious to question you.

Mr. CLEMENTS.—Perhaps I had better put some questions to Mr. Wigle.

Q. I understand that you are a large producer of tobacco and have a large tobacco farm in the county of Essex?

A. Yes.

Q. How many acres do you grow?

A. I have been growing up till last year from 60 to 80 acres annually, on my farm.

Q. For how many years have you been growing tobacco in Essex county, Mr. Wigle?

A. I think eleven or twelve years.

Q. And about how much do you grow annually?

A. In the county?

Q. No, yourself?

A. I grow an average of about 70 acres and my tobacco has turned out about 1,400 to 1,700 pounds per acre. I have raised over one ton to the acre, but the average crop, I should say, would be from 1,400 to 1,700 pounds per acre. That depends upon the variety of tobacco.

Q. What varieties do you grow?

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A. I have grown a number of varieties, including Burley and Connecticut Seed. Those are the large types of tobacco. I have grown those so that they turned out about a ton to the acre. I have grown the Comstock Spanish that was just mentioned by Mr. Charlan, and here is a sample of that variety which was grown in my neighbourhood (producing sample). That tobacco was supposed to turn out about 1,000 pounds to the acre, about half a ton.

Q. Is that a sample of the tobacco which Mr. Charlan says is not grown in any quantity?

A. Yes.

Mr. Ross (Yale-Cariboo):

Q. Not grown in sufficient quantity?

A. Not sufficiently grown.

Q. You do not get enough to the acre to make it profitable to grow it?

A. Yes, we do. It depends upon the price.

By Mr. Clements:

Q. Just give me your opinion as to how much of that variety of tobacco is grown in Essex county or Kent?

A. Well, I am not able to say, but probably 25,000 pounds.

Q. 25,000 pounds?

A. That quantity was probably grown in Essex last year, in 1907.

Q. Taking into consideration the general business of the farmers and the manufacturers, what variety do you consider the most profitable so far as your experience is concerned?

A. Well, whilst the Burley is a good price at 8 cents, it is more profitable to grow the small tobacco.

By Mr. Ross (Yale Cariboo):

Q. That is chewing tobacco?

A. That is chewing tobacco. With regard to cigar tobaccos, I paid, I am a packer too, 9 cents for that crop. That is not the purest of it; that is for cigar binders. We use the inferior grades of that tobacco for fillers.

By Mr. Clements:

Q. From your experience as a tobacco grower do you consider that any of the soils in the district in which you live in western Ontario are suitable for growing tobacco?

A. I think they are, in fact I know it.

Q. About how much tobacco can you grow to the acre in that district?

A. Of the chewing tobacco we would grow an average crop of about 1,500 pounds.

Q. And of smoking tobacco?

A. The smoking tobacco would be about 1,000

Q. What is the average cost of growing tobacco?

A. The cost of growing the cheaper tobaccos at the present rate of wages would be 5 cents, and that of cigar tobaccos, I should judge, would be 6 cents a pound.

Q. In your opinion have you always had a market, or at least a reasonable market at reasonable prices, for the tobacco which was grown, sufficient to guarantee you a profit?

A. No, we have not until the past year. We have received a fair price for the chewing tobacco, with the exception of one or two years when there was an over production.

Q. Will you give the committee an idea of why you have not had the encouragement and what would be a remedy for that condition of affairs?

A. I might refer back to 1902.

Q. Give us the details shortly?

A. There was a large quantity—a million pounds, I would say, although some thought more—a million pounds more or less of cigar leaf produced for one man—Ward. In addition there was a considerable amount produced outside of that. There was also probably, of smoking tobacco and cigar tobacco a million and a half pounds. I built a warehouse and processed upwards of a million pounds of that tobacco for the cigar trade of our country, but I found whilst there was not a Canadian license in the province of Ontario that I had a great difficulty in introducing these cured tobaccos. I sold a great number of cases of that tobacco which were returned to me because the excise officers would not allow them to go into the factories.

By Mr. Ross (Yale Cariboo):

Q. Why?

A. They had not a Canadian license and for that reason I was hampered with this stamp business.

Q. Excuse me for interrupting you. You say that our excise officers would not allow this tobacco to go into the factory?

A. Yes, a foreign leaf factory.

Mr. PARMELEE.—There are three licenses.

By Mr. Clarke:

Q. They would not allow it to go in without paying the extra excise?

A. No, I went and looked into that. If the company was willing to pay the extra excise, or the excise that was on the American leaf, they were still prohibited from putting these Canadian tobaccos in.

Q. They did not obey the law?

A. They did not in that respect. Evidently they were ignorant of the law.

Q. Who was the officer?

A. I will cite one, for instance, the officer at London. I made a great many of these shipments which were returned in the same way but I will cite you one shipment of from 5 to 7 cases to a gentleman in London, Mr. Kelly. After testing my tobaccos he purchased seven cases. The tobacco was shipped to him and the excise officers refused to allow him to take it into his factory.

By Mr. Clements:

Q. Pardon me one moment. This was tobacco which went through your packing house?

A. Yes, processed tobacco. This (producing sample) would be a sample of the same kind of tobacco. I happen to have only two samples left out of the million pounds or thereabouts. I sweated about a million pounds of that tobacco.

Q. Is that the Comstock Spanish?

A. That is the Havana Seed Leaf.

By Mr. Ross (Yale Cariboo):

Q. What excuse did the officer give for refusing to allow that tobacco into the factory?

A. Well, evidently he did not understand the law sufficiently to know that a cigar manufacturer was allowed to take that tobacco and pay the same excise duty on it that he was paying on the American tobacco and manufacture it. After those cases

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had been lying in London waiting for the excise officer to allow them to go into the manufacturer's factory they were returned to me three months later. I paid the freight both ways and also the storage while those cases were lying in London. The matter was recited to the district excise officer at Windsor and he evidently refused to interfere; but later on, after those cases were returned to my warehouse, the district excise officer went to Montreal and there learned that he was in error. He then wrote me a letter of apology for the manner in which he had treated me.

Q. Was the matter of rebates not involved in that question at all?

A. I think not. The officer was not aware that this tobacco could be allowed to be manufactured.

By Mr. Clarke:

Q. I suppose it was a new thing?

A. Yes.

Mr. PARMELEE:—They could have made him take out a license or pay the foreign leaf excise. If he was willing to pay the foreign leaf excise that settled the rebate question.

By Mr. Clarke:

Q. I suppose the officer did not know, it was the first time the question had arisen?

A. I travelled with these samples all through the province of Ontario and the province of Quebec. Although I had probably sold out of that stock in the neighbourhood of 200,000 pounds I became discouraged with my experience and disposed of the remainder of this cigar tobacco to the Empire Tobacco Company.

By Mr. Ross (Yale Cariboo):

Q. We had a delegation of cigar manufacturers down here a short time ago and one of them, the expert at Tuckett's factory, Hamilton, made this statement: That tobacco of a special character can only be grown in certain districts; that is, you get your best wrappers from Samatra, your cigarette tobacco from somewhere else, your fillers from Wisconsin, and that while they can grow tobacco in Essex they cannot grow tobacco suitable for fillers and cigar wrappers. In other words instead of making a speciality of growing a certain variety they were trying to grow every variety. What have you to say in reference to that objection made by the cigar manufacturers?

A. I have not found a variety of tobacco that was a failure in our county.

Q. They say that is the trouble with you people down there?

A. I was the person who grew this sample of Comstock Spanish tobacco which has been submitted to this committee. I am thoroughly familiar with the same variety grown in Wisconsin, which is used largely by the manufacturers of this country and I defy the United States or Wisconsin to produce an article equal to this domestic sample.

By Mr. Clarke:

Q. Have you been through Wisconsin?

A. No, but I have had a number of their samples expressed to me.

Q. Is that correct what these people say, that in Wisconsin they make a speciality of this tobacco for binders?

A. They make a specialty of it.

Q. They don't grow Burley?

A. No.

By Mr. Ross (Yale Cariboo):

Q. Let me develop that argument. We will admit that you can grow just as good binders in Essex as in Wisconsin?

A. Yes.

Q. Will you, therefore, say that you can grow as good smoking tobacco in Essex as they can grow somewhere else? Don't you think the soil is adapted for some particular class of tobacco?

Mr. CLARKE.—We have all kinds of soil in Essex county.

A. I find this from my experience: whilst we have all kinds of soil in Essex county, it depends more upon the process of curing that tobacco than it does upon the soil and the climate.

Q. Is it not true that there is great variety of soil, in some parts the soil is much better than in others, Pelee Island, for instance?

A. Yes.

By Mr. Clements:

Q. You substantiate what Mr. Charlan says, that there is no question about your growing the quality of tobacco for all purposes, excepting the finer cigar tobaccos in this country, do you not?

A. There is no reason why we should not be growing every leaf with the exception of some of the finest wrappers.

Q. We are producing 10,000,000 pounds of tobacco now; how many millions of pounds could we produce if we had the market for it, in your opinion?

Mr. CLARKE.—There is no limit.

Q. If necessary in our district we can grow 25 or 30 or 40 million pounds?

A. Yes, and would do it if the farmers were protected or encouraged, and I am satisfied that they would get a reasonable price for their tobacco.

Q. You endorse Mr. Charlan's idea that there should be encouragement given for the establishment of proper packing houses?

A. Yes. The lack of them is the reason of the grades of tobaccos being condemned greatly by the manufacturers of Canada.

Q. What effect has the growing of tobacco upon the soil?

A. I have grown, I think, as much as ten crops in succession upon the same soil. Here is a sample of Gibhardt (producing sample) being the eleventh crop, the label says, in succession. I grew that myself.

By Mr. Ross (Yale Cariboo):

Q. What is that good for?

A. Chiefly for pipe smoking, if it were properly cured, but it is not.

By Mr. Clements:

Q. Will you tell the committee as briefly as possible what, in your opinion, would be the best method of handling and curing the crop of tobacco in our district?

A. In the west? In the first place for the plug, chewing and smoking this has been cured especially for those purposes (producing sample). This is Burley and it is of the 1906 crop. I dampened this considerably and it will keep 100 years and still be sweet and good. The proper method of curing that is putting it through a kiln at a certain degree of heat. That expels all the moisture from the tobacco and fits it for manufacturing into plug.

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Q. Will you state to the committee if the farmers have suffered any detriment in growing and curing their tobacco, for instance has there been any neglect from want of information?

A. As far as the farmer or tobacco grower is concerned I do not see that he is supposed to cure the tobacco for the manufacturer. He is supposed simply to cut that tobacco, with the exception of one variety of tobacco and that would be pipe smoking tobacco. That must be cured shortly after it is cut, either by the grower or by some other person, to get it into the condition which it should be in for pipe smoking. The farmer can only cut his tobacco and hang it up and let the air cure it. That is all that is necessary for him to do with any of these cigar or plug chewing varieties. Then the manufacturer or packer must cure that tobacco to suit whatever it is intended to be manufactured into.

Q. Explain the curing process from your own experience as a packer, Mr. Wigle?

A. This leaf (exhibiting sample of Havana Seed) was cured for cigar binders only.

By Mr. Ross (Yale Cariboo):

Q. You are giving evidence as an expert, and I am not reflecting upon it, but you will understand that the manufacturers are always trying to make out that they cannot get the tobacco they want in Canada; that it is not properly cured, or the seed is poor and all that sort of thing. Are you absolutely sure that no improvements can be made in your methods of curing tobacco?

A. I would not say, but what there can be improvements made on my method of curing.

Q. Of course, I do not know anything about the business?

A. I was very anxious to secure something from Mr. Charlan because he probably knows far more than I do in reference to this matter.

By Mr. Clements:

Q. What is the reason that the quality of the Canadian tobacco has not been brought up to the standard that it should have been, is it simply through not having proper packing-houses to cure it?

A. Yes.

By Mr. Clarke:

Q. Is that not a matter which rests with the manufacturers? You often find that one manufacturer turns out a better cigar than the others do from the same sample?

A. Sometimes they do.

Q. Is that on account of a better process of curing?

A. Yes, better methods of curing and preparing the tobacco. Each cigar maker has a different method of preparing his tobacco before it goes into the cigar, although the tobacco is the same.

By Mr. Parmelee:

Q. It is foreign leaf?

A. It is foreign leaf but he will treat it probably in some way.

By Mr. Clarke:

Q. That is a matter for the manufacturer to work out?

A. Yes.

By Mr. Carrier:

Q. In the States of Virginia and Kentucky they have a class of men in their tobacco industry that are known as re-handlers. Those men go to the farmers?

A. That is right.

Q. In the case of our tobacco it has been given a bad name and according to the old saying 'Give a dog a bad name and they will hang him.' Our tobacco in this country for years has had a bad name and the farmers have dealt with the consumers direct. We want to try and stop that and get the farmers to place their tobacco in the hands of re-handlers when it will undergo a curing process in expert hands?

A. Yes.

Q. The proper handling of tobacco requires extensive, and in our climate, well heated buildings. Very few men in our province have been willing to go to such an expense. When the industry has been put on a better footing by and by, you will find men who will be willing to spend thousands of dollars to get the trade into proper shape by means of this system of re-handling. We want our manufacturers to go direct to the re-handler and not to the farmer?

A. Yes.

Mr. CARRIER.—Canadian tobacco has been given a bad name which we are trying to remove. That is because the tobacco has never been properly cured. We are having in Quebec on the 17th June next a meeting of the Dominion Wholesale Grocers' Guild. I am president of the Guild of the Province of Quebec and I have been in correspondence with Mr. Beckett, of Hamilton, the President of the Dominion organization. I intend at the next meeting of the Guild to read a paper on the subject of Canadian leaf tobacco and I want every man in the country to learn that with respect to this tobacco he has been labouring so far under a prejudice.

Mr. ARMSTRONG.—Have the manufacturers been asked to establish these curing rooms?

Mr. CARRIER.—They have been doing their own curing. The American Tobacco Company have started a large factory at Granby of their own and they have been trying to do away with the re-handlers and curing men and buy the tobacco themselves from the farmers and perform this process.

Mr. PARMELEE.—They do it better.

Mr. CARRIER.—They can do it better.

Mr. PARMELEE.—They do it better.

By Mr. Clements:

Q. What would you suggest as a remedy for the existing conditions in the case of our tobacco growers?

A. I wish to say that I call myself a re-handler of tobacco. We take this tobacco into our warehouse and it is hand sorted and sized and then packed into cases and sweated. Then it is ready for the manufacturers. We draw four hands from each case and that is generally put into a sample of our goods guaranteeing that every leaf in the case is equal to the sample.

By Mr. Ross (Yale Cariboo):

Q. To whom do you sell them?

A. To the cigar manufacturers.

Q. What objection do they make to the tobacco as to its quality?

A. Some have made no objection, but consider it a good quality of tobacco. Others object to it and say it was an inferior tobacco.

Q. I still want this point absolutely cleared up if it possibly can be. I can very well understand why the cigar manufacturers, with the object of leaving things as they are, attempt to create the impression that they cannot get the tobacco which they want in Canada, they might have a selfish reason in speaking that way. I think it would be in the interest of the tobacco growers that an expert like Mr. Wigle should

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put such evidence on record as will convince the public, at least, that there is nothing in this statement, that we can grow the tobacco that is necessary in Canada. I know some Montreal and Hamilton manufacturers claim they cannot get the tobacco they want in Canada, and I would like the fact that the tobacco can be got in Canada emphasized?

A. Just here I would say that on my first trip to introduce my processed tobaccos in 1902, I came to the city of London and when passing Mr. Tuckett's branch I called there, knowing that they were manufacturing foreign leaf. I asked their foreman to wrap up a cigar, and test it, from my processed tobacco. He did so and expressed his views in this way—that it was equal to the very best Havana that they were putting in their best cigars, Margree. He admitted it to me before a witness but he said 'we are not allowed to use it.'

Q. Was that tobacco which you showed that particular firm a special sample or did it represent the average tobacco grown?

A. The average processed tobacco. I would have been glad to have sold him 200,000 pounds equal to the sample he prepared that cigar from and would have been glad to have done it at that time.

By Mr. Carrier:

Q. Do you think that if the duty on foreign leaf were increased it would have the effect of establishing more re-handlers of tobacco?

A. If the duty were sufficiently increased the packers, or rather the re-handlers as you call them, would be here by to-morrow morning from the United States.

Q. Lots of them?

A. To build warehouses in which to cure our tobaccos the same as they do on the other side of the line.

Q. You are probably aware that foreign countries like France, Belgium and Italy, that import their tobaccos from Virginia and Kentucky, are represented by re-handlers in the United States. Those men prepare the tobaccos so as to give them a flavour which suits the taste of the consumers in the countries which they represent?

A. They do in some cases.

Q. These re-handlers give the tobacco a special flavour which suits the taste of the consumers of each country. As a matter of fact the tobacco used in France is prepared in a special manner so that it is adapted to the taste of those people?

A. If the time allowed me was not quite so limited I would read you correspondence with a man in Wisconsin with respect to the manufacturing of this tobacco providing there was sufficient duty.

By Mr. Ross (Yale Cariboo):

Q. About the matter of duty, you say it ought to be increased?

A. Yes.

Q. As I understand, it is not a question of increasing the duty?

A. Not altogether.

Q. It is more a matter of the re-arrangement of the duty. If the customs duty be increased and the excise duty correspondingly reduced would that not meet the case?

A. Yes, that will help if it is sufficiently increased in the one case and sufficiently reduced in the other.

Q. Let me put it in this way: Do you not think, as a tobacco grower and tobacco dealer, that taking the customs duties and the excise duties together you have a reasonable protection in this country for tobacco?

A. There has not been sufficient, especially on the cigar tobacco.

Q. Is the difficulty not more a question of the arrangement of the duty than the extent of it?

A. You will understand that the 10 cents per pound on cigar tobacco makes only \$2 difference on 1,000 cigars. The rebate on that would nearly equal one-half, so you might consider that there was a duty of only \$1 a 1,000 upon them.

Q. That is 10 cents a pound duty on the imported leaf?

A. Yes.

Q. There is an excise duty of how much?

A. \$6 a thousand.

Q. Supposing we increase the import duty say to 28 cents a pound?

A. I would not consider it sufficient.

Q. You would not?

A. I think that 35 cents should be placed on it.

Q. That is 35 cents on the raw leaf unstemmed?

A. Yes.

Q. You think that is enough?

A. Yes.

Q. I am bound to say you are the most reasonable protectionist I have come across in some time?

A. In advocating 35 cents a pound.

Q. Yes?

A. Customs duty on unstemmed leaf.

By Mr. Clements:

Q. Take this year's crop, under your process of packing or re-handling, could you get this crop prepared say in twelve months for the manufacturer?

A. Yes, in six months.

Q. Would there be any advantage in taking a longer time?

A. Not very much under the sweating process.

Q. There is no doubt, taking this year's crop, and re-handling it, you could put it into the manufacturer's hands within a very few months?

A. Yes, we could put it in their hands by the month of August next.

Q. How long have you felt the need of a change, for instance, with regard to the stamp and the excise duties?

A. Since I have become a packer, since 1902.

By Mr. Ross (Yale Cariboo):

Q. Since the rebates were granted?

A. I don't know when that rebate came into force.

By Mr. Clements:

Q. You had a large demand for eight or ten years for what tobacco you grew in Essex county?

A. Yes.

Q. Give us the reason why there has not been such a demand for the last three or four years?

Q. There is now an over production of tobacco, that is, chewing tobacco?

A. Yes.

By Mr. Clarke:

Q. Does that apply only to chewing tobacco?

A. Yes.

Q. There is a sufficient demand for smoking tobacco?

A. Yes, I think so.

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By Mr. Clements:

Q. You think that if the customs duties were better arranged there would be a market in Canada for all that you could produce of it?

A. Yes.

Q. What effect would it have on the cigar manufacturers, of course they must be taken into consideration?

A. It would make little or no difference to the cigar manufacturer, increasing the custom duty and lowering the excise duty.

By Mr. Clarke:

Q. Why are they making such an uproar against this proposed legislation?

A. It would make this difference, that it would probably drive them to change the brands they already have established and use Canadian leaf.

By Mr. Ross (Yale-Cariboo):

Q. I suppose they have worked out convenient connections for getting their tobacco, and they would have to change them?

A. Yes.

By Mr. Clements:

Q. What effect would it have upon the consumer?

A. No effect upon the consumer.

Q. You think it would have no effect upon the consumer?

A. I don't see that the effect would be noticeable.

By Mr. Ross (Yale-Cariboo):

Q. What would be the effect of smoking cigars made out of Canadian tobacco?

A. Well, I have introduced some of them. The people who have smoked them have found them quite satisfactory.

Q. Did you try one of the cigars produced to-day?

A. I did not have a chance to test it thoroughly. I have smoked a good many cigars made from Canadian tobacco.

Witness retired.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 30,

THURSDAY, March 26, 1908.

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

The CHAIRMAN.—As the members of the Committee are aware we intend to continue the investigation into the cultivation and preparation of tobacco. When we adjourned yesterday Mr. Darius Wigle from the county of Essex, Ontario, was under examination. That examination will be now continued.

By Mr. Clements:

Q. You have looked over the schedules and know the legislation which the government propose to enact. In your opinion what effect will the one license and stamp, with the higher rate of duty, have upon the tobacco industry in your section as well as in other parts of the country?

A. One thing it will bring about better methods of curing and preparing our tobacco for the Canadian manufacturers.

Q. It will bring about better methods of curing?

A. It will bring about better methods of curing. It will be an inducement to manufacturers to manufacture Canadian grown tobacco leaf.

Q. Do you think the farmers require any education as to growing tobacco; should there be some other assistance given them in the way of instruction by experts, or is Mr. Charlan, in your opinion, able to take care of the whole of the tobacco-growing districts? Would you consider his territory too large?

A. Well, as far as Mr. Charlan is concerned, I am unable to answer the question as to his ability, as I have never conversed with him to any extent, and I was unable yesterday to understand his address, which was given in French. So far as the farmers and tobacco growers in Western Ontario are concerned, I feel that they thoroughly understand growing the crop and taking care of it. Our farmers, however, might be urged to plant earlier, so that the crop would be harvested in the early fall, whilst the weather is warmer and drier.

Q. Personally, I have felt the need of some such change as the government intends to bring about. When do you think that change should take place? I know the farmers in my district will refuse to put in any tobacco, if the change is not made known soon? What is your opinion about that?

The CHAIRMAN.—What changes do you refer to?

Mr. CLEMENTS.—The changes contemplated in the government's proposed legislation?

A. I would say this in answer to that: The farmers, under the present regulations have a disposition to not plant very much tobacco during the coming year, because they have the most of last year's crop on hand, and without they have some guarantee from the government that there will be a change in the tariff, they will not plant very much tobacco this year.

Q. How much of last year's crop is in the hands of the farmer at present?

A. I presume that four-fifths of the crop grown last year is still in the hands of the farmer.

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By Mr. Owen:

Q. What does the American tobacco cost laid down here?

A. Cigar tobacco?

Q. Yes?

A. Duty paid?

Q. Yes?

A. About 17 cents a pound for fillers.

Q. And what do you offer yours for in Canada?

A. I would sell it at from 12 to 17 cents a pound, that is fillers.

Q. That is the same quality of tobacco as the American tobacco?

A. It would be a better quality. I would say that my experience in the cured tobaccos is this: I find that the American people ship their culls to this country usually. I have seen almost hundreds of invoices showing that they are introducing that tobacco at 7 cents a pound into the hands of our cigar manufacturers. When that tobacco passes the international boundary line it has to pay 10 cents a pound, which would make the price 17 cents a pound. The Canadian farmer growing cigar tobacco should have from 8 to 10 cents per pound.

Q. Duty?

A. No, he should be paid from 8 to 10 cents per pound, that is the Canadian grower. The handling and the processing of that tobacco costs 3 cents per pound. That would be 13 cents. There is a shrinkage of about one cent and a half to two cents, which would nearly reach an amount of 15 cents. Over and above that we consider profit for the packer, who, however, has to incur other incidental expenses. We are unable, as packers, in this country, to put a fair quality of cigar leaf in the hands of the manufacturer as a filler at less than about 17 cents per pound, and 20 to 25 cents for tobacco as a wrapper or a binder.

By Mr. Clements:

Q. Just one question in connection with that point. You, as a packer, and also as a grower and purchaser of tobacco, living in the district where the tobacco is produced, feel that some change, from a legislative standpoint, is necessary in order to keep the industry alive; that is in the interest of the grower?

A. Yes, there has got to be a change.

Q. And that at once?

A. Yes.

By Mr. McColl:

Q. Would the proposed changes that have been announced by the Minister of Finance be satisfactory to the farmer or grower?

A. Not altogether, for the reason that the proposed change with respect to chewing tobacco makes a reduction of 2 cents a pound.

By Mr. Clements:

Q. That is, that the grower is 2 cents worse off than he was before?

A. Yes. The manufacturer will benefit to the extent of 2 cents by the proposed change. The duty was 35 cents, and it has now been decreased to 33. In reference to cigar tobaccos, there is a benefit to the grower, as against the cigar manufacturer, of 3 cents. The change in regard to stamp and license will certainly be a benefit to the grower.

Q. What is the percentage of chewing and smoking tobacco grown in your district, approximately?

A. I presume that there has been only about one-fourth of cigar tobaccos to three-fourths of chewing tobaccos. Less than that, probably. To substantiate my remarks as regards the 7 cent tobacco, I have visited the various packing houses of Ohio and

the other States, and I would just merely read a letter that I got the other day from a gentleman writing me from Wisconsin, a gentleman who wishes to take an interest in my packing house, provided there is sufficient change in the duty and license to warrant him of a good business in this country. He writes me:

'DEAR SIR,—Yours received dated February 25th. I was in the country for two weeks superintending a farmer's crop, to be assorted; that is why I have delayed answering yours before. I am a sober and industrious man.

'As to your inquiry of my experience with the tobacco crop. We in this country first assort it, by separating the good from all damaged tobacco, such as pole rot, or shed burn, sunburn, frosted and wet tobacco, and rust and ragged leaves; then put the good over a sizing table graded into one, two, three, four, five, and so on, and then packed in cases, and sweated, ready for cigar manufacture. After the sweating is through we draw four hands from each case, as sample, putting the number of the case on each sample.

The damaged tobacco is put up for export, and much of it is sent to your country.

The 1906 crop here molded because it was so cold and damp during the sweating process. Farmers often sprinkle their tobacco to make it heavier, gives us much trouble and loss in handling it, as it is sure to show on the tobacco after it is sweat.'

Q. May I ask what is about the duty that they have to pay on tobacco now?

A. We have now ten cents on cigar tobacco, and the manufacturer gets the rebate on his cuttings, he ships his cuttings to Germany and sells them at 12 cents a pound, and he gets a rebate from the government of 10 cents a pound, so that he realizes 22 cents a pound; the rebate is equal to one-half the duty he pays in the first place, or about 5 cents per pound at the present time.

Q. As far as the rebate is concerned that is a matter of trade, he gets a rebate of 5 cents a pound or one half what he imports—it means up to one half, he imports at 10 cents a pound and then he is allowed a rebate of 5 cents a pound when he exports it, is that it?

A. No, he pays a duty of 10 cents a pound on what he imports, and on the cuttings from his factory he has the privilege of exporting them, and the government pays him ten cents a pound for all that he exports, and that 10 cents on what he exports is almost equal to a half of what he pays in duty.

Q. He is allowed a rebate on the home grown tobacco, is he?

A. No, I am speaking of foreign leaf.

Q. The excise is, of course, the same in both cases?

A. The same in both cases, so that I have always claimed there was not more than about \$1 on a thousand cigars difference in duty between the Canadian or the domestic cigar and the foreign leaf manufactured by a foreign leaf manufactory.

By Mr. Owen:

Q. I would like to ask a question. As you travel around quite a bit, do our farmers cultivate the land so as to get as many pounds per acre as possible out of the land?

A. Yes.

Q. As I understand it the land has to be specially prepared and while the plants are growing the weeds must be kept out, because the plant requires all the nourishment there is in the land, without allowing anything to go into weed. Unless tobacco is kept very clean it will not do as well as it would if it were kept free from weeds, is that so?

A. No, it will not.

Q. Do our farmers take every care while the plant is growing to get as many pounds per acre as possible?

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A. They do in Western Ontario. I am not posted as regards the cultivation of tobacco in Quebec, but I will venture to say that you can go through the tobacco fields of Western Ontario and you will not find more on the average than one weed to the acre, and even you will find ten acres in which there is not a weed to be found.

Mr. BARR.—That is pretty nearly perfection.

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

DARIUS WIGLE,
Tobacco Handler.

The CHAIRMAN.—We will now hear Mr. Lewis Wigle, who is likewise from the County of Essex, in Western Ontario.

Mr. LEWIS WIGLE, called:—

By Mr. Clements:

Q. I understand you have had a good many years experience in buying and growing tobacco?

A. Yes, I purchased nearly all the tobacco that was grown in the county of Essex and a good portion of Kent from the year 1864 to 1895.

Q. You are practically one of the pioneers in the tobacco growing industry?

A. Yes, I grew the first Burley tobacco in 1894 or '95, I am not sure which. I grew the Burley tobacco from which the first plug of chewing tobacco was ever manufactured in the Dominion. I can tell you how I know it was the first. The Empire Tobacco Company had made up their minds to try to cultivate the growing of Burley tobacco in this country; they had always been purchasing it to the south, in the United States, and they felt it might be grown successfully in the province of Ontario. Mr. Archibald, who was then one of the partners of the Empire Tobacco Company, came to Essex county and enquired who had been purchasing the tobacco in that part of the country. He was told that I had been buying it, so he came to me with the seed he had purchased in the United States and asked me to plant all I could myself and to give the balance of the seed to the farmers around that country who I thought would grow it and prepare it for him. He paid me nine cents a pound for it, I grew 18 acres, and he was so anxious to test it, to ascertain whether he could make a success of Canadian Burley with his formula that he induced me to put a stove in my barn, and attach it to the natural gas pipe, we had natural gas in the town, in order that I might dry it before nature would do it so that he might get it to his factory more quickly in order to test it. That is the reason I know that my tobacco was the first tobacco that was ever manufactured into chewing tobacco in this country.

Q. You bought for the Empire Tobacco Company for a number of years, for how long a period?

A. I have bought for them since 1895.

Q. What kind of chewing tobacco do you recommend as the most profitable for us to grow?

A. Burley is the only tobacco for chewing tobacco.

Q. Why is that?

A. Burley is the only tobacco for chewing tobacco on account of its absorbing qualities. It absorbs the sweets, the liquids and molasses and so forth, that they put into the tobacco. No other tobacco would do that.

Q. Does Mr. Charlan agree with you, you say that Burley is the only tobacco for chewing tobacco?

A. Burley is the only tobacco that they make a success of in manufacturing into chewing tobacco.

Q. I understood from Mr. Charlan's evidence yesterday that there is an over production of Burley tobacco, why is that?

A. There is an over-production because we in Canada do not have our own country for our own tobacco of that kind; there is too much imported from the United States. I understand by the returns brought down by the government in 1906 that there were nearly 10,000,000 pounds of Burley tobacco bought in the United States. We have a demand here for between four and five million pounds at the present time.

Q. That is all that the Canadian growers produce?

A. The Canadian manufacturers manufacture Canadian Burley to the extent of about four or five million pounds a year.

By Mr. Broder:

Q. Do you know the amount of tobacco which is manufactured, imported and all?

A. Do you mean the manufacture of chewing tobacco or how much leaf was imported from the United States?

Q. I want to know the quantity of leaf of these different kinds of tobacco which they use?

A. Fifteen millions and some odd pounds were imported in 1906, about twelve millions of the same kind that we raise, and to my mind no better.

By Mr. Clements:

Q. Would that be practically the same kind?

A. Yes, the same kind.

Q. That all goes into chewing tobacco?

A. Well, they use the bottom leaves, the lighter leaves of Burley, for a certain kind of smoking tobacco.

Q. Under the present conditions has the Canadian grower a sufficient duty upon his tobacco, or what protection should there be? Explain to this committee how it is, for example, that Mr. Macdonald can pay an excise duty of 20 cents, I think it is, upon the tobacco which he imports?

A. The excise duty is 25 cents on American and 5 cents on Canadian. He pays 20 cents more excise duty than the manufacturer of Canadian tobacco does.

Q. He pays 20 cents a pound more?

A. 20 cents a pound more excise and 10 cents duty.

Q. If the tobacco which he imports is the same kind of tobacco that we grow here and he pays 20 cents a pound more excise and 10 cents duty on it, can you give any explanation of that?

A. I think so. I think the reason that Mr. Macdonald makes tobacco to suit the tastes of the people of this country is because they have got accustomed to it and to his formula. It is a formula that they like and it acts like a patent right on the kind of tobacco that he makes. I think that if Mr. Macdonald would make chewing tobacco with his formula out of the Canadian Burley he could make just as good chewing tobacco as he does to-day out of the American Burley.

By Mr. Broder:

Q. Does he not use any Canadian Burley?

A. Not a pound. He takes a license to manufacture American leaf and is not allowed to manufacture Canadian leaf. It has often seemed to me that if this government would give Mr. Macdonald the right to buy fifty or 100 thousand pounds, or whatever quantity they choose, and manufacture it into chewing tobacco with his

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formula to test whether he cannot make as good out of our tobacco as he does out of American, it would be a good thing.

By Mr. Gordon:

Q. Would he do so?

A. I don't know whether he would.

Q. I understand he refused absolutely?

A. He was asked to give evidence before the Agriculture Committee in this House some years ago as to the manufacture of chewing tobacco out of Canadian. He said then, so I am told, that he had tried to make chewing tobacco out of Canadian leaf and he could not make a success of it with his formula and he never would try it again. But at that time there was not such a thing as Burley tobacco known in this country. He had been importing Burley tobacco to manufacture into chewing tobacco, and when he took the leaf tobacco which was grown at that time as a smoking tobacco it would not absorb as the Burley tobacco did and, of course, he could not make a success of it. I claim that if he was compelled to manufacture Canadian Burley he could make just as good a tobacco as he does from the manufacture of American Burley.

Q. With your experience you have no doubt of that?

A. I might say this: I have been told more than once by an expert purchaser of tobacco in the United States that he had bought millions of pounds of American Burley tobacco and shipped to Mr. Macdonald and he never shipped a pound of better Burley tobacco than we grow in this country. Now here is the Burley tobacco grown in the County of Essex (producing sample). They cannot beat that Burley tobacco in the United States. I was in Kentucky two years ago last October, for a week, in Woodford county, Kentucky, at a place called Midway, fourteen miles from Lexington. A cousin of my wife's has a 2,000 acre farm there and he grows 200 acres of Burley tobacco every year. When I told him that I purchased tobacco for the Empire Tobacco Company in Canada he asked me if I would like to come and look through the barns and see if he kept the tobacco in the same way as we did. I went to his barns and found that they were the same as ours. The doors were fixed with hinges to open out and let the air through. The tobacco was the same kind of Burley and it was put on the sticks in the same way; in fact everything was done in the same way only that his Burley was not as large as ours. It was a smaller tobacco, the stem was smaller, the rib here (pointing to the sample) was smaller, and it had a finer appearance. But I found out the reason for that in going through the country. They do not plant that tobacco there in the same way as we do. We plant it about 3 feet 8 inches apart; they plant theirs 30 inches apart each way. We put a little over 4,000 plants to the acre; they put nearly 7,000 plants to the acre. So you can understand that when 7,000 plants are put on an acre the stalk does not grow as large stems or as large leaf.

By Mr. Broder:

Q. The plant does not get as much sun?

A. The plants are closer and they do not have the space to make them large. If we in this country planted in the same way we could grow the same kind of Burley. But we plant 3 feet 8 inches apart and that will not grow Burley as small as in Kentucky. However the Burley that will grow in the county of Essex cannot be beaten in any country in the world.

TOBACCO GROWING ON PELEE ISLAND.

Q. Was that a sample grown last summer?

A. A year ago last summer. Now, Pelee Island is in the county of Essex and 16 miles out in the lake, half way between Essex and the United States, you might

say the State of Ohio. It is about 5 miles one way and perhaps 12 miles the other. They have there the very same soil that they have in Kentucky—a limestone bottom—and that is especially adapted to the growth of Burley tobacco. Not only has the soil on Pelee Island a limestone bottom, but it is out in the lake where the air keeps the frost away, so that they can plant a week and sometimes two weeks earlier than we can 16 miles away and the frost remains away for from one to two weeks later in the fall.

By Mr. Clarke:

Q. Therefore, they can grow a tobacco of better quality?

A. A better quality. They can grow as good Burley tobacco there as they can anywhere else in the world. The farmers cannot get the plants they want to plant sometimes. Coming to that point Mr. Darius Wigle said he thought that the farmers are being educated to plant much earlier. That is a fact. They first began by sowing seed in beds in the woods, in the open air. They could grow tobacco plants there but they could not plant them so soon. Then they got to planting the seed under cotton, they did that for a while, and now they have glass houses to put it under, and have artificial heat in them so that they can get the growth earlier. If they can get tobacco in about the first of June it is sure to be a good crop, we have never missed a crop in the last eleven or twelve years, since we have been growing Burley tobacco.

By Mr. Clements:

Q. You have no doubt that we can grow tobacco here in Canada equally good, sufficiently good, not only for chewing, but for ordinary good cigars?

A. I am not so much posted as to the cigar tobacco, but I believe we can grow Zimmer Spanish and the big Havana and Connecticut seed leaf—all these are smoking tobaccos that I believe are specially adapted to this country, those three kinds. We can't grow Cuban tobacco successfully here, and I am told they cannot grow Cuban tobacco in Florida. The United States import large quantities of Cuban tobacco and pay a duty on it in that country. They pay millions of dollars of duty on tobacco they can't grow, but they are sure to fix their tariffs so that they do not pay duty on tobaccos they can grow. I believe we should do the same thing. I believe there can be enough tobacco grown in this country to supply the wants of this country, and why can't we grow it?

By Mr. Carrier:

Q. I suppose you are aware of the fact that this particular brand of tobacco can only be grown in a certain portion of Cuba, because the soil in that part of the country is of that particular nature which, I think, gives it that special flavour?

A. I do not think there is any use in discussing that question of Cuban tobacco.

By Mr. Carrier:

Q. You say it is not grown anywhere else than in Cuba, but not even in Cuba is it grown all over the island?

By Mr. McIntyre (Strathcona):

Q. Do you know anything about tobacco grown in the southern valleys of British Columbia?

A. No, but I am told they do grow tobacco there. My belief is that tobacco can be grown wherever corn can be grown.

By Mr. Clements:

Q. That is, you do not think the soil makes much difference?

A. Oh, yes, the soil makes some difference.

Q. How many pounds per acre does it produce?

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A. In our country it averages 1,400 pounds, that is Burley; and to show the extent to which it can be grown, in the county of Essex there are warehouses in Harrow, in the township of Colchester South; at Kingsville, in the township of South Gosfield; and Leamington, in the township of Mersea. Now, there were 7,500,000 pounds of Burley tobacco grown in Essex and Kent in 1906. Over 4,000,000 pounds of that were grown in these three townships, and the people who live in those three townships have the advantage over the outsiders on account of the warehouses being there and the buyers being there—it is the head centre. Outside of these three places the outsiders do not have as good a chance to sell their goods; there is only a demand for a certain quantity, and the outsiders, I consider, do not have a fair chance when there is more grown than required. Now, if we had our own country for our own Canadian tobacco, if we had our own market for the 14,000,000 pounds instead of only 4,000,000 or 5,000,000 pounds—if we had our own market for our own Burley tobacco, I am sure in Essex and Kent counties alone we can grow from 14,000,000 to 15,000,000 pounds every year without much exertion. If the farmers were only sure that they had our own market it would pay them to put up barns to cure it in and prepare the land for it. We have to keep them back from producing every year. I will tell you what the Empire Tobacco Company had me do a year ago last spring. They first had me send out a circular through the township in which I bought tobacco, the township of Colchester South—I bought for them in 1906 1,200,000 pounds in that one township—they had me send out a circular to the farmers from whom we had purchased tobacco the last year asking them not to grow but very little, because they were afraid they were overstocked and would not be in a position to purchase much. And, to make it stronger, so that the farmers would not misunderstand them, they sent me personally with my horse and buggy to tell the people they had better not grow tobacco, because I would not be there at all this year to buy from them. I have not bought a pound of the growth of 1907, the output is all on their hands except a few thousand pounds.

Q. Simply because there is no demand for it?

A. There is no demand for it and the Empire Tobacco Company did not want the farmers to grow tobacco for which there would be no market.

By Mr. Carrier:

Q. You said you are a buyer for the Empire Tobacco Company?

A. Yes.

Q. Do you not think the prices at which the Empire Tobacco Company is selling their goods to the trade is not in keeping with the prices they pay to the farmers?

A. How, selling it?

Q. Excuse me—what you pay to the growers—what are the prices paid usually by the Empire Tobacco Company to the grower or handler?

A. We bought direct from the farmers.

Q. Is it not ten to twelve cents a pound?

A. We bought for three or four years at as high as ten, eleven and twelve cents per pound, then they began to over-produce and then the prices went down. We paid in 1907, for the growth of 1906, eight cents and six cents and down to four cents.

Q. This tobacco costs the Empire Tobacco Company, domestic grown, about ten cents a pound, about 2½ cents freight, or an average of 12½ cents a pound?

A. Yes.

Q. I suppose it costs to manufacture it into plugs about five cents per pound as a maximum?

A. I don't know about that.

Q. Do you know that the lowest price at which the Empire Tobacco Company is selling to the trade is 25 cents a pound, what does that represent? 200 per cent profit?

A. I will put it in another way; Mr. Macdonald pays 10 cents and brings it from the United States and sells it at 25 cents a pound more, and he puts 12 plugs to the

pound instead of 8. Now if the American tobacco was kept out of this country and Mr. Macdonald was made to manufacture our tobacco with his formula, I believe he would make as good chewing tobacco as he makes now.

AN HON. MEMBER.—Mr. Macdonald has a monopoly.

A. He has a monopoly, but he wouldn't have a monopoly if Mr. Macdonald's agents were travelling up and down the concessions in the townships of Essex and Kent buying his 10,000,000 pounds of leaf there instead of up and down the side lines of Kentucky. There would be competition then between him and every other manufacturer.

Q. Yes, but you see Mr. Macdonald introduced his tobaccos in this country 25 or 30 years ago, and everybody to-day thinks they can't do without Macdonald's tobacco any more than they can do without salt and pepper. It is a kind of prejudice, but he has no tobaccos he sells to the trade at less than 65 cents and this tobacco costs him 25 to 30 cents to bring it to this country. Now, he will pay a customs duty on that of 28 cents a pound, which with excise duty puts the cost to him up to probably 58 cents or something like that. That tobacco does not cost Mr. Macdonald more than 5 cents a pound to manufacture, and yet it is sold at 80 cents a pound, therefore realizing a profit of from 50 to 100 per cent. Every day Mr. Macdonald is using a carload of tobacco and he is making an average of \$3,000 a day profit. It is the same with Mr. Tuckett of Hamilton?

A. I understand all that, but I will give you my version. Up in the county of Essex, years ago before we grew tobacco, the people thought they could not chew anything but Macdonald tobacco. It took them a long time to get educated to chew tobacco made out of Canadian leaf. Now there is not one pound of Macdonald tobacco sold in the western country where there are 100 pounds made out of Canadian leaf sold. I will tell you what I would do. I would put the duty high enough to keep American tobacco from coming into this country and I would say to the manufacturer, 'You have got to manufacture your chewing tobacco out of Canadian leaf or quit the business.' To the chowers in this country I would say 'You have got to chew Canadian tobacco or quit.'

By Mr. Zimmerman :

Q. Oh, no, that would never do?

A. If Mr. Macdonald with his formula can make as good chewing tobacco out of Canadian leaf as he can out of American why should he not do it?

Q. He has built up a business on imported tobaccos and the people of this country want that?

A. I want to give you an experience which came to my notice. The ex-Reeve of Pelee Island and I were discussing that very thing six months ago; he said, 'I want to give you my experience on the chewing of tobacco. I never chewed any tobacco in my life except Macdonald's until last summer. Then the merchant with whom I deal at Pelee Island ran out of Macdonald's tobacco and I was compelled to buy a plug of tobacco made out of Canadian leaf. I chewed that tobacco for three weeks. I longed at first for the Macdonald tobacco but got used to the Canadian. At the end of three weeks I took a chew of the Macdonald tobacco but spat it out, and have never chewed a chew of Macdonald tobacco since.'

By Mr. Clarke :

Q. Won't that apply to smoking tobacco as well?

A. I don't know very much about smoking tobacco.

Q. They can smoke our tobaccos too?

A. Yes, they can smoke it, too. I think we should do as they do in the United States. There they say, 'We can grow all the tobacco we want and no other country

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can ship to us unless they pay 35 cents duty.' That duty is prohibitive. Nobody ever heard of a Canadian farmer getting a dollar for tobacco shipped by him to the United States. On the other hand, the farmers there get a million and a half of dollars every year for supplying the same kind of tobacco to this country that we can grow ourselves. What we should say is, 'We can grow all the tobacco we want in this country and you shall not ship any to us.' Make the duty so high that you will not get any customs revenue out of it; keep it out of the country. Or, if you want revenue, put enough excise duty on it. That is the way they do on the other side.

By Mr. Gordon:

Q. Would you apply that policy to other commodities or just to tobacco?

A. I am talking of tobacco.

Q. I am looking as to what the effect of that policy would be?

A. Well, I would not.

By Mr. Clarke:

Q. You do not believe in such a policy for everything?

A. No, I do not believe in that for everything, I am talking about tobacco. If we ever produce any other product but tobacco, we can feed or export it, but tobacco we can neither feed nor export.

By Mr. Broder:

Q. You cannot safely encourage the cultivation of tobacco to any extent even if we had our own market?

A. I have a memorandum here of the tobacco production in the townships that I know. Take Colchester south and north in South Essex. They grew in 1906 about 1,300,000 pounds. Now I say that if we had our own market for our own tobacco that would mean a consumption of 14,000,000 pounds of Burley and the production in that township would be 2,000,000 pounds. That is not a very extravagant statement. Then take Anderdon and Maldon, I claim they would grow 1,000,000 pounds in the two townships. The land is not as well adapted for the growth of tobacco, but the climate is exceptionally good, these townships being situated on the Detroit River and Lake Erie.

By Mr. Clarke:

Q. I think it is safe to say the County of Essex would produce double its present consumption?

A. Gosfield south and north now grow about one million and a half of pounds. They could grow 2,000,000. Mersea township grew 1,700,000 pounds in 1906. In that township 2,000,000 pounds could be grown without any difficulty. Tilbury west and north would produce 1,000,000 pounds, Rochester and Maidstone 1,000,000, Sandwich south and west, 1,000,000 pounds. That would be a production of 10,000,000 of Burley leaf tobacco in the county of Essex. The county of Kent can grow 10,000,000 pounds. There is no mistake about that because I have bought all through that county and they have exceptionally good land.

By Mr. Carrier:

Q. I don't know that, they raise a good bean crop there?

A. They prefer to raise tobacco if they can sell it. Now, Pelee Island alone will grow 2,000,000 pounds.

By Mr. Zimmerman:

Q. Don't you think that if they improve the quality of Canadian tobacco there would be no trouble in regard to the sale? I find in Hamilton—

A. Will you please wait a minute until I get through with this statement. Pelee Island will grow 2,000,000 pounds, and then I claim they can grow outside of the counties of Essex and Kent, on the north shore of Lake Erie all the way down to Niagara, over 5,000,000 pounds at least. That would be a total of 27,000,000 pounds by the estimate I have given.

By Mr. Clements:

Q. What would our Quebec friends do?

A. They grow smoking tobacco and we grow Burley tobacco for chewing. They cannot grow Burley tobacco successfully there.

By Mr. McColl:

Q. Would this 27,000,000 pounds be consumed?

A. No, it would not be consumed. The consumption now amounts to only between 14 and 15 million pounds.

Q. What would you do with the surplus?

A. If we had the market in Canada for all that we use there would be a consumption of 15,000,000 pounds of Canadian tobacco instead of 4,000,000 pounds. And the consumption would grow; it is like everything else. I see present Mr. Armstrong, who represents one of the Lambtons. They grow corn in Lambton, don't they, Mr. Armstrong? Well they can grow tobacco there; there is no mistake about that. Now about the price. I paid Robert Wigle, who is a farmer and a cousin of mine, \$1,975 for the product of less than 12 acres for Burley tobacco, at the rate of 11 cents a pound. You can see from this how it would pay the farmer.

By Mr. Clements:

Q. What would be the cost of producing that?

A. It cost about \$45 an acre, but it would be \$50 an acre now with the price of labour as it is. Talk about impoverishing the land. I went to buy tobacco from Mr. Abram Bruner of Olinda a few years ago and I said to him 'That is as nice a field of tobacco as I have seen in years. Have you grown much tobacco on this land?' He said, 'I have had fourteen crops on this same land, and out of that number only one crop of potatoes and thirteen crops of tobacco; I think this is as good tobacco as I have ever had.'

By an Honourable Member:

Q. Would you not consider that hard on the land?

A. You have got to keep the land fertilized. Some gentlemen asked a while ago if the farmers up there have to prepare the land specially. They do have to prepare the land specially. They put on barnyard manure. Now there is a special fertilizer being used which was brought out by the agent of the American Tobacco Company. He sells it to the farmers and waits until they sell their tobacco for his payment.

Q. Does this land produce good crops afterwards?

A. Yes, sir, the crop is all right. Now there is a question which Mr. Zimmerman wanted to ask me.

By Mr. Zimmerman:

Q. I made the statement that if the quality of Canadian tobacco was such that the cigar and tobacco manufacturers of the country could use it—?

A. You cannot go into Mr. MacDonald's factory and pick out a better hand out of his million pounds of American Burley than that (holding up a sample of Canadian Burley grown in Essex county). They all admit you can pick out a 'hand' here and there, but not in any quantity first-class.

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I venture to say that you can go to the Empire Tobacco Company's institution in Granby and you will see millions of pounds of Canadian grown tobacco there that is better tobacco than Macdonald's. You let an expert go into Macdonald's tobacco warehouses and see his Burley tobacco that he imports from the United States, and let that same expert go to Granby and see the tobacco that the Empire Tobacco Company has, and I will stake my existence they would give their decision in favour of the Empire Tobacco Company's tobacco—that is all chewing that I am talking of, all Burley tobacco.

Q. Would it not be to the advantage of the manufacturer to use Canadian tobacco if it is as good?

A. Yes, I believe it would be to Mr. Macdonald's advantage to-day to use it.

Q. You have to-day 32 cents a pound protection on an article that costs five cents to raise, and it appears to me you are the highest protected industry in Canada to-day?

A. Yes, I know but we are not high enough protected to keep that American stuff out and that is what we have to do.

Q. Does that argument apply to everything?

A. No, it will not, but we can grow enough for this country, and just about enough. When we have a market for only 4,000,000 we can grow too much and I will tell you why.

Q. It is 600 or 700 per cent?

A. I will tell you why, it is not protected enough, because a man who is disposed to manufacture Canadian leaf cannot manufacture a pound of American leaf in that same factory and have his rebates. That is the reason, and the manufacturers of Canadian leaf manufacture about 4,000,000 pounds a year and the manufacturers of American leaf manufacture between 9,000,000 and 10,000,000 pounds a year. If you can fix it some way so that the man who manufactures American leaf can also manufacture Canadian leaf and so give Macdonald a chance to try it, or fix it some way to make him try it you will find he can manufacture tobacco out of Canadian Burley as well as he can out of American Burley.

Q. What is the objection of Mr. Macdonald to using Canadian tobacco?

A. Mr. Macdonald pays 20 cents more excise than the manufacturer of Canadian leaf and 10 cents customs duty. Under the new arrangement the 20 cents excise is knocked off, and 18 cents is put on the customs, so that he only pays 28 cents in customs and 5 cents excise.

By Mr. Clarke:

Q. So that it will be an additional advantage that the stem which before did not pay excise is now paying an extra 18 cents a pound, is not that so?

A. Yes, they do not pay the excise on the stems but they pay excise on the molasses and licorice and all that kind of stuff they put in, which is heavier than the stem.

Q. Yes, and the regulations provide for them still paying duty on molasses and everything?

A. Well, I do not know about the molasses and tobacco separately.

Q. When you speak of the 28 cents customs duty instead of the former one of 10 cents, how much will that be increased by the increase on account of the stem, what proportion of stem is there?

A. I do not know.

Q. It is one-third or one-fourth, I believe?

A. Yes.

Q. So that would make a difference on a pound of four or five cents?

A. He does not pay excise on molasses.

Q. That is provided for?

A. Did it come in free before?

Q. There was a customs duty before and that is as it is now, that does not interfere with it?

A. Now Mr. Macdonald pays 20 cents more excise on the manufactured Canadian leaf, when he imports molasses doesn't he pay duty on it now?

Mr. CARRIER.—Not when it is from the British Isles.

By Mr. Zimmerman:

Q. The conditions are just the same now as they were before as far as that is concerned?

A. This molasses will take up just as much weight as the stem.

By Mr. Clarke:

Q. What proportion of the plug does the molasses and other ingredients represent?

A. I really cannot tell you that.

Q. Is there any standard?

A. No, I suppose it is according to the formula of the manufacturer, some would be more and some less.

By Mr. Zimmerman:

Q. I think that in chewing tobacco it runs about 40 per cent?

A. They have been paying 20 cents excise on that 40 per cent that they won't be paying now.

Q. Yes, but they are paying a percentage, as I understand it, of excise on the ingredients that go into the plug.

By Mr. Clarke:

Q. Yes, and that is continued under the new regulations?

A. I have never seen that.

By Mr. Armstrong:

Q. Can you suggest any remedy for the present situation?

A. To my mind there is only one remedy, and that is—the Americans put duty enough on to keep our tobacco out—and I say we ought to put duty enough on to keep theirs out.

Q. How much protection ought there to be?

A. Well, the Americans put 35 cents on us.

Q. Leave the American duty out?

A. I would consider 35 cents, and if that would not keep it out I would put on forty—put on enough to keep it out anyway.

By Mr. Avery:

Q. You said a few minutes ago that Mr. Macdonald won't manufacture Canadian tobacco?

A. He doesn't, and I understand he says he won't.

Q. But he can, under the new law?

A. No.

By Mr. Clarke:

Q. But he can under the proposed regulations?

A. No, he cannot do it, I don't think he can.

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Q. With the uniform stamp, the same license for everybody; before he could not do it, but under the new conditions proposed he can?

By Mr. Zimmerman:

Q. In all fairness, when you deliberately try to wipe out a man's business, he has worked up a business on certain tobaccos during the last fifty years, he has established a trade in tobacco, he has made one brand for fifty years, would you deliberately come here and advocate the prohibition of that man importing that tobacco upon which he has built up this trade, in the interest of the farmer?

A. I tell you what I would say to Mr. Macdonald.

Q. I am not speaking about Mr. Macdonald particularly, there are others?

A. Well, I would say this to the manufacturer of the American leaf, 'keep on manufacturing but buy your leaf tobacco in our own country.'

Q. That is no reply to my question. There are men who have established a large business on certain classes of tobacco, their customers want it and are willing to pay for it, and yet you would deliberately wipe out that man's business?

A. No, I would not want to wipe out his business. But I will tell you what I would say: 'I believe we can grow as good Burley tobacco in this country as in the country that you buy from, and I want you to try some of it.'

Q. Your opinion is only one opinion?

A. That is right.

Q. But the manufacturer's opinion is different?

A. That is right.

By Mr. Armstrong:

Q. Mr. Macdonald, as Mr. Wigle has said, has never tried the Canadian Burley. Is it unreasonable to ask him to try it?

A. I would ask him to try it.

Mr. KNOWLES.—I want to raise a point of order, Mr. Chairman. I think the witness is too much disposed to argument and too contentious. I want to say this, I think it is a dangerous precedent to have a gentleman come here and advocate some contentious point such as protection. I can see if we are going to do that we are entering into a very large problem. Those who are favouring freer trade have just as much right to bring people here to give adverse opinions. With all respect to the witness, I think it is a dangerous precedent, and I do not think, in this connection, that members of parliament want education along the line of protection. The Lord knows we have plenty of protection in this country at present; that is my personal view. I think the witness should give evidence as to facts and not enter into contentious controversial matters.

Mr. SPROULE.—The witness was asked a direct question by the member for Hamilton, 'What in your opinion would be the remedy?'

Mr. KNOWLES.—Then my quarrel may be with Mr. Zimmerman.

Mr. SPROULE.—And the witness tells us what he honestly conceives to be the right remedy. That is what he was brought here to tell the committee. He comes from the locality in which the tobacco is grown. Surely he is quite within his rights to answer questions which are put to him.

Mr. ARMSTRONG.—Mr. Wigle was asked to come here and give evidence. We want evidence from practical men like him who have been in the tobacco business for years and who understand the needs of the industry. I asked Mr. Wigle a simple question, to suggest a remedy for the difficulties which now exist. He is suggesting a remedy.

Is there anything wrong in suggesting a remedy even if it is along the line of increased protection, is there anything unreasonable or unfair about it?

Mr. CLARKE.—Do not let us take up time arguing. I want to ask a few questions of interest to the farmers.

Mr. GORDON.—I feel very deeply interested in the debate, but I am not satisfied with the information that has been given. What we want is the increased consumption of Canadian tobacco, and I understand what Mr. Wigle proposes to do is to compel the consumer to buy Canadian tobacco, or to compel the manufacturer to do so, even if the consumer does not. Surely a step in the right direction would be to encourage the farmers to raise the kind of tobacco that will bring them the greater profit.

By Mr. Clarke :

Q. How long has tobacco been grown in Essex and in Kent ?

A. Do you mean all kinds of tobacco ?

Q. Yes ? I wish you would trace briefly the history of that growth ?

A. I believe it was grown more than 100 years ago.

Q. I understand it was grown 200 years ago by the Indians, who were called the Tobacco Nation ?

A. Yes.

Q. You have lived all your life in Essex, will you state what the growth of tobacco has been from the beginning ?

A. We used to consider it a good crop if they raised 100,000 pounds in the whole peninsula.

Q. Up to what time would that extend ?

A. Up to about 1894.

Q. Before that year was any attempt made to grow tobacco in anything like the proportions that are grown at the present time ?

A. No. It was this Burley tobacco that brought the growing of tobacco into that country.

Q. About 1894 ?

A. Yes, in the first year this was grown about 80,000 pounds were raised.

Q. I have a statement here which I would like to place on the record. It is taken from the Leamington 'Post.' It shows that in 1895 the total production was 60,000 pounds ?

A. I said 80,000 pounds, so that I was pretty close to it. I know I bought four carloads that year and there are 20,000 pounds in a carload.

Q. I will give the statement as I find it here (reads) :—

Year.	Pounds.
1895.	60,000
1896.	80,000
1897.	600,000
1898.	4,750,000
1899.	2,000,000
1900.	3,250,000
1901.	2,500,000
1902.	1,500,000
1903.	3,250,000
1904.	5,500,000
1905.	6,500,000
1906.	7,500,000

A. Are these figures correct ?

Q. What year were the 4,000,000 grown ?

APPENDIX No. 2

A. In 1898, 4,750,000 pounds. In 1898 it was estimated that there were 8,000,000 pounds in Essex and Kent and I will tell you what started the growing of it then.

Q. One moment. You think the figures for 1898 are not correct?

A. I think not.

Q. What about the other years approximately?

A. A little more than that was grown each year. In 1897 the tobacco manufacturers paid about 12 cents a pound. All the farmers from St. Thomas west to Windsor were discussing the growing of tobacco. As I had been in the tobacco business there since 1864 they had me to address farmers' institute meetings on tobacco culture. I have picked up a circular which I had at that time entitled 'Instructions for Growing Tobacco in Canada.' This circular was distributed among the farmers. At one meeting the question was asked 'Was it not good to keep the land clear of weeds and all that?' I took one of the clauses contained in these circulars distributed among the farmers—that is away back in 1897—which reads as follows:

'Keep the weeds out. Keep the suckers pulled off, top low, 14 leaves. Keep the tobacco worms well cleaned off, they always eat the best part of the leaf and will destroy the crop. You can't be too particular about that part of it.'

Q. They put in turkeys now to eat the worms?

A. They put in turkeys now instead of boys; they are cheaper. I gave the farmers an address at nearly every institute from Iona near St. Thomas, west to Windsor and Amherstburg, on tobacco culture and I told them at nearly every meeting 'Tobacco is 12 cents a pound but there is only a demand for 3,000,000 pounds'—that is about what I estimated at that time—'Don't grow very much but raise the best tobacco you can and you will get a fair price for it; but if there is an over-production prices will surely go down.' That year prices went down because the farmers grew too much.

Q. I see the average for that year is $5\frac{3}{4}$ cents?

A. The price was about 10 cents and it went down—

Q. To nearly one-half?

A. Nearly one-half, yes, because there was too much tobacco grown; more than was needed to meet the demand.

Q. I am afraid you are responsible for the drop, you told them to grow tobacco?

A. They would have grown twice as much if I had not told them not to. I knew what the demand was and told them at every meeting.

Q. In all these years from 1895 to 1906 there has been a considerable fluctuation in prices?

A. Yes.

Q. Running from $6\frac{1}{2}$ and $5\frac{3}{4}$? Some years it was 11 cents, running on to about 8 or 9 cents?

A. Something like that.

Q. According to the production?

A. Yes.

Q. The present year, I believe they cannot sell tobacco at all?

A. No.

Q. Do you know what the intention of your company is about buying last season's crop of tobacco?

A. The manager of the leaf department of the Empire Tobacco Company is now down in North Carolina, but his brother has been telling the farmers 'We are not going to buy any tobacco until after the new crop has been put in this year.' If there was not too much put in, he said, they were going to buy last year's crop; but if the farmers planted a lot of tobacco the company were not going to buy any at all. This was meant to restrain them from growing tobacco.

Q. The result would be that the farmer would lose his crop if he did?

A. That is it.

By Mr. Zimmerman:

Q. That same condition is existing in Connecticut to-day. I see the American Tobacco Trust have agreed to purchase the tobacco crop of last year and the year before that is on hand, provided the farmers will not grow any this year?

A. They are paying a pretty fair price on the average, 15 cents a pound.

By Mr. Clarke:

Q. Our Burley is, I think, as good as the Burley they are bringing in, judging from what everybody says?

A. I am sure it is, from what I know, I am sure of it.

Q. I am sure of that too?

A. Yes.

Q. What prices are paid over in the United States to the farmers for that class of Burley which we produce in Essex and Kent?

A. The year I was there, two years ago last October, Mr. Parish told me that he sold the same for 11 cents a pound.

Q. I am told that is about the run of prices over there?

A. Yes.

Q. And while they were paying 11 cents a pound over there the price in Essex—

A. That would be in 1905?

Q. Yes, that was in 1905, and according to this paper the price in Essex at that time was 8½ cents?

A. That may have been the average, we paid from 11 cents down to 6; it would average probably 8½.

Q. That is not the fact, if you read this you will see that he puts the high price at 9 and 8½ cents for the average.

A. What year is that?

Q. 1905?

A. That would be for the growth of 1904, you see, what is it next year?

Q. You would run an average of about 8½ cents as against 11 cents which the farmer got in the United States?

A. Yes, I might say that the farmers in the United States used to take their tobacco to the warehouse, to the packing house, as we call them here, and there they would assort it out, and if the farmer took 10,000 pounds they would sort it into two or three grades, put it on the floor, one pile here, another here, and another there, and have the first, second and third grade. Then they would put it up to auction and ask how much for this pile, and how much for that pile, and how much for the other pile, and it was sold to the highest bidder and then they packed it up and shipped it to its destination, that is the way it used to be done. But in Kentucky to-day they have the head buyer, the same as we have in Essex, and he has his buyers all over the county, the same as we have in Essex, buying direct from the farmers. I know that, because I was introduced to Mr. Zeigler, who was the representative for that county.

Q. You made a statement that we imported 10,000,000 lbs. of Burley?

A. Yes.

Q. Are you certain that is correct?

A. Well, I understand it was 15,000,000 all kinds.

Q. I got the figures from Mr. Gerald of the Inland Revenue Department, and they are very, very far from that, and I would like to have it verified.

A. The statement I got is, I think, in the Hansard, in a statement by the Hon. Mr. Templeman in reply to a question by Mr. Clements, that 9,000,000 pounds odd went into the factory.

APPENDIX No. 2

Q. Was that Burley? Did he say it was Burley?

A. For chewing tobacco.

Q. I think you are mistaken. What the return shows is that we imported about 14,000,000 pounds of tobacco and a little less than 10,000,000 went into the other factories, that is smoking as well as chewing. The whole importation into Ontario is 14,000,000 pounds?

A. It was 15,165,000 in 1906, and I understood from the answer that Mr. Templeman gave over 9,000,000 lbs. were Burley.

By Mr. Clements :

Q. That is the question, what went into the plug and chewing tobacco?

By Mr. Clarke :

Q. Yes, I looked into that, and from Mr. Gerald I got the information that 10,000,000 pounds in round figures went into plug tobacco and 4,000,000 for cigars. As near as he could estimate 3,000,000 pounds of that which went into the tobacco factories was for chewing. If that is right there was about 3,000,000 pounds of Burley leaf imported?

A. I only took the returns, that there were 10,000,000 pounds. I think that all the kinds of tobacco that go into the manufacture of chewing are the kinds that we can grow, they are the same kinds that we are growing.

Q. You have been representing the Empire Tobacco Company as a buyer for a number of years?

A. Yes.

Q. They take a great portion of the output of Essex and Kent and manufacture it at Granby?

A. Yes.

Q. How many other concerns buy tobacco in Western Ontario?

A. The Erie Tobacco Company, Windsor, buy all their tobacco there, they manufacture Canadian leaf. There is the Dominion Tobacco Company of Montreal, the Rock City Tobacco Company.

Q. The Rock City Company buy all Mr. Walker's output?

A. I do not know that, I know he sells to some person in Quebec.

Q. That is the Rock City Company.

A. They buy outside in Essex as well.

Q. Then there is the McAlpine Company?

A. Yes, the McAlpine Company have an establishment in Leamington where they dry the tobacco and prepare it before shipping it to Toronto.

Q. There are five or six concerns buying?

A. Yes.

Q. Take the last few years, have they all been paying the same prices? The farmers are protesting that they all pay the same prices. I have had complaints from the farmers that there is a combination among all the buyers, so that the farmer does not get any benefit from the protection, it all goes to the manufacturers.

A. I am quite sure there is no combination as between the Empire Company and the rest of them. The smaller concerns have always waited until the Empire Company has established the price and then they would start in and buy and the Empire Company has kept on buying until they have cleaned up the crop.

Q. As I understand it the Empire has fixed the price?

A. They have.

Q. And they pay the farmer whatever they choose?

A. I will say this for the Empire Company that they have always told me when I come to a good lot of tobacco to pay the farmer the very highest price, and never to cut them down on the price.

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Q. How was this arrived at? Is it done by dividing up the 34 cents protection they have?

A. No.

Q. Or do they figure out how much it costs the farmer to grow it?

A. I will tell you what I think; they have been requiring from 3,000,000 to 4,000,000 pounds, their trade has increased and they have been paying good prices in order to induce the farmers to grow it and the farmers have kept on growing it.

Q. What do you mean by that—in the United States they are paying 11 cents for tobacco and yet they only pay an average of seven cents to the farmers here.

A. That is all they have to pay to induce the farmer to grow 4,000,000 pounds. If they had a market for 15,000,000 pounds they would have to pay them 10 cents.

By Mr. Zimmerman:

Q. This protection is not given to the farmer?

A. No, it is not.

By Mr. Clarke:

Q. Your idea is that the only way the farmer can get the benefit of protection is to prohibit the importation of it altogether.

A. They prohibit ours, and we can put a 35 cents duty on and that will be pretty nearly prohibition.

Q. I think those figures which Mr. Carrier brought out with regard to 'Pay Roll,' that is the Empire Manufacturing Company's price to the jobber less discount, after they have paid an excise of 5 cents, leaves them a profit of nearly 45 cents a pound on Canadian tobacco to the manufacturer. You take the 'Prince of Wales' that is the favorite brand of Macdonald with everybody, and his price to the jobber is 63 cents, after paying duty and excise of 39 cents, that only leaves him 24 cents a pound profit as against nearly 45 cents a pound that the manufacturer gets on Canadian tobacco. Now explain about all that profit?

A. What is the cheapest tobacco of the Empire Tobacco Company? You are quoting their highest price and Macdonald's lowest price. Mr. Macdonald's price is higher than 67 or 68 cents.

Q. Sixty-three cents?

A. It is not fair to take the highest price of the Empire Tobacco Company and compare that with the lowest price of Macdonald's. Everybody knows that Macdonald does not sell his best tobacco for 63 cents a pound.

Mr. CLARKE.—I am not doing that.

By Mr. Carrier:

Q. That is his lowest price?

A. That is his lowest price and you are comparing it with the highest price of the Empire Tobacco Company. You should compare their lowest price with the lowest price of Macdonald's.

Q. The lowest price of the Empire Tobacco Company is 46 cents. Now don't you think, Mr. Wigle, that the outrageous price which these people are placing on their tobacco is an impediment to the circulation of the tobacco amongst consumers?

A. Let me give you my experience about that.

By Mr. Clarke:

Q. You had better explain that, because the farmers cannot understand why these men are getting these big profits?

A. I don't know what it costs to manufacture tobacco, but a lot of farmers in the county of Essex figured it out just exactly as you do; that the cost of producing

APPENDIX No. 2

was 5 cents a pound and they got 40 cents on the sale of it, and they said, 'Why, we can pay the farmers 10 cents a pound.' They got up the Erie Tobacco Company composed altogether of farmers and they were bound to pay the stock holders 10 cents a pound for their tobacco. Well, the Empire Company raised the price to 12 cents, and they had to pay the same, but every time the Empire paid less than 10 cents the farmers' association followed their example. I want to tell you this, that the farmer who figured the matter out in the same way as you did got out of the business just as quickly as he could. Not many of the original farmers who formed that company has any stock in it to-day, they could not make any money out of it.

Q. Was that in the Erie Company?

A. Yes, 'in the Erie Company.

By Mr. Carrier:

Q. My opinion is that the American Tobacco Company came to Canada with a big stick; they control all the other manufacturers in the same line and all the growers?

A. In what way are they doing that?

Q. You yourself said a moment ago that they are dependent upon the Granby Company in making their prices. The other manufacturers have got to follow the Granby Company's prices or else die?

A. I don't know that.

Q. I think the price they are putting on their lowest class of plug tobacco is simply outrageous. In my opinion 30 cents would be a reasonable figure and at that price the consumption would be doubled in this country. I do not think myself, with the exception perhaps of the Burley which is grown in your country, that the Canadian grown tobacco is up to what it ought to be. And even if your Burley is equal in quality to the Connecticut Burley why are the farmers in Essex and Kent only getting 8½ cents a pound for it while the Connecticut man is getting 11 cents per pound for tobacco which is exported?

A. Because the Americans put 35 cents per pound duty on it and won't let us take our tobacco over.

Q. Excuse me, give somebody else a chance to say something. Why don't you export this tobacco, if it is as good as you say it is, to France or Belgium? Those countries have representatives in the States buying tobacco, why don't they come here and buy Burley tobacco or why don't you send it over there?

A. Will you let me now talk for a minute. I had a cousin, he is dead now, Mr. Jaduthan Wigle, who lost his farm trying to sell tobacco in the old country. He mortgaged his farm for \$2,000 and went over to the old country to try and establish a market for our Burley tobacco. He met all the manufacturers that he could in Great Britain and other places and thought he was going to revolutionize the whole thing. They were getting Burley from the United States. When he spoke to them the manufacturers there said: 'We have been buying from the United States. The tobacco comes to us on the very same conditions that it would from Canada and we will continue to get it from there.'

By Mr. Clarke:

Q. Why do they not buy our Burley seeing that it is equal to that of the United States?

A. It is just the same as with Mr. Macdonald's tobacco. He buys his from the United States and won't trade with anybody else. If we don't make the manufacturers here do it they won't do it.

Q. There is the Macdonald plug (holding up a plug of tobacco)?

A. Please let me finish. There is the tobacco journal published in England which contains the names of all the manufacturers in that country. Mr. Cox of

Leamington wanted to furnish samples to those manufacturers and wrote to those whose names were in the *Tobacco Journal*. He got ready as nice a sample of tobacco as ever was grown and he fixed it up ready to send over there. He showed it to me and he said: 'You know something about tobacco, I want to show you if that is not nice.' I looked at it and said, 'That is as nice a tobacco as there is on the earth, you could not grow better anywhere, it ought to be good enough for any country.' He said, 'I think it is good enough for any country on the earth.' Then I said, 'If it is good enough for any country it ought to be good enough for Canada.' Let us furnish tobacco for Canada first and afterwards supply Great Britain and Ireland if we grow more than we need.

Q. I was going to show the difference between the two brands of tobacco. Now there is 'Prince of Wales' (holding up sample), that is a favorite brand of Macdonald's. There is 'Black Watch,' do you know whose tobacco that is? That is a high grade of the Empire. Now there is the difference. Can you understand why people prefer to pay 10 cents for this smaller plug in preference to the larger?

A. Because they have got accustomed to it. It is like the man on the Pelee Island I told you about. Mr. Mackenzie, of Leamington, told me that he was up in the Owen Sound district some time ago and could not get a pound of Canadian chewing tobacco. He could not chew the Macdonald tobacco because it was not the kind he was used to.

Mr. CLARKE.—An argument against us was attempted to be made on the election platform. Our opponents said 'There is the Fielding plug' and holding up the other tobacco they said 'There is the old Foster plug.'

Mr. CLEMENTS.—To offset what Mr. Zimmerman said—

The CHAIRMAN.—Let Mr. Clarke finish what he was saying.

Mr. CLARKE.—I met a fellow chewing some of this Macdonald 'Prince of Wales' and I said to him 'You can buy nearly double that quantity of tobacco for the same price.' He said, 'I don't care what it costs, I am going to chew 'Prince of Wales.''

The WITNESS.—I heard one man say that when he chews the Macdonald tobacco his system gets so saturated with the liquids in it that he does not want to chew any other for a while.

By Mr. Clarke:

Q. I want to work out how the farmers can get a better price. You say that under the duty we have they do not derive any benefit from it, it all goes to the manufacturer. Suppose we adopt your view and shut out the American tobacco altogether, how would you protect the farmers so that they would get a share of that any more than they do now?

A. The farmer now knows that there is a demand for 4,000,000 pounds and the manufacturer of that quantity keeps telling him, 'Don't grow too much, we cannot buy it or pay so much for it.' But if the American tobacco was kept out and the farmer knew that he had a market for 14,000,000 pounds instead of 4,000,000 and the manufacturer knew he had to buy 14,000,000 pounds the farmers would pretty nearly have the matter in their own hands. They would say 'You must pay us 10 cents a pound or we will not grow it for you. We have our own country for our own tobacco and we will not grow it unless you pay us a fair price.' The manufacturers would then know that they would have to pay the farmers a fair price in order to get them to grow tobacco.

By Mr. Zimmerman:

Q. Your argument is that the farmer is in the hands of the manufacturer to-day?

A. No, he can only sell so much.

APPENDIX No. 2

By Mr. Clarke:

Q. If you shut out the American tobacco the consumer would be at the manufacturers' mercy and the farmer also?

A. How is that?

Q. To-day the farmer is at the mercy of the manufacturer?

A. Yes, if he grows more than 4,000,000 lbs. a year.

Q. If you shut American tobacco out and prevent it from coming in at all then the consumer would also be at the mercy of the manufacturer, because he would have to chew the Canadian tobacco or none at all?

A. He would, yes. He would have to chew all that we would grow and if he wanted any finer quality he would have to pay the duty on it.

Q. How can you regulate the price which the manufacturer would pay the farmer in that case or which the manufacturer would charge the consumer?

A. Competition would do that. The different manufacturers would all want a share of the 14,000,000 pounds of Burley. We claim that we can grow all the Burley that is required.

Q. I claim so to, and a great deal more?

A. Well, then, why should we keep our market for it, especially when they won't let us ship a pound to the United States. If they would let us ship our surplus there it would be a different matter.

Q. I would like to see my way to doing something which would be certain to benefit the farmers?

A. If the farmer had a market for 14,000,000 pounds of tobacco it would be better than a market restricted to 4,000,000.

Q. More people would grow it, but what guarantee would the farmer have? The duty is 34 cents now?

A. 28 cents.

Q. No, 34, 20 on the excise and 14 on the other?

A. It is 20 cents more on the excise and 10 cents duty.

Q. And 14 on the stemmed.

A. We were talking about the customs.

Q. They do not put stems into the tobacco, it is 14 on what goes into the tobacco?

A. They put the liquids in order to make up for the stem, which comes back to the same thing.

Q. But they get a difference in the excise of 20 cents?

A. Yes.

Q. On the manufactured article?

A. Liquid and everything, molasses, &c.

Q. Yes, so that it is really a great deal more than 20 cents a pound on the tobacco, and 14 cents, that is 34 cents.

A. No, you are figuring on the stems, we take the stems out. A pound of stemmed tobacco, they tell me, will make nearly two pounds of the manufactured article.

Q. Yes, so you are really getting 40 cents a pound on the tobacco?

A. They are not.

Q. At the present time the farmer gets no benefit at all from protection?

A. No.

Q. Supposing you make it 35 cents as you propose, what guarantee has the farmer that he will get anything more than he does now?

A. Because it will keep the American out and he will have a market of 14,000,000 pounds instead of 4,000,000 pounds.

Q. Not 14,000,000, if Mr. Gerald is right, but 3,000,000 more.

A. It must be more than three millions more, because I claim we can grow thirteen millions of the fifteen millions. Of the quantity that is brought in, there is probably 2,000,000 pounds of Cuban which we cannot grow, but I do not care what it

is, we can grow the majority of that 15,000,000 pounds—the 2,000,000 pounds, probably, of that fine quality we cannot grow I know.

Q. I believe that about 4,000,000 pounds comes from Wisconsin and we ought to be able to grow that with proper assistance?

A. Yes.

Q. But I do not convince myself with regard to your idea that if the American tobacco is shut out altogether the farmers would have the manufacturers in their hands—I do not see how that would be the case any more than they have them in their hands at the present time?

A. They would have stronger competition, they would have the man who is buying in the United States now buying in competition with the other men, and they would have the benefit of the millions of dollars which are paid to the American farmer to-day.

Q. What is your own opinion of the proposal to abolish the different kinds of stamps so that all kinds of tobacco can be made in one factory?

A. I do not know very much about the stamp. I have understood that the manufacturers of cigars were not as much interested in the stamps as the manufacturers of chewing tobacco.

Q. You were saying just now that the difficulty now with the manufacturer is that he cannot bring in Canadian tobacco and use it. Would it be of advantage to the Canadian trade if he were allowed to do that?

A. Certainly.

Q. So that if there is a uniform stamp that could be used anywhere it would benefit the Canadian trade?

A. I think it would, but it would be a great deal better if we had our own country for our own tobacco and if we had the uniform excise the same as they have in the United States, they have no stamp at all there.

Q. Your idea is that there may be a uniform excise on tobacco?

A. Yes.

Q. That is what is proposed at the present time, and you approve of that?

A. Yes.

Q. The Ontario government announces that they are going to start an experimental farm on tobacco in the county of Essex, do you know if anything has been done in that matter?

A. I think they have given seed to Mr. Peterson to be grown, but I haven't heard how far it has gone.

Q. I understood they were going to establish an experimental farm?

A. No, I do not know that they have gone that far.

Q. Can anything be done to improve the quality of the Canadian tobacco?

A. I will tell you what has brought this Burley tobacco to the high quality it has attained. The manager of the Empire Tobacco Company sends out a circular every year, and he has been sending them for years, instructing the farmers how to grow it. He tells them the best methods, and impresses upon them that the better tobacco they grow the more they will get for it. More than that, he had a special fertilizer made for tobacco and brings that down by the carload.

By Mr. Zimmerman:

Q. They have made very great improvements in the type of tobacco grown during the last ten years?

A. Certainly, the improvement is 100 per cent.

Q. And although the quality of the tobacco has improved years ago they were getting bigger figures for the poor tobacco than they are to-day for the improved quality. The more they improve it the less price they get apparently?

A. That is right, because the Yankee stuff comes into competition with them.

APPENDIX No. 2

By Mr. Caldwell:

Q. Isn't there something in the curing of the tobacco?

A. No, it is cured as well as anybody can cure it.

By Mr. Sproule:

Q. I would like to ask Mr. Wigle if he does not think there is a good deal in the way the tobacco is manufactured with regard to the quantity that is sold? It suits the taste better. Is it not a fact that in some factories they use a good deal of glycerine and licorice, and in other factories they use molasses?

A. Every factory has a different formula, there is no doubt about that.

Q. It suits the taste of one man better than another?

A. Every manufacturer has his own formula.

By Mr. Clements:

Q. Does not Mr. Wigle think it is a question of prejudice in regard to the Canadian tobacco, and I am sure my Quebec friends will bear me out in my opinion with regard to the Canadian tobacco which is this, I had never smoked Canadian tobacco, and everybody knows I smoke about as much as anybody, but I was on my farm for a couple of weeks and ran out of the other tobacco and I commenced to smoke the Canadian. I had never smoked it before, and now I do not want to smoke anything else, and I say it is the best tobacco anybody can smoke.

By Mr. Caldwell:

Q. If I understand aright Mr. Macdonald's great success has been in the flavour of his tobacco. A smoker gets attached to a certain flavour and no other flavour will fill his wants. The question to me is, I have often wondered, is that flavour on account of the use of a dope or drug? I have often thought that there is a possibility of the flavour being obtained by the use of opium or some other drug which makes it attractive, so that a smoker becomes attached to a certain kind of tobacco and wants no other. The experience I have had with Canadian tobacco is, and I have tried all the brands that I have heard of, that one smoke of Canadian tobacco is about all that I can stand. I do not know whether it is the flavour, or the rankness of the tobacco or what it is, but there is something that is not right. I have grown it in my own grounds but I can't stand it?

A. I stated, I guess it was before you came in, that I believe if Mr. Macdonald would manufacture that tobacco with his formula he would make just as good chewing tobacco out of it as if he used the American.

By Mr. Ross (Yale Cariboo):

Q. Then why doesn't he do it?

A. Because he said years ago he would never do it, and as long as a man, having established a brand can go on selling it without having to bother about trying a different kind of tobacco he will continue to do so.

Q. Now that develops another point, because we have got to look at every side of this question. The consumer of Macdonald tobacco has as much right in this country as the consumer of this tobacco. You say 'Shut out the American tobacco.' Now if you do that what is the consumer going to do who wants to chew the smaller plug?

A. He can do the same as the Americans do. They have got to chew their own tobacco over there.

Q. I am afraid you are not in active politics at the present time?

A. You did not hear me state an experience a moment ago and you could not have heard Mr. Clements give his experience. The ex-Reeve of Pelee Island told me not six months ago, that he had never chewed any but Macdonald's tobacco in his

life until they had run out of that tobacco on the island. For three weeks he was compelled to chew a plug manufactured out of Canadian tobacco, and he said it had cured him of his love for the Macdonald tobacco. He got so that when he again obtained a plug of Macdonald tobacco he took a bite of it and then threw it away; he could not chew it like he could the Canadian plug.

By Mr. Caldwell:

Q. Can you say whether this tobacco is drugged?

A. I don't know about that, but I can say that no two manufacturers have the same formula for making chewing tobacco. I know that.

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

LEWIS WIGLE.

Tobacco Grower, Leamington, Ont.

Mr. JERRY O'BRIEN, Chatham, Ont., called and examined.

By Mr. Clements:

Q. To my knowledge you are an extensive manufacturer of cigars and you have also had some experience in buying Canadian leaf grown in Essex and Kent. I would like you to give as briefly as possible your ideas as to what you think would be to the benefit of the Canadian grower as well as the manufacturers?

Mr. ZIMMERMAN.—That is the point.

Mr. CLEMENTS.—They have got to be considered.

Mr. ROSS (Yale-Cariboo).—Mr. O'Brien ought to tell us where he is manufacturing.

The WITNESS.—I have been growing tobacco and manufacturing cigars in Chatham.

By Mr. Clarke:

Q. Chatham, Ontario?

A. Yes, for a number of years.

By Mr. Ross (Yale-Cariboo):

Q. Manufacturing what?

A. Foreign leaf tobacco.

Q. Into what, Mr. O'Brien?

A. Into cigars. From my experience in growing cigar tobacco up there I think we can grow tobacco that would take the place of Wisconsin or Connecticut tobacco for cigars.

Q. That is for fillers?

A. Binders and fillers.

By Mr. Clarke:

Q. That is what they use it for?

A. Yes. At the present time it is suitable for medium goods and I think that the proposed duty is good.

APPENDIX No. 2

By Mr. Ross (Yale-Cariboo) :

Q. Medium in strength you mean ?

A. No, medium in price, that is outside of the high class goods.

By Mr. Clarke :

Q. You mean medium quality I suppose ?

A. Yes. The proposed changes in the duties would be, I think, of great benefit to the farmer and to the manufacturer also. If the duty is raised as proposed and the uniform stamp adopted, every manufacturer will have a chance to try Canadian tobacco on its merits. At the present time when any Canadian tobacco is taken into the factory rebates on cuttings would cease. There is such a prejudice against Canadian tobacco that most of the people would not try it.

By Mr. Ross (Yale-Cariboo) :

Q. Where do you get your tobacco for fillers from, Mr. O'Brien ?

A. I buy some of it in Wisconsin, some in Cuba, some in Connecticut, and quite a bit of it in Ohio.

By Mr. Clarke :

Q. Is your factory a foreign or combination ?

A. Mine is a foreign.

Q. You have never tried Canadian tobacco in your factory ?

A. No.

Q. There is nothing to prevent any manufacturer from using Canadian tobacco at the present time, if he chooses to bring it in and pay the additional expense he can use Canadian tobacco ?

A. He will lose the rebate as soon as he brings Canadian tobacco into his factory.

Q. He pays the additional excise of 25 cents ?

A. He pays just \$6 a thousand.

Q. That is on cigars ?

A. Yes, that is what he pays and he can use the Canadian tobacco.

By Mr. Ross (Yale Cariboo) :

Q. Your point is, Mr. O'Brien, that if the duties are re-arranged, you as a manufacturer would then use Essex grown tobacco for your binders, do you make that statement ?

A. Yes.

Q. Now, as a manufacturer, would you say they can grow good tobacco for fillers in Essex county ?

A. Yes, I think if that duty is arranged in the manner proposed that all the manufacturers in Canada when they see a piece of cigar tobacco which is suitable will buy it and use it.

By Mr. Clarke :

Q. Use it on its merits ?

A. There are quite a number of manufacturers and if we all used 5 tons a year it would make the Burley crop so short that the farmer could get the price he wanted from the manufacturer to grow it.

By Mr. Zimmerman :

Q. I thought Burley tobacco was only fit for manufacturing chewing tobacco ?

A. So it is, but if they grow cigar tobacco it will make such a scarcity of the Burley.

Q. I understand that in different States of the Union they grow different qualities of tobacco. For instance in Wisconsin they can grow a wrapper, and in Connecticut they can grow a filler and not a wrapper, and so on in different States. Now how is that?

A. It is a little bit reversed. In Wisconsin they grow a binder and in Connecticut they grow a binder with very few wrappers.

By Mr. Clarke:

Q. The filler is of Havana, is it not, principally?

A. The filler is Zimmer. Zimmer is similar to what is grown in Essex.

Q. Take Tuckett's, their filler is of Havana?

A. I don't know.

Q. It is reputed to be?

A. We all make Havana goods.

Q. But I am speaking of the filler now. I understand what they profess to do is to use Havana for the filler, Wisconsin for the binder, and Sumatra for the wrapper?

A. Or Connecticut for the binder.

By Mr. Ross (Yale Cariboo):

Q. Is that not the rule?

A. Yes.

Q. That tobacco is grown for special purposes in different places?

A. Yes.

Q. That is the rule?

A. Yes.

Q. If that is the rule—I am not saying it to reflect upon the growers in Essex—why should they say that they are more particularly placed there than any other place in the world to grow tobacco for all purposes?

Mr. CLARKE.—There is no place in the world like Essex.

A. In regard to Essex we have different kinds of soil along that lake shore. I have bought tobacco from Amherstburg down as far as St. Thomas. We have a lot of limestone there which is the same as in Hartford, Connecticut. This is Connecticut or Comstock Spanish (pointing to sample). There is a cigar tobacco that is grown up there (pointing to sample), it is a good burning tobacco. It has a white ash and doesn't blister ahead of the fire, and will hold fire for, I should judge, from five to seven minutes; it will hold fire as good as any Havana tobacco that is imported here.

By Mr. Zimmerman:

Q. Have you any experience with Kelowna tobacco at all?

A. No.

By Mr. Ross (Yale Cariboo):

Q. You ought to get some good tobacco in your factory?

A. Well I have heard some good reports about that tobacco.

By Mr. Zimmerman:

Q. I have smoked it; it is good and strong, you do not want to smoke more than one cigar.

By Mr. Blain:

Q. You have the right soil; is the climate good?

A. Yes, we have a good long climate, an early spring and late fall that gives the tobacco lots of time to ripen and cure properly.

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Q. Is it equal to those portions of the United States that you have referred to?

A. It is similar to that of Ohio, where the great proportion of the filler tobacco comes from that is used in the manufacture of cigars?

Q. Is it better than Connecticut?

A. Yes.

By Mr. Schell (Oxford):

Q. How is it you do not use Canadian tobacco in the manufacture of cigars, if the quality is good?

By Mr. Clarke:

Q. Do you attribute that to the present system of having three separate factories?

A. Yes, as I stated a few minutes ago you can see by the returns of the amount of Canadian tobacco used in foreign factories; that I think will satisfy you it can be blended in beautifully at the present time.

By Mr. Ross (Yale-Cariboo):

Q. You mean to say that there is a reasonably large amount used at the present time?

A. Yes.

Q. That is it, although you are not advertising it to the world?

A. Yes.

Q. That is on account of the prejudice against Canadian tobacco. If people knew generally it went into cigar factories, you fear it would affect cigar trade?

A. I think so.

By Mr. Zimmerman:

Q. You think under the proposed regulations the manufacturer and grower will be very much benefited?

A. I do, yes.

Q. And that it will be a distinct advantage to have one excise and one stamp?

A. Yes, a big advantage.

Q. And one excise?

A. Yes.

By Mr. Parent:

Q. Can you tell me whether good cigarettes can be made out of Canadian tobacco?

A. I never tried it.

Q. You do not know anything about that at all? Are you aware whether experiments have been recently made by manufacturers of cigarettes with Canadian tobacco?

A. I never went into that, in regard to the cigarette business.

By Mr. Clements:

Q. As a manufacturer, and as a buyer, you would approve of encouraging trade in Canadian tobacco and you are perfectly satisfied in your own mind that we can grow in Essex and Kent counties, or in the Dominion of Canada, taking into consideration British Columbia and Quebec, suitable tobacco for the general trade, I do not mean it all, but I mean for anything except the fancy grades?

A. Yes, I think tobacco can be grown here suitable for all classes of trade outside the Sumatra and Havana type.

By Mr Sproule :

Q. Do you manufacture any kind of tobacco except cigars ?

A. No.

Q. You don't manufacture plug at all?

A. No, not at present.

By Mr. Caldwell :

Q. There is a question that I was speaking of a while ago. Is there any flavouring used in the tobacco which is injurious ?

A. I should not think so.

Q. You think not ?

A. I think not.

By Mr. Sproule :

Q. You don't manufacture cigarettes or cigarette tobacco ?

A. No.

Mr. DARIUS WIGLE.—I would like to ask Mr. O'Brien two or three questions.

The CHAIRMAN.—Be as brief as you can.

By Mr. Darius Wigle :

Q. Mr. O'Brien, as a manufacturer of cigars under the American license, I understand that you have been using Wisconsin binders ?

A. At times, yes.

Q. This is a sample of Comstock Spanish. Can you tell me whether you have ever procured a better binder from Wisconsin than I have in this sample ? (Producing sample).

Mr. ROSS (Yale-Cariboo).—You had better identify the sample.

Mr. DARIUS WIGLE.—This is a sample of Comstock Spanish tobacco grown in Kingsville, Essex county, from seed from Wisconsin.

Mr. CLARKE.—On whose farm ?

Mr. DARIUS WIGLE.—This was grown by Mr. T. Peare, of Kingsville. I paid 9 cents a pound for the crop and I want Mr. O'Brien to give his opinion upon that as a binder ?

The WITNESS.—Well, I have driven through that section of the country this winter several times and examined a lot of this big Havana tobacco grown from the seed that the experts sent up there.

By Mr. Gordon :

Q. You mean comparing it with the big tobacco ?

A. Similar tobacco.

By Mr. Darius Wigle :

Q. How does it compare with what you have received from Wisconsin ?

A. I have examined a lot of it this winter and it will make a first class binder for cigars.

By Mr. Clarke :

Q. Is that a fair sample ?

A. Yes.

Q. There is a lot of tobacco as good as that ?

A. Some a little finer than that.

By Mr. Darius Wigle :

Q. Outside of that I understand you use the Connecticut seed as a binder ?

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A. Yes.

Q. That is Connecticut seed grown in the township of Mersea. Will you give us your opinion as regards that quality for a binder?

A. That is the quality that I have just stated in the case of these two classes of goods that can take the place of the tobacco that we import from Connecticut and Wisconsin.

By Mr. Ross (Yale Cariboo):

Q. It is just as good?

A. Yes.

By Mr. Darius Wigle:

Q. Do you get any better tobacco imported from the United States?

A. The tobacco that comes from there is not in the farmers' hands and is cured better than the way we get it.

By Mr. Zimmerman:

Q. Is that a wrapper or a binder?

A. This is a binder.

By Mr. Darius Wigle:

Q. In a clean state just as it comes from the farm. What varieties of tobacco would you recommend to grow in western Ontario for cigars?

A. Comstock, Spanish, Connecticut and Big Havana.

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

JERRY O'BRIEN,

Tobacco Manufacturer.

Mr. WHITSON BALDWIN, called.

By Mr. Clarke:

Q. You are from the township of Colchester South, down on Lake Erie?

A. On the north shore of Lake Erie, it is supposed to be the most southerly point in Canada.

Q. How long have you been growing tobacco, or been concerned in the growth of tobacco?

A. I have been interested and concerned in it all my life.

By Mr. Zimmerman:

Q. That must have been as much as twenty years ago?

A. Yes, quite as much as that. Of course in the growing of Burley, I suppose I have been growing it for ten years, some other varieties before that.

Q. The growth of Burley commenced about ten or twelve years ago? What varieties were grown before that time?

A. Well, what we called Thick Set, the Blue Prior and several other varieties which to-day you would not call tobacco at all; they were a very heavy coarse tobacco which answered the purpose at that time.

Q. What was done with it then?

A. It was sent to Montreal, when I first commenced to grow it, by a small vessel.

Q. So that the varieties of this tobacco you grew twenty years ago are not used at all now?

A. Not used at all.

Q. There is a good deal of complaint, I believe, at the present time, by the farmers that they have no market for their output?

A. I can show you hundreds of barns where the tobacco is hanging as it was last fall because it is not worth while to handle or prepare it for the market because there is no sale for it.

Q. What do you say as to the quality of the tobacco grown up there?

A. So far as the quality is concerned it has been pronounced first-class. They have shown you some prepared tobacco and some that was not prepared. There (indicating sample) is a sample of Comstock, taken out of a bundle just ready to be given to the buyer, this is Connecticut seed leaf.

Q. Where is this grown?

A. In Colchester South.

By Mr. Clements:

Q. Just as it was picked by the farmer?

A. Yes, as it came from the barn pole.

By Mr. Clarke:

Q. What improvement has there been in the last few years on the part of the farmer in regard to taking care of it?

A. They have been more careful in growing and the handling of it. Of course they are trying to grow newer varieties and are becoming better posted in the handling. When we first commenced to grow tobacco it was almost impossible for the ordinary grower to cure it at all, which was all due to handling.

Q. I believe there are several things they have to take care of? Keep it free from sand?

A. That is all in the handling, of course if you allow it to lie on the ground and get rain on it it collects sand.

Q. And the better care taken with it by the farmer, you think, the better price he gets?

A. Certainly, one of the great troubles is the worms get at it sometimes if care is not taken; that is the greatest drawback in the growing of tobacco to-day, but the price is made by the buyer.

Q. Then it has to be cut at the proper time?

A. That depends upon the setting and the season, whether we get a long season. I aim to get my tobacco in about the first of June.

Q. What I meant was that it must be in proper condition?

A. Yes, the coarser tobacco such as Burley, there is no trouble about, when to cut that, it shows for itself when to cut it, but in the finer tobaccos there is a certain time at which it must be cut. There is the Connecticut seedling, it is very difficult to tell when that is ready and there are some other varieties with which similar difficulty is experienced. Take the Kentucky Yellow, for instance, you won't find two plants beside each other fit to cut the same day even if they were set on the same day. Seed leaf is not quite so difficult, it will show more difference on different qualities of land; if you have strong sandy soil and it runs down to black soil you have a different result entirely.

Q. What is your opinion as to the varieties of soil up there for growing different kinds of tobacco?

A. We haven't any soil up there but what will grow tobacco. Of course the heavier soil grows a heavier quality of tobacco.

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Q. But there are different qualities of soil suited to the different varieties of tobacco?

A. Yes.

Q. And speaking generally you say that the farmers have become pretty expert in growing tobacco?

A. They are improving their soil and their methods have improved as well.

Q. Some more so than others, I suppose?

A. Certainly.

By Mr. Clements:

Q. What would you suggest in the way of improvement?

A. I have been talking with my neighbours about it and they are very anxious to have an experimental station started among us with an expert in charge. It has been said in this house that we do not grow first class tobacco; we are anxious to learn and to be educated along these lines. A number of my neighbours came to me when they found I was coming here, and they said: When you get down there we wish you would urge the necessity of an experimental station along these lines and that we have an expert from the United States where the facilities and the conditions are the same as our own, let it cost what it will, and we will put ourselves under his direction if the government can do so, in order to start a stripping and handling plant among us where the best and greatest quantity of tobacco is grown so that it will be convenient to bring it to the stripping and preparing station, where it can be made ready to be taken to any market, either our own or foreign market. Along with that they wish to have some of our younger men, who have been educating themselves for a higher position, and place them with this expert to educate them so that they will become experts at the work or better if possible, so that we will have men of our own, and reliable among us to carry this business on. We cannot always depend upon hiring the right man in the right place. I noticed when Mr. Wigle was reading that letter that he had to ask particularly of some man he was trying to employ if he was of good habits, sober and industrious, which it is necessary he should be. If we have our own boys we know what these boys can do and what they are capable of acquiring, and we have numbers of them annually who have been attending our colleges, trying to place themselves above the common herd and I think they should be encouraged to become experts in this as in other businesses.

By Mr. Ross (Yale Cariboo):

Q. In the Agricultural College do they give any attention at all to the question of tobacco culture?

A. Not yet.

By Mr. Clarke:

Q. Yes, but they do to the question of chemistry and kinds of soil?

A. That is where these boys would come in, they would have an advantage in that respect.

By Mr. Clements:

Q. Besides looking after the growing of the crop and the taking care of the crop, Mr. Baldwin, do you think that the quality of our tobacco can be improved if our people had better buildings than they have for the curing of it?

A. Yes, I think it could.

Q. And that with proper encouragement the farmers would readily take hold of it and provide those improved facilities if they were assured of a proper market?

A. Certainly.

Q. You have no doubt about that?

A. I am satisfied that our country can be more than double its present production, and would if there was a price that they would be safe in going into the business.

Q. Then in your opinion, Mr. Baldwin, a good deal of our tobacco is not kept in proper buildings, the growers have not proper facilities for keeping it and sometimes it is put in sheds or open buildings?

A. Certainly there have been cases of that kind.

Q. With proper buildings for keeping it the quality would be considerably improved?

A. I think so, certainly.

By Mr. Zimmerman :

Q. Mr. Clarke touched upon a point which seems to me to be extraordinary as to the difference between the raw leaf and the manufactured plug tobacco, that is the plug tobacco which is manufactured out of this Burley?

A. There does seem to be quite a discrepancy between the price received by the farmer and that received by the manufacturer.

Q. How is it that the farmer cannot get any benefit at all by the sale of that?

A. It is a very difficult question to answer. If I were to say that there is a combine amongst the manufacturers in this respect I would perhaps be saying something that I could not substantiate.

By Mr. Clarke :

Q. But there is that impression?

A. It is the general impression, but whether it is so or not I cannot say; not so much of combine as a division of territory.

Q. If it is the fact why people can account for it?

A. Then again when we consider the importation of weed from our neighbours.

By Mr. Zimmerman :

Q. Just on that point. If the tobacco is selling, as one witness says, on the other side of the line at 11 cents while for tobacco of the same quality the grower here is only paid 8½ cents a pound, how do you account for the importation?

A. The duty is not sufficient to keep the American leaf out.

Q. But there is such a tremendous difference in the price?

MR. CLARKE.—Mr. Zimmerman means if they can buy it cheaper here than they can in the United States.

A. I cannot answer that question.

MR. ROSS (Yale Cariboo).—You must answer the question.

MR. CLARKE.—If you can.

THE WITNESS.—I must, eh?

MR. ROSS (Yale Cariboo).—You will excuse me, but you cannot get away from this fact: I asked Canadian manufacturers what was the reason of their paying a bigger price for the imported article and they replied that it was because they cannot get the article they want in this country. Now that is a statement of facts by the manufacturer and you must answer it. The argument on the face of it that the manufacturers are not foolish enough to buy tobacco on the other side if they can get tobacco of equal quality here at a lower figure?

A. If they get a better tobacco on the other side it is not in the Burley but only in the lighter varieties, because I have the opinion of experts from Kentucky; because the Burley tobacco grown in Essex has been placed on the St. Louis market and brought just as good a price as did the Kentucky grown article of the best quality. Where then is our tobacco inferior?

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Q. I am not answering that, I am only giving you the statement of the manufacturers. There should be an answer to it?

A. There are a lot a things there is no answer to.

By Mr. Parmelee:

Q. We are not going into the growing of cigar tobacco to any extent?

A. Not to any extent. One reason is to be found in the price of cigar tobacco. There has been very little grown. Only since this last year has there been any cigar tobacco grown at all to note.

By Mr. Clarke:

Q. How much Comstock Spanish and Zimmer Spanish is grown?

A. Eight or ten thousand pounds, perhaps not so much. That is excluding the Seed Leaf from the Comstock Spanish and the Zimmer Spanish. There must be from 50,000 to 100,000 lbs. of Seed Leaf.

By Mr. Zimmerman:

Q. With the introduction of one excise duty on all tobaccos in your opinion is that going to benefit the grower?

A. Not directly, it will indirectly, because the men here don't know what they are chewing unless the name is printed on it. Is that satisfactory to you, Mr. Ross?

By Mr. Ross (Yale Cariboo):

Q. Of course, as a canny Scotchman it is absurd to say that the reason Macdonald will not buy Canadian tobacco is because he has got a prejudice against it. Of course, he is a very rich man and does not care probably?

A. That is the conclusion I would come to, he does not care to handle our tobacco because he has a prejudice against it.

Mr. CLARKE.—I think he has got a brand established and does not like to change it.

Mr. ZIMMERMAN.—No man is doing more for Canada to-day than Mr. Macdonald.

The WITNESS.—No one is finding fault with him.

By Mr. Ross (Yale Cariboo):

Q. Do you not think that as far as the chewing public are concerned it is rather strange they will persist in buying twice as much of Macdonald's small plug as they do of the bigger plug made out of Canadian tobacco?

A. I cannot agree with you that twice as much of the Macdonald plug is handled. In our immediate section there is not one-tenth of the Macdonald plug sold to-day that there was three years ago.

By Mr. Clements:

Q. Not one-tenth you say?

A. Not one-tenth of the quantity there was three years ago.

By Mr. Ross (Yale Cariboo):

Q. I am talking of the national output of Macdonald's plug tobacco and all other Canadian factories. I am not sure of my figures, but I think there is twice as much of Macdonald's tobacco chewed in this country as there is of any other variety?

A. I admit that there is a large section of country where nothing but Macdonald's is sold, the Northwest for instance. The Northwest requires Macdonald tobacco simply because they have been chewing it and they cannot get any other. I have one son who used to chew Macdonald tobacco, but at one time he could not get it and tried chewing tobacco of the Erie Tobacco Company of Windsor. He started chewing that and has not chewed any Macdonald tobacco since.

By Mr. Zimmerman:

Q. You ought to work up a prejudice against the Macdonald tobacco. I think Mr. Macdonald has a prejudice against Canadian grown tobacco.

Mr. CLARKE.—Take a brand of anything and it requires time to work up a trade in it?

A. I don't know that we should work up any particular prejudice. We should try and foster that which is going to do us the most good. We want to encourage the use of home-grown tobacco and do away with the importation.

By Mr. Carrier:

Q. You have often heard that Mr. Macdonald has got a secret of his own for preparing his tobacco?

A. So I understand.

Q. All the other manufacturers in this country tried to copy, or to get the flavour that Mr. Macdonald places in his 'Prince of Wales Navy' and have never been able to approach it or to improve on it?

A. So I understand.

Q. This has made Mr. Macdonald's fortune. There was only one man in this country who could do it. His name was Campbell, and he is probably dead now. This secret has made Mr. Macdonald's fortune?

A. Yes.

Q. No one has ever been able to approach the flavour which Mr. Macdonald puts in that tobacco, and the people would rather pay 10 cents for it and get it, than any other tobacco.

Mr. ROSS (Yale Cariboo).—You are not arguing that he could not apply the same flavour to tobacco of the same quality?

Mr. CARRIER.—It was not a question of tobacco but of flavour?

A. It is not a question of tobacco but the flavour, certainly.

By Mr. Parmelee:

Q. You spoke of 8½ cents a pound as an exceptionally low price, that is not the ordinary price?

A. Not the ordinary price.

Q. And that price is due, I suppose, to the farmers growing more tobacco than the market demands, they went into it too fast?

A. A little too fast.

Q. There are two things that I think you should direct your attention to: you should devote yourself to producing, perhaps, a larger variety of leaf so that you could supply the new demand there would be for Canadian leaf for cigar purposes, which would give you a larger output. Then you should improve the quality of your tobacco and keep the production down to within what the demand is likely to be. Of course, that demand is going to grow, but don't get ahead of it.

A. That would be the advice I would give. I would not advise the farmers to go too heavily into the cultivation of tobacco. Of course, if the contemplated changes go through and we get 35 cents a pound duty on tobacco it is going to be an encouragement. I would advise also that an expert should be appointed to instruct the growers in the handling of this tobacco, because we do not understand the handling of cigar tobacco. Those tobaccos are more expensive to grow and handle in every respect, and if we undertake their cultivation we should do it to the greatest amount of profit and turn out the best product possible. Now the greatest possible care has to be exercised in regard to these cigar tobaccos, and to that end we should have expert growers and handlers. I refer to such varieties as Zimmer and Comstock. The Connecticut does not soil quite so quickly, but these other tobaccos if they are handled in a rough or

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careless manner you ruin one-quarter of your product at least. The plants should be rightly cut and hung up without touching the ground. The plant soils very easily and when in that condition is not even fit for making into a wrapper. So you see there is your wrapper gone. As to the filler it would not make so much difference. But the handling of a crop is everything in order to make the tobacco into a first-class article.

By Mr. Ross (Yale Cariboo):

Q. I want to ask you two questions: You said a little while ago that a few years ago you grew abominably bad tobacco in Essex county, what would not be considered tobacco at all to-day?

A. I would not.

Q. Do you know, as a matter of fact, whether it was when you were growing that bad tobacco Mr. Macdonald made his experiments with Canadian tobacco?

A. I could not say how far Mr. Macdonald's experiments date back. I have learned since coming home that it was at that time.

Q. I understand it was at the time you were growing inferior tobacco he made those experiments and got his prejudice?

A. I guess it probably was. I have learned that it was.

Q. As a grower of first class tobacco, have you or your associates made any effort to put that tobacco in Mr. Macdonald's factory, to show him you can grow good tobacco now?

A. No. It has been shown to him by some of our representatives, Mr. Robinson and others, but he is a man that it is very hard to approach. Of course as growers we do not know Mr. Macdonald, we do not have any communication with him; we are a long way from him; as farmers we do not get very far away from home very often and I cannot say it has ever been placed before him.

Q. You would not blame him for having a prejudice if all he ever saw was the tobacco you grew a number of years ago?

A. No, I do not suppose we would.

By Mr. Clarke:

Q. I suppose that is the way this red stamp and green stamp were so unpopular, because they were applied to the tobacco that was grown years ago?

A. No, that seems to have been the original arrangement, the three stamps have always existed. I do not know whether it was because they were put on Canadian tobacco years ago, it may have been something like that but I could not say. Of course we hear a great deal about the red stamp. I do not see a great deal of it, I am not mingling with smokers as much as I used to, but when the red stamp used to come up they would shove it aside and take the green.

By Mr. Ross (Yale Cariboo):

Q. Because the red stamp indicates to the world that it is made of poor, home grown Canadian tobacco.

A. That is your idea, it is a danger sign.

By Mr. Clarke:

Q. Your idea is that the uniform stamp would be an improvement?

A. Yes.

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

W. G. BALDWIN.

Mr. PETER LAMARSH, township of Mersea Essex county called.

By Mr. Clarke:

Q. You are the deputy reeve of the township of Mersea, in the county of Essex?

A. Yes.

Q. That is the largest township in the county?

A. The largest township in the county.

Q. To what extent is tobacco grown there?

A. It is grown extensively in the township of Mersea, which is one of the greatest tobacco-growing townships we have, I suppose in the Dominion.

Q. Just state what samples you have with you.

A. This (producing sample) is a sample of white Burley grown in the township of Mersea; that, I presume is made into chewing tobacco.

Q. What do you say about the quality of that?

A. I doubt if it can be beaten in Kentucky or anywhere else.

Q. That sample is put up by the farmers in the usual way?

A. That is the usual way the farmers put it up ready for the buyer.

Q. Have the farmers become fairly expert in taking care of the tobacco?

A. They are becoming more and more proficient.

Q. They improve with experience?

A. Yes.

Q. Take the other samples?

A. These (producing samples) were grown in the same vicinity and they are a splendid quality of tobacco. These are white Burley—I could not procure any cigar tobacco in the time at my disposal but we have grown some in that vicinity.

By Mr. Zimmerman:

Q. Are these cigar tobaccos?

A. No, chewing.

By Mr. Ross (Yale Cariboo):

Q. Was this sample cut at the proper time?

A. Yes, I think so.

Q. Isn't it a little too ripe?

A. No, I do not think so. It is very bright and quite clear. Here are some samples off the limestone in Pelee Island.

By Mr. Clarke:

Q. How does that differ from the other, can you tell me?

A. Well, I can't say that it is any coarser, it is more in case than this Pelee Island tobacco, and you can't get at the Pelee Island tobacco as well to examine the quality.

Q. Is it the case that the Pelee Island tobacco has a better reputation than the mainland?

A. It seems to be, you see the others are of very fine quality.

Q. The buyers pay higher prices for it?

A. I believe the buyers do prefer the Pelee Island tobacco.

Q. What is that other sample, Pelee Island?

A. The same thing, that is for chewing.

Q. Or smoking?

A. They smoke it in Essex a great deal and prefer it to anything they can get, but it is not a smoking tobacco.

By Mr. Carrier:

Q. It has not a good flavour?

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A. It has not as good a flavour as the smoking tobacco grown for smoking.

By Mr. Clarke :

Q. The farmers there always use this?

A. Yes, they use it.

Q. Is it Burley that they use?

A. Yes.

Q. And they have been using it for a number of years?

A. Well, the farmers use it for both chewing and smoking, after becoming accustomed to it they do not want anything else.

Q. Do they chew it in the raw state?

A. Yes, sir, many of them.

By Mr. Zimmerman :

Q. Do they die young?

Q. No, they live to a good old age.

By Mr. Clarke :

Q. What is your idea about the difficulty between the farmers and the buyer?

A. Well, there is one difficulty, we know that there is a considerable protection given to our tobacco and we know that the farmers do not receive any benefit from it apparently.

Q. How do you account for that.

A. Well, the only answer I can give is that the parties that are manufacturing it must take advantage of the whole thing. They must do so because, apparently, there is no competition, what you might call practical competition in buying.

By Mr. Zimmerman :

Q. I could understand you now if the price of tobacco was as high here as it is in the United States. But you claim to raise as good tobacco as they do in the States, and yet it is three cents a pound higher in the States, and then there is an additional duty of 34 cents.

By Mr. Parmelee :

Q. Just one moment, I want to get at these facts. Mr. Clarke told us a few moments ago that the Empire people are selling a plug of chewing for 10 cents which is twice as large as the plug made by Macdonald.

By Mr. Ross (Yale Cariboo) :

Q. Could the manufacturers pay you as much for your tobacco as they pay for American tobacco when, in order to compete with the latter they have got to put twice as much Canadian tobacco into a plug?

A. Do you want to know my opinion as to why that is?

Q. Yes?

A. The only answer I can give you is this: that the Canadian manufacturer is competing with a trade that has been established for 30 or 40 years, and you know that an established trade anywhere in the world is a hard thing to overcome.

Q. I thoroughly agree with you if that is the answer. The next question that arises is, if they have to do that they cannot pay as much for your tobacco as for the tobacco they are competing with, can they?

A. Well, you would naturally think they could not do so.

Q. They could not do it?

A. No.

Q. If they have to put twice as much tobacco into a plug in order to sell it they cannot pay as much for it?

A. That looks reasonable, but at the same time if the figures which Mr. Clarke quoted are correct, the manufacturers are certainly making a large enough profit to allow the farmers a little of it. They should not retain the whole of the profit, but give us a reasonable amount, and not have us growing tobacco at cost or at a loss. I think the prices which were quoted by Mr. Wigle and the figures which were published by the Leamington Post are really a little larger than what we have actually got.

By Mr. Zimmerman:

Q. That is an outside price?

A. These are outside prices and the majority of tobacco growers have not received the amounts that have been quoted to-day.

By Mr. Ross (Yale-Cariboo):

Q. In order that you may get the same price as the American growers do for their tobacco you have got to educate the people who use the American tobacco out of that prejudice?

A. There is no question about that in my mind and the manufacturer also needs to be educated.

By Mr. Clements:

Q. How would you legislate in order to prohibit the American tobacco from coming into Canada?

A. Such prohibition is not my natural inclination in regard to trade questions, but throughout the world tobacco is regarded as a legitimate object of taxation by all governments. In some countries tobacco is made a government monopoly, and I think that in the majority of cases tobacco is taxed more heavily than it is by our government. It is the same with the Dominion of Canada. Now there is no reason why, if tobacco is a legitimate object of taxation, we should not tax it sufficiently to introduce the growing of certain varieties into this country and supply our domestic market.

By Mr. Clarke:

Q. There is this view of it: supposing you prohibit the importation of tobacco and raise the whole excise, so far as that portion of it is concerned, from Canadian tobacco, you would not affect the price which is paid to the farmer?

A. If the excise were increased it would depend a great deal upon competition between the manufacturers.

Q. In the event of excluding importations of American tobacco the whole of the excise would have to come out of the Canadian leaf?

A. Yes, the Canadian leaf.

By Mr. Carrier:

Q. Do you think it would be advisable for the government to send an expert abroad having with him the best grades of your tobacco, and try and introduce it into European countries?

A. I think so, if they could get the tobacco handled properly.

Q. These finer grades of tobacco might be exhibited at the Anglo-French exhibition in London, and an expert might deliver addresses in their favour?

A. Without doubt.

Q. Bringing out all the good points of Canadian tobaccos?

A. Yes, that might be done. There is something about the tobacco that personally I do not understand. In that connection let me give you a little experience of my own. In 1898 I sold my crop of tobacco. It was a very large one and I think I got some 5 or 6 cents a pound. But when I stripped my tobacco I culled it. I took the poor

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leaves—the torn leaves and the lower leaves of the plant—and culled them out. The prime leaves or the best leaves I placed upon the sticks. When the buyers came to purchase the tobacco they would not touch the culled leaves, but they bought the good tobacco. Well, I had, I suppose, fifteen or twenty bales of this culled tobacco, in 50-pound bales or thereabouts, and I placed it in my granary where it could not take any moisture or where there was no chance of it heating. I kept that tobacco for a year and a half. My father-in-law, who is a tobacco user, came along and said: 'I want a bale of that tobacco to use.' Well, he took away a bale of it. Let me say first that this tobacco was a mixture of Zimmer Spanish, Connecticut Seed Leaf and Burley. I got my seed from a neighbour who had badly mixed his plants. I think there would also be another variety or two in addition to those mentioned. Well, my father-in-law took that tobacco to the village where he lived and the tobacco users there soon found out that he had some of the weed. One or two begged a little of this tobacco, and finally they all came there and deserted Macdonald and other tobaccos. All wanted to use the Canadian leaf, and they very soon stripped my father-in-law of all that he had and he came back for more. He said that they all admitted that it was the best tobacco they ever got.

Q. Perhaps you are an exceedingly good hand at curing it?

A. No, I think it was nature that did it. I think the tobacco was cured by nature in some way.

By Mr. Ross (Yale-Cariboo):

Q. Were those people not getting that tobacco cheaper?

A. It was not that at all, that would have nothing at all to do with it. They very soon came back and bought the balance of that culled tobacco at 2 cents a pound.

By Mr. Carrier:

Q. Don't you think it would be a good idea for the government to issue licenses to re-handlers for the privilege of handling that tobacco?

A. I think so.

Q. I am speaking of the province of Quebec, because there we have not got the advantage of the beautiful climate such as you have?

A. Yes, we have a good climate, we are ploughing up there now.

Q. Unfortunately for twenty years in our province the farmers have been selling their tobacco just as they raised it, they did not understand about the curing or anything else. The consequence was it gave the tobacco a bad name. The necessary thing now, I think, is to have that tobacco go through the hands of experts, who understand all about the curing, before it goes to the trade?

A. Just so.

Q. We want re-handlers to undertake that, men who understand the business and would pay a license to the government. I believe that the government should put an excise duty of 1 cent a pound on every pound that goes into the trade.

Mr. ZIMMERMAN.—What is your reason?

Mr. CARRIER.—My reason is that all the tobacco should go through the hands of re-handlers. The purchaser would then know what he was getting. The tobacco would be graded and prices paid in proportion to the quality. At present tobacco of an inferior quality goes to the trade the same as the very best, and hence the tobacco receives a bad name.

The WITNESS.—That is very true.

By Mr. Carrier:

Q. You see if the government had a proper system of giving licenses to re-handlers the trade would be placed upon a sound basis?

A. Or let the government themselves appoint inspectors and grade the tobacco the same as they do the grain in the northwest. I have often thought of that. At present we are handicapped and the buyers, or re-handlers or manufacturers—whatever you like to call them—will not give the farmers a reasonable price for their tobacco. Let the government themselves put an excise duty on all tobacco that these men buy, less a certain fixed price to be paid to the farmer, and it would insure to the farmer a certain price for his tobacco at any rate.

Q. That is my theory.

A. I have often thought along the same lines. There is one difficulty in buying county of Essex tobacco, and that is that apparently the best quality such as this (producing sample) was bought at probably only one cent per pound higher than other stuff for which not more than one-half the price should have been paid.

By Mr. Clements:

Q. How much more large Burley can you grow than small Burley per acre?

A. I have never had much experience in that. A great deal depends upon the planting and the distance the plants are set apart and the soil. Mr. Ross, I believe it was spoke about the difference in climate. He will understand the climate of the county of Essex when I tell him that when we left there on Tuesday the people were ploughing. Some years ago I met a party of hunters who were going to the woods of northern Michigan. They had come from a point 80 miles south of Sandusky, Ohio, that is pretty far south from us; we had not had a particle of frost; that was the 22nd of October, and they told us that they had had frost three weeks before throughout the state of Ohio that had killed all vegetation.

By Mr. Ross (Yale-Cariboo):

Q. A remark was made about the Connecticut Yellow not ripening at the same time, any two plants. Would that difference be on account of the planting or something in the condition of the plant or the soil? Is that the same tobacco as grown in Connecticut?

A. I might say that I have had no experience. Before I close, I spoke of Mr. Macdonald's prejudice against Canadian tobacco. I have a brother who has been a very extensive grower, and when he first started to grow White Burley he sent some samples to Macdonald and asked him if he would try the Canadian tobacco. Mr. Macdonald said he had tried the Canadian tobacco once and it had not been a success in this country. His trial was made many years ago, but if he made the experiment now he might change his views.

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

PETER LAMARSH.

HOUSE OF COMMONS,
COMMITTEE ROOM No. 34,
FRIDAY, March 27, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 2 o'clock p.m., Mr. McKenzie, Chairman presiding.

Mr. LOUIS V. LABELLE, Joliette, Que., called and examined.

By Mr. Dubeau:

Q. How long have you been interested in the tobacco industry?

A. About 20 years.

Q. You have visited the different parts of the provinces of Ontario and Quebec where tobacco is grown?

A. Yes, I have made extensive trips throughout those provinces especially for the purpose of getting acquainted with what was being done and the possibilities in regard to the tobacco industry, not only from an agricultural, but also from an industrial point of view.

Q. Have you remarked that the climate in the two provinces affects the cultivation of tobacco?

A. I remarked a general effect which has been proven long ago by results obtained and it is this: that in Ontario on account of certain climatic conditions and also the nature of the soils devoted to that culture, it seemed to permit the production of certain types to a greater perfection than we can attain in Quebec. I also noticed, and it is a well known fact proven likewise by results, that in Quebec—for the same reasons, but acting inversely I suppose, or in some way which is not clear to my mind or to anybody else's mind—we can produce certain types and varieties of tobacco to a greater perfection than they can in Ontario. I may add just at this moment, if you will permit me, that this fact is often overlooked. It seems to me that by overlooking the fact that in one province certain types of tobacco obtain greater success than in the other, and vice versa, unnecessary rivalry seems to have arisen between the growers of Ontario and Quebec which should not be the case. This condition of things is not peculiar to this country but is universal. For instance, in the United States, where the cultivation of tobacco is very extensive—in fact they are the largest producers of tobacco in the world—the districts, so far as the agricultural industry is concerned, are clearly defined and divided. In certain states they produce a certain type of tobacco which is never taken out of those States. That is, the culture of that particular type of tobacco is not transferred to other States, but remains there. Now the tobacco growing areas are divided into about five great sections. For example, the central States produce a certain type of tobaccos which is entirely different from that produced in the Eastern States. In the Southern States they produce a certain type of tobaccos which is very different indeed from that grown in the Northern States. This is due to certain climatic conditions combined with the nature of the soils upon which the tobacco is grown. I am stating this to show that there is no need of confusing the possibilities of tobacco culture in the provinces of Ontario and Quebec. Now for the matter which I believe constitutes the object of this inquiry or investigation; I should not think that there need be any rivalry between the provinces of Quebec and Ontario. I believe we are all agreed that both provinces need facilities for opening up a market for their respective products. I do not know if what I have stated is to the point and gives you the information which you require. If not, you can ask me to explain any matters which appear to be in doubt.

Q. You cannot see that there should be any rivalry as to tobacco production between the provinces of Quebec and Ontario?

A. No, there should not be, because in Ontario they can produce certain things to a greater degree of perfection than we can; and on the other hand we can grow certain varieties of tobacco in Quebec more successfully than they can in Ontario.

Q. In your opinion is it a good thing to increase the excise duty on the foreign tobaccos; is it necessary in order to successfully develop the Canadian tobacco industry?

A. No, I do not think it is a necessity, not a bit. I mentioned a moment ago that what we need are facilities for our products in Ontario and Quebec to be used by the manufacturing industry; and the increasing of the duty on the foreign leaf would not help much to that result so long as the restrictions, which have so far existed, remain. I would rather have the restrictions done away with, as is proposed, than have a prohibitive duty put on foreign leaf. I will tell you why I think that. We have already, it seems to me, plenty of protection. There is in fact a protection of 30 cents per pound, considering the total duties imposed upon foreign leaf, in favour of Canadian tobacco. Well, the effect of the increase of duty over what existed prior to 1897 had been felt. That increase of duty was required at that time in order to induce the manufacturers to use Canadian tobacco in their factories. But if a system of fiscal or administrative dispositions had not been established, whereby the use of Canadian tobacco in factories was facilitated, the 10 cents of increase of duty on the foreign leaf would have been of no avail. However, in 1897 the factories were opened up to the use of Canadian leaf to a certain extent; in fact the means were devised whereby the manufacturers who chose to do so could use the Canadian leaf. They could do that under a separate license. Now the results of that increase of duty and the changes in the regulations have worked to the good of the Canadian tobacco producers. The proof is to be found in the fact that we are using now almost 5,000,000 pounds of Canadian tobacco out of the total quantity manufactured, whilst before 1897 the amount that went into manufacture was almost nothing. There is an old saying that the proof of the pudding is in the eating. There we have the proof of the good which resulted from the measures adopted in 1897. However, sufficient has not yet been done because there are other types of tobaccos which we can produce here, and which would be used by the manufacturers were it not for certain restrictions.

By Mr. Owen:

Q. What restrictions?

A. There are three licenses and different stamps used. Those, briefly, are the restrictions I mean; the system of three separate licenses you see. I will not go into this detail very much because a great deal has been said respecting it in the testimony that has been taken. I mention these as being the restrictions and objections to the development of a certain branch of the manufacturing industry from which we can derive great benefit, that is, I mean the tobacco growers. My more particular reason for not being so much in favour of increasing the duties is that supposing we made the duty prohibitive entirely there might be some reason on the part of the manufacturer to complain, because we cannot claim that here in Canada we can produce all the types and varieties and sub-varieties and different grades of leaf which are required by the manufacturing industry. I quite understand we shall always have to import from foreign countries certain types and grades of tobacco which we cannot produce here in Canada, and there is nothing extraordinary in this because, even in the United States, where they produce seven hundred million pounds of tobacco per year and where also they have all sorts of climates and soils, they have yet to import 30,000,000 pounds of Sumatra leaf. Their reason for that is simply an industrial one. It is simply because that Sumatra leaf has certain peculiarities of its own which cannot be duplicated in the best situated parts of the United States. For the same

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reason we shall always have to import a certain portion of the tobacco which will be required for our tobacco manufacturing industry in all its branches. Therefore, the manufacturers might have some reason to complain if such a step was taken. And as producers, supposing we make the duty prohibitive, the result to the growers would be such that in two years we would fill the country with so much tobacco, I would not say of all sorts of tobacco, that the price would go down and it would be down for fifteen years.

By Mr. Clarke:

Q. How would it affect the price to the farmers?

A. Over-production would bring prices down, that is the natural result. And it seems to me that it is taking a wrong view for the farmers to favour the increase in the duty. I know lots of farmers are in favour of increasing it, and making it even prohibitive, but it would work out in practice so that it would first bring the price down on account of over-production; it is the natural result, and we have the proof of this as I will show you in a moment.

Q. May I ask, are you a grower of tobacco?

A. Yes, sir; I have been a grower for 17 years; I am not engaged in it now. I quit simply because I thought I would never live long enough to see the changes which are about to take place now. But I will go into it again, now that the change which I have been waiting for for many years has come.

By the Chairman:

Q. You refer to the changes in the inland revenue?

A. I say this, that the farmers are mistaken in trying to have the price or the value of tobacco adjusted by means of fiscal measures, because it can only have a momentary effect. It is impossible to fix the value or price of such a product as tobacco, or in fact any product of agriculture, by any such means. An industrial product may, perhaps, be regulated in price to a certain extent by fiscal means, but no agricultural product can be.

By Mr. Clarke:

Q. Wouldn't it have the effect of increasing the demand by giving a wider market in Canada?

A. Here is Canada with a tobacco consumption of 20,000,000 pounds in all forms and shapes, including the foreign importations. All Canada consumes, manufactured or in the raw state is about 20,000,000 pounds—I would not be sure about the exact quantity, but it is that more or less, it may be a few hundred thousand pounds under or above that, but that does not make much difference. Now, I've heard gentlemen say, and they were right in that, when they stated yesterday that in Essex county alone they can produce 20,000,000 pounds. I claim we can just as easily grow 100,000,000 pounds as 20,000,000 pounds. But if the total capacity for consumption is only 20,000,000 pounds at the present time, supposing we produce 50,000,000 pounds just after making the duty prohibitive, what would be the result? First the country would be flooded by over production, and for that very reason the price would come down and the farmers would not obtain what they expect or desire, that is an increase in the value of their product. But supposing we had the whole 20,000,000 pounds to raise, if we produce 50,000,000 pounds what will happen?

By Mr. Owen:

Q. Export it?

A. That is all right, but before we can export it we must produce such an article as will first be suitable for our own native industry, and we could export to advantage only certain types of tobacco which are cigar types, and which can be produced only

under certain favourable conditions, which do not exist now, but which will arise under the proposed changes now under consideration. That is all right, that is what we have been clamouring for so long, for a change, not so much by increasing the duty, but by some improvements in the conditions under which the industry was being carried on. An intermediate industry will arise out of changed conditions and then we will supply, I think, the requirements of the country, and then when there is over-production we can export to foreign countries. Such new conditions will also create something favourable to the good growers of tobacco and discriminate in their favour against the bad growers. Then there will be distinction between tobacco and tobacco. Now there is no distinction made.

By Mr. Owen:

Q. None at all?

A. Hardly any, I will admit there is some, but very little, not enough to attain the desired results, that is give encouragement to the production of good tobacco, that is my idea.

By Mr. Clarke:

Q. About what quantity is produced in the province of Quebec at the present time?

A. I can only make an estimation which may be altogether wrong, but at the same time I might say that whatever has been stated in that respect hasn't much better foundation than my own idea. I would estimate that the production in Quebec is about 5,000,000 pounds—that is the maximum production that was ever attained.

Q. Can you tell me how much of that amount is cigar tobacco and how much chewing?

A. I will tell you, in my estimation nearly all of those types grown there belong to the cigar types, but in order to make it suitable for cigar purposes it must be cultivated under certain peculiar conditions which are not observed, because in the province of Quebec, and for that matter in the province of Ontario, we haven't yet in existence any cigar industry worth mentioning.

Q. At the same time into what manufacture does that five millions go?

A. Very little goes into cigars, the most of it goes to the consumer direct from our farmers without anything being done to it except drying it, as well as can be done and pressing it in bales.

Q. Is that for smoking?

A. For smoking in the pipe.

Q. Do you grow any for chewing purposes?

A. Some of it is used in factories, but I must admit that western Ontario produces the Burley type which is far superior for chewing purposes to our tobaccos in the province of Quebec. Some factories take ours after they have supplied themselves with what they want of Burley. For certain purposes, which are matters of detail in the industry, they find it advantageous to take some of our tobacco also; but the bulk of it comes from western Ontario. Our tobacco is mostly consumed in a raw state, and that is why Quebec tobacco has obtained such a bad reputation. It is because that tobacco has been placed before the consumers in a raw state and that is about the worst state in which it could be offered to anybody. Now, tobacco is not a natural product, it is an artificial product, and in order to bring out its qualities it should be treated properly. Now, the intermediate industry, which will arise out of the new conditions will be created for the particular and specific purpose of treating that tobacco for industrial purposes. Do you see what I mean?

By Mr. Geoffrion:

Q. Are you in favour of the proposed new fiscal arrangements as announced by the Minister of Finance?

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A. Yes. I believe they meet exactly what is necessary to foster the industry throughout Canada. Everywhere in Canada where tobacco can be grown benefit will be derived from those arrangements. First, because they will do away with difficulties under which certain manufacturers are labouring. It will permit the introduction of the leaf in a better state to the manufacturers through the intermediate industry. It will disseminate a knowledge amongst the farmers of certain things which they at present ignore absolutely. There was no necessity for knowing anything about those things before. Then the ultimate result will be that after we have supplied our manufacturers we shall be able to export whatever is produced over and above the amount necessary for our own consumption. I stated a moment ago that I believe an increase of duties and the prohibition of importations would mean simply harm to the growers, because it would have only a momentary effect, and then I referred *en passant* to the effect which was caused by changes in 1898.

By Mr. Dugas:

Q. Will you show how the intermediate industry would improve the quality of the tobacco?

A. Yes. That improvement will be brought about by treating the tobacco in a certain way and the details of the treatment are these: This intermediate industry exists under different names in the United States. In certain parts the men engaged in it are called re-handlers and in other parts packers. It does not matter what name they go under. The re-handlers are employed in sections where they produce smoking and chewing tobaccos, while the packers exist in sections where cigar leaf is raised. That is the only difference there is between the two names. However, these re-handlers or packers are supplied, or they supply themselves, with buildings which must be constructed for the special purpose of treating tobacco. In the second place, there are certain—I would not say secrets, but there are tricks of the trade which are known and acquired by practice only. Now, these re-handlers or packers will come over here, they will know how to distinguish between types, they will know how to treat and classify them, they will know how to pack them for the different branches of industry or for that matter, for exportation, and they will know how to ferment them. Fermentation is practised in the case of the cigar leaf. The other types of tobaccos, whether for chewing or smoking, are not fermented in the strict sense of the term.

By Mr. Parmelee:

Q. They go through a process?

A. They are put through a process, but not the fermentation process which is given to the cigar leaf.

Q. But it is a process?

A. Yes, it is a process.

By Mr. Dugas:

Q. All this work is done by the packers?

A. Or re-handlers.

Q. Or re-handlers?

A. Yes. In the United States. And the same would be done here, and that is where they would increase the quality of the tobacco, because it is the treatment and process which is absolutely necessary in order to bring out the qualities of the leaf which exist in a latent state in a good crop.

By Mr. Dugas:

Q. Do you think that our Canadian tobacco can be exported to a foreign country without being managed by these packers or re-handlers?

A. No. Simply for this reason, that the foreign markets are not used to special types of tobacco, absolutely well treated from countries that export tobacco. They

would not take Canadian tobacco in the raw state and with all qualities mixed up and poorly packed. They would not receive it. We must have these re-handlers or packers who will prepare the tobacco properly, before we can expect to export.

By Mr. Parmelee:

Q. What is the difficulty in the way of these establishments being started now?

A. The difficulty is this, this has been tried by means of organizations among the farmers, but it is impossible to bring the farmers to work together towards a certain goal. There is no inducement for it, take the cigar types, for instance, which should be grown for the cigar industry exclusively, and we have not that cigar industry here; it does not exist, or only on a very limited scale, and the manufacturers who have attempted it, for the most part have made the mistake of trying to make cigars out of a leaf that was not properly treated. The re-handlers or packers have no assured opening for their product which costs them something above what they pay for it, and therefore are not induced to go into it. They must first be assured that having added to the value of the tobacco by means of selection and treatment they will find a market for it so that it will pay them, that is where the difficulty lies exactly.

By Mr. Owen:

Q. Your contention is that our tobacco is not good enough for export?

A. I beg pardon, sir; I do not say that, and I do not mean that. I simply say it is not in the proper condition to export.

Q. Is it in the proper condition for home consumption?

A. No, sir.

Q. That is right?

A. I quite agree with you on that, but we have been consuming it in the worst condition possible. It is an acquired taste for it, and can you prevent a man smoking straw if he wants to?

By Mr. Dugas:

Q. As an example of what you have said, did you not prepare some tobacco in 1901, some samples to be sent to Belgium?

A. Not only in that year, but at three different times I sent samples of tobacco to Belgium myself, and also to Holland, and a good deal of correspondence has resulted from that. I have none of the letters here, but most of the letters that I received held out favourable prospects on what I have submitted to them in a very crude state. All those letters I believe are here at the department, if not all, at least the most important and most interesting of them are. From my personal experience I might say that our tobaccos have been highly appreciated by the importers of Belgium and Holland, but they have always made the remark that the tobacco was not in a suitable state for them to take it.

Q. It was not finished?

A. Exactly. I sent it in the raw state, because I wanted to find out myself what should have been done to improve the tobacco, and they explained to me what was wanted was better assorting and more particularly the fermentation of it.

Q. What was the opinion of those people to whom you sent samples as to the quality of your tobacco in its condition?

A. They stated that this tobacco had in itself qualities which made it at least equal to some of the types which were received in Belgium and Holland from the United States, that is exactly what they said, and then they went on to remark that our type was in a raw state in which they could not receive it there; that if we treated it properly, that is, if we assorted it according to their particular requirements over there, so that it would be suitable for their market, and if we also fermented it the result would be that it would possibly be a superior article to the Wisconsin tobacco, which they imported themselves.

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Q. Is there any other place in the world where tobacco is used as it is in this country, without being prepared?

A. No. There is not a single civilized country in the world where tobacco is consumed in the raw state. I might say, Mr. Dugas, that suppose we went to Central America, Mexico, Columbia or Brazil, I will leave out Cuba because we should not compare ourselves with Cuba and for that matter no country can be compared to Cuba, but take South America, where it is generally thought the conditions are ideal for the production of tobacco—supposing I went to Brazil, to the Bahia district, and brought some tobacco back in the raw state, the same as we get it from the farmers and as it is consumed by our farmers here, and went to a manufacturer and had it made into cigars, and suppose I had some in my pocket and offered them to you, you and the other gentlemen here would say, 'This is about the worst stuff I ever smoked in my life.' That would be the case even if it was Brazilian tobacco, which has the highest reputation on the market, and yet the fact is that our tobacco is now being consumed in the raw state.

By Mr. Parmelee:

Q. Just a moment here; you know, as I know, there is in the province of Quebec an enormous quantity of tobacco consumed in the raw state?

A. Yes.

Q. Can you tell me why a man who has once acquired a taste for it will smoke no other?

A. I can't explain.

Q. But it is true, isn't it?

A. It is true, but it means we should not give personal opinions on these matters of taste, we should not dispute upon them; it is a question of an acquired taste.

Q. I mean this, that the man who is in the habit of smoking the raw leaf, if I offer him some manufactured tobacco he will politely refuse it?

A. Quite true, but that is limited to the province of Quebec; we have a market in the province of Quebec for that tobacco.

By Mr. Geoffrion:

Q. You mean to say that in some parts of the province of Quebec, mostly in the lower counties, that there we do not get smoking tobacco, for pipe smoking, that is good; that it is not really good tobacco we get?

A. Well, good, I'll admit that it is good, because I find it good myself, but you will not get everybody to admit that it is good.

Q. It is just as good as any other tobacco you can buy at a dollar a pound anywhere?

A. Yes, that is quite right, but I would say I never tried to make an argument of that, because my personal taste may be wrong.

Q. I suppose your argument is that we ought to have some depots where it would be properly prepared?

A. Exactly.

Q. What would you propose as to that? Do you think that the proposed regulation will have the effect of having the producers get together?

A. I do not know exactly how it will happen. I surmise it will happen simply in this manner: That people having money to invest will find it advantageous to go into this new branch of business in Canada; and I believe that the proposed new regulations will create such conditions as will induce people that have money to go into the business. Now, I have already the proof of that because I have been consulted by men that meant to go into the business years ago and have been simply waiting for the creation of these new conditions to do so.

Q. You think they will certainly go into the business now?

A. They will certainly go into the business now, and one of them has already made the necessary arrangements.

By Mr. Broder:

Q. If you increase the product very much it will result in a surplus that you will not be able to dispose of even if you get your own market?

A. I have just explained that the new conditions created will give birth to a new industry which will help us in disposing of our surplus to foreign countries.

By Mr. Dugas:

Q. I would like to know your opinion in regard to the new regulations. Some of the witnesses that have been heard before this committee have stated that the new regulations will result in lowering the duty on foreign leaf from 35 to 33 cents?

A. I do not see it that way.

Q. What will be the effect as to duty?

A. I have looked into the matter carefully in order to find out whether what I read in the papers with respect to this was right or not. Mr. Fielding said that it was a rearrangement without augmentation of or diminution in the duty.

By Mr. Parmelee:

Q. Yes, he said that practically?

A. He did not say this absolutely, but in a general way. There might be slight differences due to the impossibility of getting decimals into line in making the calculations; but practically there is no increase or decrease in the amount of duty to be imposed on the foreigner, absolutely none.

By Mr. Dugas:

Q. I see that the new regulations provide 'on foreign leaf tobacco unstemmed, per pound 28 cents.' This will be collected before the manufacturers use their tobacco, and then they will pay 5 cents duty when they place their tobacco on the market. This brings the duty up to 33 cents?

A. Yes, but there is something overlooked in that calculation. It is this: the duty of 10 cents is collected on the raw leaf as it comes out of the warehouse and goes into the factory where it is taken for use and converted into the manufactured product. Now, when this comes out of the warehouse again for consumption it pays a duty of 25 cents. The total duty, therefore, is 35 cents. But this fact should not be overlooked: the 10 cents duty on the leaf is also on the stem which is taken out in the manufacturing process, and more especially in the case of chewing tobaccos, because into chewing tobaccos none of the stems go. Now, in the case of a strictly chewing tobacco factory this will mean one-third taken off. Now, the 10 cents is also imposed on that 33 per cent of the weight. But the way it works out is that there is a difference of 2 cents owing to the change in weight. A duty of 28 cents on the raw leaf means that this duty is also levied on the stems which are taken out later in the process of manufacture, which accounts for the apparent superficial difference of 2 cents in the total duty. Twenty-eight and five make 33, and 25 and 10 make 35. But I am pointing out where the discrepancy is made up. Take 100 pounds of tobacco which pay 28 cents duty. Then take the stems out of the leaf and it will mean a change of, we will say 25 per cent. That means a difference of 7 cents. One-fourth of 28 cents is 7 cents, and 28 cents and 7 cents added make 35 cents. Then again after that tobacco has been converted into chewing plug there will be 5 cents more duty to pay on it, making the total duty 40 cents. Of course, there will be compensation for that. You may say that, as I have figured it out, the duty amounts to 40 cents. But no, it is not that. The licorice and other ingredients that go into the chewing tobacco replace to a certain extent the stems which have been taken out in the process of manufacturing chewing tobacco. Therefore, 100 pounds of leaf tobacco, if it has

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been stemmed, produces 100 pounds of manufactured tobacco, because the stems have been replaced by the licorice, sugar, molasses and everything else that goes into it.

By Mr. Broder:

Q. Do the factories use the stems for any purpose?

A. There is no practical use for stems in this country.

By Mr. Clarke:

Q. Do they not make snuff out of it?

A. Very little. There is no snuff trade in this country, or hardly any.

By Mr. Dugas:

Q. It has been said by some witnesses that under the old regulations the government collected 25 cents a pound on chewing tobacco, for instance, and collected that amount on all ingredients which were used in the manufacture of that tobacco. Now I see in the new regulations that where less than 50 per cent of Canadian raw leaf, and 10 per cent or more of other material, is used, such material shall be subject to a duty of 16 cents per pound?

A. This is entirely in favour of Canadian tobacco. It is a direct inducement to the manufacturers to use Canadian tobacco in combination with foreign leaf.

Q. Thus the duty will not be diminished?

A. It will be increased whenever that clause applies.

Q. Are you aware of the amount of the rebate which was granted to the manufacturers for their strips of tobacco?

A. No, not exactly.

Q. I put a question in the House lately and the answer was this: The quantity of tobacco exported upon which a refund was paid on foreign leaf was 112,891 pounds. The amount of the refund was \$10,737.70. There was an addition to the above of 363,518 pounds of cigar cuttings exported upon which a refund of \$36,311.80 was paid. According to the new regulations no such rebate will be paid in the future?

A. That is what I understand. They could not do so under the new regulations, because the Canadian and foreign leaf will be so mixed up that it will be impossible to distinguish one from the other. So the government have to do away entirely with the rebate and that is in our favour. It is not so much in the amount of money that I see where that will be a gain to us; but in that it closed the factories that wanted to have those rebates, to the Canadian leaf. That is all, I understand, there is in it. It is a peculiar thing but, those rebates seem to have closed those factories to the Canadian leaf.

Q. I have received a letter from Mr. Jos. Picard, of the Rock City Tobacco Company, Quebec, complaining of the new regulations as regards cigarettes. Will you read that letter (handing a letter to witness), and say whether the new regulations will injure the cigarette business as is claimed there?

A. (After reading the letter) I believe Mr. Picard is mistaken. In making his calculation he erred in the same way as I did myself when I first worked it out, he overlooked certain things. I see here a plain calculation which makes the point clear, and by what I see there is absolutely no difference in the total amount of duty imposed on the foreign leaf in the case of cigarettes. Therefore, it means that under the new regulations the protection in favour of Canadian leaf to be used in cigarettes amounts to exactly the same. That is what I make out from this calculation here, and I know that I have been doing the same thing myself. There is a slight apparent discrepancy of about 6 cents per 1,000 cigarettes, but I believe this is due to certain losses which necessarily occur in that industry, cuttings and things upon which they possibly got a rebate before, but which they will not receive now under the new regulations. Therefore, it seems to me that as to the amount of duty it remains absolutely the same

as it was before. I believe, Mr. Dugas, your correspondent is mistaken in his contention that they are losing a certain advantage which they enjoyed before.

Q. Are you aware of the number of cigarettes which are made yearly with Canadian tobacco?

A. No, I cannot say that I know the number, or the quantity of tobacco used for cigarette purposes; but I would not think it is a great deal.

By Mr. Dubeau:

Q. What will be the effect of the proposed regulations? Will it be to induce the manufacturers to go among the farmers and establish packing warehouses for re-handling?

A. Yes, undoubtedly, and I believe that a moment ago I replied to about the same question. I will again say that I not only believe, but I am absolutely sure, as I mentioned a moment ago, some persons of importance in the tobacco industry have been looking towards the time when such change is made as would warrant their going into that particular re-handling industry. Now, it looks as if the time had come, and no later than about four or five days ago I met one of those gentlemen who told me that if nothing goes wrong with the contemplated change, he will be right into our section among the farmers and start a re-handling establishment there this very spring. So that, if there is no undue delay I am sure that it will establish the re-handling industry, but if the carrying out of the contemplated change is postponed so late that the crop will have started fermenting it will be too late for him to do anything this year.

By Mr. Dugas:

Q. Are you not aware that last year Mr. Cusson, a cigar manufacturer of Montreal, bought nearly a half a million pounds of tobacco for the purpose of making cigars, and there was a man brought from Connecticut to prepare this tobacco, and that this was done in the expectation that these new regulations would have been approved last year?

A. Yes, I know that because Mr. Cusson asked me several times what I thought with respect to the changes, and I told him that in the course of time this would certainly occur. Well, one day last year he told me, 'I am going right into it,' and he bought, as you say, Mr. Dugas, between 500,000 and 600,000 pounds—it must have shrunk some since, but I believe the original weight was between 500,000 and 600,000 pounds, and I know he has brought a gentleman from the United States who is an expert in treating that tobacco. I was there myself at his warehouse and I looked at the tobacco and spoke to the gentleman from Connecticut, who told me he was very much surprised at the quality of it.

Q. Is it not a fact that these cigars we are now smoking were made out of the tobacco which Mr. Cusson has bought?

A. I do not know whether these particular cigars are made out of that tobacco, but I have myself often smoked some very fine cigars which Mr. Cusson gave me. We talked it over several times, but as to these very cigars I would not vouch that they are the real thing, but I have been smoking some that I know were made from that tobacco, and I believe myself that they were Canadian wrapped up in Sumatra.

Q. Are you engaged in the manufacture of cigars?

A. No, I was in the manufacture of tobacco when I became a grower.

By Mr. Clarke:

Q. Can you tell me what proportion of the leaf is stem? What proportion of the whole weight does the stem constitute?

A. We have to distinguish in this, Mr. Clarke, because in the smoking tobacco factories, for instance—there are none such existing exclusively—but I would mention Sir William Macdonald's factory, where they manufacture only smoking and chewing

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all in the plug, I would estimate that in such a factory the proportion of stem is about 25 per cent of the original weight of the leaf on the average. Because in such a factory all the tobacco is stemmed, as he never makes plug tobacco with the stems in; but take for instance the American Tobacco Company, where they make cut tobacco, the greater proportion of their tobacco that they place on the market contains the stems, consequently their proportion of stems to the total weight of their production would on the average be very far below 25 per cent.

Q. I thought the American Tobacco Company imported the tobacco without stems?

A. They may, I do not know as to that, but I hardly think they do. They may, but I do not see where the advantage would be for them to do so.

Q. Can you tell how many varieties of smoking tobacco you grow in the province of Quebec? You have the Comstock Spanish?

A. Well, I would not say we are growing any types of smoking tobacco, known as such in the United States, we are not, neither are the growers in Ontario, because the smoking types which the United States are producing are grown more especially in the two Carolinas, Virginia, Delaware and also in Kentucky and Ohio. These are the States where they grow smoking tobacco more particularly known as such, but we are not growing in Quebec those varieties, we are growing cigar leaf tobacco which we use for pipe purposes also, and for which such a taste has been acquired as to render them acceptable to the public as a pipe smoking tobacco. But if you ask me, 'Are you growing pipe smoking tobacco,' I could not say that we are, according to the American standards.

Q. I do not mean the pipe smoking tobacco, but this Comstock Spanish, Connecticut seed leaf?

A. Those are cigar varieties.

Q. But you grow all of those?

A. Yes.

Q. And you grow Havana leaf, that has been spoken of?

A. There is not so much in varieties as would appear, but it is the types that should guide us, because the varieties after all differ very slightly. I have read the names of 121 varieties of seed leaf plants, they are nearly all alike in the field, you could not distinguish between them.

Q. What is the most profitable type you grow down there?

A. I do not know that I could find a basis for establishing a valuation of the cost and profit in that sense, I do not know.

Q. Which is the favourite type grown by the farmers? What is grown there most?

A. I would say the Havana seed leaf, including the Comstock and the Zimmer Spanish, which belongs to the Havana seed leaf type. The Havana seed leaf is the most favourable type to be grown in the province of Quebec. Our possibilities there are limited, and we should not go beyond our possibilities, that is where many make an error, they try all sorts of tobacco; I have seen them trying to grow Sumatra in the province of Quebec, it is impossible, they simply do not know what they are about. Our possibilities are limited and so they are in your own section. If they ever try to grow a lot of varieties they will *casser sa pipe*—break their pipe—as we say in Quebec, because their possibilities are limited and they should remain within their possibilities. So should we also. The Havana seed leaf types are the most advantageous for us because they are very rapid growers and they seem to adapt themselves to our particular climatic conditions. We have certain soils which, owing to their chemical composition and natural elements, combined with our particular climatic conditions produce a result which is sometimes surprising to us. We sometimes produce a product which is superior even to the parent plant coming from Wisconsin. That may be a surprise but it is a fact. There is not so much to be wondered at when we have learned something about tobacco. It is simply that this plant can adapt itself to the most curious and diversified conditions.

By Mr. Dubeau:

Q. If I am not mistaken you stated a few minutes ago that the consumption of Canadian tobacco has increased very much. Did you not find in that fact the industrial value of our Canadian tobacco?

A. Undoubtedly, that is obvious to my mind. It seems to me that the increase in the consumption of the tobacco manufactured from the Canadian leaf which has taken place since 1897 undoubtedly means that it has an industrial value and a commercial value, also, and to me it is an absolute proof that the public like it. Is that an answer to your question? I believe it is absolutely obvious. It was claimed prior to that increase of duty by manufacturers right here in Ottawa that we would never be able to use the Canadian leaf for industrial purposes on a large scale. I remember that perfectly well, because I was here several times discussing the subject and I had occasion to tell these large manufacturers that the future would prove whether they were right or wrong, that their own personal opinion might be very respectable indeed but that it was a little bit tainted by their being interested in objecting to the change proposed by us. The increase of duty was desired in order to promote the manufacture, and improve the manufacture of Canadian leaf. Then the proof came and we have it before us. The proof is in the fact that we now use almost 5,000,000 pounds of Canadian leaf in the manufacture of chewing and smoking tobacco; whether it comes from Ontario or Quebec is immaterial to the fact. Now it is claimed against Canadian tobacco that it will never be suitable for the cigar industry, and the manufacturers say that they cannot use the Canadian leaf. I quite admit that they cannot make a good cigar out of the leaf they get from the farmers as it is produced now. But what is proposed by these new regulations is to arouse an active interest in the development of this branch of the industry and prove the possibilities of the cigar leaf produced in Canada. It is from that that we infer later on the same result will be obtained in the cigar industry that has been obtained in other branches of the industry. I believe that is answering your question—that there will be an industrial value in Canadian tobacco.

By Mr. Lewis:

Q. In reference to the adaptability of the soil, I want to know whether this gentleman can give me an opinion whether you can grow tobacco in the county of Huron. It would not be as warm a climate probably as you might have in Quebec?

A. I believe that we can grow tobacco almost anywhere, and some authorities have claimed that tobacco can adapt itself to any climatic conditions, and in fact tobacco has been produced in the 60th degree of latitude. Whether it has any industrial value is another question. As to being able to produce it, there is no doubt that any soil will produce it, but of course there are some soils better adapted to produce a certain standard.

Q. What would be the best kind of soil, gravel or clay or loam?

A. It depends, gravelly or light soils will produce light coloured varieties.

By Mr. Clarke:

Q. Black mucky soil will also produce good tobacco?

A. Yes; light soil will produce light coloured varieties and loamy soil will produce fine textured cigar leaf; sandy loam and heavy clay will produce the heaviest types of chewing tobacco, not Burley, but the dark kinds.

By Mr. Lewis:

Q. Will the proximity of water have an influence in the growing of tobacco?

A. It may have, but it is so remote and difficult to define that I would not go into that, except to say that near the ocean where certain currents of wind drive the brine

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of the ocean from the sea to the land it may affect the product so that it will make it very badly combustible on account of the salt.

Q. How long does it take tobacco to grow?

A. Sixty days for the quick growing varieties, and up to one hundred days for the slower.

By Mr. Clarke:

Q. What is the meaning of the word 'Cavendish,' I do not just understand it?

A. Cavendish is the name which has been used under all administrations in England and in Canada in reference to tobacco which is pressed into plugs, whether chewing or smoking; it is the general name which has been given to the manufactured tobacco in plug shape; that is, the 'cut' tobacco is different from Cavendish, which is chewing and smoking plug.

Q. One other question. Under the present law there is a rebate for clippings, but under the proposed regulations that rebate will not exist. Can you tell me what effect that change will have?

A. Yes, sir. I mean from the point of view of the Canadian grower—it will have this effect, that in all the factories working under a foreign license and using foreign leaf exclusively, if they choose to use Canadian tobacco in combination with the foreign they will not be induced to do so as at present on account of this rebate.

Q. That rebate is if they ship the clippings back?

A. Exactly, re-exporting.

Q. Do you know what proportion the clippings bear to the total weight?

A. Mr. Dugas has given the figures; he says that it is something like 300,000 pounds of cigar cuttings exclusively. There are other rebates on manufactured tobacco, but that is the total of the cigar clippings.

Q. So that this is really an important matter, because where Canadian tobacco was used they could not get the benefit of that rebate?

A. No.

Q. So that the removal of that difficulty will be of decided advantage to the Canadian grower?

A. Yes. It opens the door of all factories to Canadian tobacco.

By Mr. Dugas:

Q. According to your long experience, Mr. Labelle, is it not a fact that the commercial value, the real value of tobacco, resides more in the preparation of it than in the cultivation?

A. Yes. I expressed myself on this point just a little while ago, when I said that tobacco is not a natural production, it is an artificial product; there are latent qualities in the crop which must be brought out afterwards. Of course, in order to make a success in cultivation it must be grown in the best soil for that type, and it must be cultivated with a view to attaining certain qualities for certain purposes; yet, even when all these conditions are observed, there will be latent qualities in the crop which will permit of producing, by preparation and handling, a highly valuable article for certain definite industrial purposes. But these qualities will be brought out of the leaf only after certain specific treatment has been given to the product of the grower, and only then will those qualities be brought out, and it is only after those qualities have been developed that the crop will be suitable for industrial and commercial purposes. Therefore, it is more an industrial product than a natural product, just the same as it is with wine. Wine is simply the juice of grapes, but if it is only the juice of grapes and not fermented it is not drinkable. Even in the part of France where they produce the best wine an experienced man may press the grapes and get the juice out of them, but if he does not know how to ferment and to blend

it—and it is not so much the blending as the coupage which makes the difference—it will only be grape juice after all; it will not be wine.

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

LOUIS V. LABELLE.

Mr. J. B. DUGAS, St. Jacques, County of Montcalm, called and examined.

By Mr. Dugas :

Q. You are a tobacco grower ?

A. Yes.

Q. You have considerable experience in tobacco growing ?

A. I have some 17 or 18 years' of experience.

Q. You were charged by the Department of Agriculture of the Dominion to prepare samples of tobacco to be sent to London and Belgium there to be examined by experts. Did you go yourself with those samples and will you state to the committee what was the report thereon ?

A. It was in 1902 or 1903 that I was ordered by the Department of Agriculture to prepare a certain quantity of our Canadian tobacco just as we produce and prepare it and to go with those lots of tobacco and introduce them in the English and Belgium markets in order to get an appreciation of our product from those people. Invariably we had the same answer from every one to whom we showed our samples. They would say 'The brut product is good, it looks well and appears to be of fine quality, but in its natural condition it is not saleable on our markets for the reason that it is not finished. This tobacco should be sorted and fermented, and re-sorted later on in order to make it acceptable on all our markets for different uses.' There is some difference in the demands of different markets. On the English market they prefer a darker tobacco, that is as they term it there fired, fermented highly when the tobacco becomes darker in colour; except on the British market where a lighter coloured tobacco is preferred. On the Belgium market in every instance the light coloured tobacco is preferred; but there they gave us exactly the same reasons that we had already met with on the English market, that our tobacco was not finished. The raw leaf, they said, seemed to be of very good quality but in its actual condition they could not really give a correct appreciation. While we were there, in Belgium and other places, they told us. 'Why, it is singular, we are doing an extensive trade with the United States market. You are situated in the neighbourhood of that country, why don't you prepare your product as they do there. If your tobacco is prepared as it is in the United States we have no doubt you can do a good trade here with us in Belgium.' In England they told us the same thing. They remarked: 'If your tobacco is as good as the American tobacco we will undoubtedly give you the preference. We are fellow citizens and if you will give us an article as good as we can buy in the States we will give you the chance.' The tobacco dealers of England and Belgium have made a report to this effect. Accordingly the Department of Agriculture thought it would be well to send some one over to Wisconsin, the state that was most convenient for conducting observations and which was in about our latitude.

Q. Have you not been advised in Belgium or England to recommend to the Minister of Agriculture that he should send somebody to Wisconsin to study the methods of tobacco culture followed there ?

A. Yes.

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Q. And was it not on that account that samples of tobacco were imported from Wisconsin ?

A. Yes.

Q. It was on the suggestion of those people in England or Belgium that you made that report to the Minister of Agriculture ?

A. Yes.

Q. And then you were sent there ?

A. I was intending to make my remarks brief and perhaps I have cut them too short as to that.

By Mr. Clarke:

Q. Before you leave the subject of Belgium, do they grow any tobacco over there ?

A. Some.

Q. Do you know what price the growers there get for tobacco ?

A. It varies. I believe that Mr. Charlan would have more knowledge of the price paid in Belgium for raw leaf.

By Mr. Dugas :

Q. Is there a large market in Belgium for tobacco ?

A. An immense market.

Q. And in England also ?

A. In England also.

Q. So that if our tobacco was prepared in proper shape there would be a good market in England and Belgium for our product ?

A. Yes. From the information I got whilst there, the demand is almost unlimited, because the consumption in England is two pounds per head of the population, men, women and children, and then besides there is a great importation and exportation of tobacco.

By Mr. Clarke:

Q. What do they pay in Belgium for tobacco? Suppose we exported tobacco to that country, what would we realize for it?

A. For tobacco in good shape, 15 cents of our Canadian money; that is what they told me.

Q. Would that be 15 cents here or with the duty in Belgium?

A. 15 cents f.ob.

Q. Here?

A. Here. We would load it.

By Mr. Dugas:

Q. There is no customs duty there?

A. No.

By Mr. Clarke:

Q. I believe the restrictions in Belgium are less than in most countries?

A. That is the reason we were sent over there.

By Mr. Dugas:

Q. As to the freight, you say you exported tobacco from Canada to Belgium, is the freight heavy—how much did you have?

A. 1,840 pounds of tobacco.

Q. That you exported from Canada to Belgium. How much was the freight?

A. I think I calculated that it amounted to something like one-fourth of a cent per pound.

Q. Well, now, will you state what you did in Wisconsin at the time you were there for the Minister of Agriculture? Did you bring some samples of our own tobacco from Quebec, and did you show them to those people in Wisconsin?

A. Yes. From the favourable report we had made of the reception of our tobacco in the European market, the Agricultural Department thought it would be wise to send some of our Canadian farmers to obtain information as to the methods of cultivation, etc., in the State of Wisconsin, as that state was the most convenient and in about the same latitude as Canada. So I was sent over there in company with Mr. Denis, of Rouville county, for that purpose. We found that the climate is about the same as ours, because we had left here in the last days of April, I think it was, and when we got there we found they were hardly any more advanced than we were. The beds there were just getting made, and we stayed there until the plantation was about to commence, but we did not stop to see the plantation. We went around there to see how the work was done in the warehouses and the condition of the different crops, etc. We found that the Wisconsin tobacco looked a great deal like our own Canadian tobacco, but we never said anything about it until finally—I had brought with me some tobacco produced in Montcalm county. I had cured it myself. I did not know much about the quality of it; I suppose I took what was about the best quality—and after having examined a good deal of the Wisconsin tobacco in the warehouses here and there I introduced this sample of Canadian tobacco which I had with me, and I asked one of the principal handlers and dealers of Jamesville, Mr. S. B. Heddles—he is an important grower and dealer in tobacco there—and I showed him the sample, asking him what he thought of it. He looked at it and said that the tobacco was very good apparently, and passed several remarks on it; he said the tobacco was really in fine condition to go just then into fermentation. After we had talked a while on the qualities of this tobacco he asked me where it was grown and told me later on that he thought I had picked it up in some of the neighbouring warehouses. I told him it was tobacco produced in Canada, and he looked at it again and said: 'It is really a splendid article in raw leaf, only the form of the leaf is defective—it should not be so pointed, it should be more rounding and broad,' and he made the remark that all this variety of tobacco that was packed had a tendency to coming towards a point in the leaf, and it always left a narrow space between the fibres. He called his foreman, who substantiated all that the boss had said in reference to the good qualities of this tobacco. That encouraged me, and I showed the same samples of tobacco to several other people, and invariably I received the same comments and the same answers to my questions—that it was of really good quality, only it was not finished—what it was but (rough, not sorted).

Q. And did you bring back some seed from that state to plant in your part of the country?

A. Yes, I brought a small quantity of seed produced in Wisconsin, and from what I had seen over there I thought myself justified in recommending this type of tobacco to the Hon. the Minister of Agriculture, and he sent some of this Wisconsin tobacco seed, which goes by the name of 'Comstock Spanish.' Mr. Comstock introduced this variety of tobacco some forty years ago, so they told me, and it has kept the name ever since, but it is really Wisconsin tobacco, because we suppose that Comstock died long since.

Q. What has been the result of your experience with the seed brought from Wisconsin?

A. We had this seed distributed in our district, I suppose perhaps five or ten pounds of this tobacco seed, and invariably it has given satisfaction. From the first years' seeding, the first crop was considered of excellent quality, and I was inquiring at our annual convention of the Tobacco Growers' Association, I met there several manufacturers and had them to examine the samples that were there on exhibition, tobacco produced from the imported seed itself, the first year's importation, and the

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second year's growth, that is from seed produced from the plant grown from the imported seed and also samples of the third year's growth. While between the second and third year's growth there wasn't really any difference, those experts considered that as between the first and the second year's crop there was a marked difference and that in favour of the second year's crop. They said that the production of the second year was better than that produced from the imported seed the first year.

Q. So according to your experience you have a good product in the tobacco grown from this Wisconsin tobacco seed ?

A. Yes.

Q. You are aware that Mr. Cusson, of Montreal, bought some of those tobaccos last year, had them properly prepared and fermented, and made good cigars out of them ?

A. Yes. I know Mr. Cusson very well. I see him frequently and often have a conversation with him concerning tobacco. I have seen his tobacco in the leaf, I have seen it manufactured into cigars and I have had the pleasure of smoking a great many of his good cigars.

Q. Are you aware that Mr. Cusson is prepared, under the new regulation, to build warehouses for packing tobacco in your county, he is ready to go into the business of preparing tobacco ?

A. I could not say because I have not seen Mr. Cusson since the changes were announced. About a week before the announcement I met him, and we were talking about what is likely to take place, and he told me that if such would take place he had about decided to establish himself in Montcalm county or the county of L'Assomption in the re-handling business. The committee, of course, understand what is meant by re-handling.

Q. On account of the new regulations foreign manufacturers will have to pay 28 cents duty before using their tobacco. This fact will cause people to go into the business of re-handling ?

A. Yes, so it seems to me.

Q. There will be a large return to them if they go into that re-handling business ?

A. I don't know that it will be necessary. The gentlemen to whom I exhibited my samples of Canadian tobacco—

Q. In Wisconsin ?

A. In Wisconsin remarked that he thought with the protection we then had—that was two years ago—and the quality of the tobacco we could produce in Canada, he had simply a good sure way of making money and if he was not established to suit himself in Wisconsin, he could not see any better place to establish himself to make money than in Canada.

Q. He would have been ready to do it under the old regulations ?

A. Under the old regulations, yes.

Q. And he would be more ready to come now under the new regulations ?

A. Yes. I thought it would be well to state this. I had forgotten to do so before.

By the Chairman:

Q. He wanted to have a hand in the pudding ?

A. Yes, he said he would have a real pudding.

By Mr. Clarke :

Q. You made the remark two or three times that the opinion expressed in England and Belgium in regard to our tobacco was that it was not finished ?

A. Not finished.

Q. What do you mean by that ?

A. It is not fermented and sorted in a manner convenient to the manufacturers. You see the English method is this: The English dealer sends his order to an Ameri-

can dealer that he wants such and such a tobacco. That is, ready for his lines just as he wants it.

Q. What needs to be done to our tobacco is the work of the re-handler?

A. Exactly.

Q. And you think the proposed regulations will bring that about?

A. In my opinion.

By Mr. Dugas:

Q. You have been travelling for several years through the United States, and have also been in England and Belgium. Did you see on the market in those countries any tobacco which is kept in the very same condition that we place our own tobacco on the market here?

A. I have seen tobacco in many conditions. I have seen tobacco in just as poor, and I suppose poorer, condition than ours in Central South America, where they ought to produce the very finest tobacco. The cause of that is, I suppose, just as it is here, the want of knowing how to prepare it properly.

Q. But no tobacco is put on the regular market elsewhere without being properly cured, or fermented and sweated?

A. No.

Q. In no market in the world except in Canada?

A. No. I have come to the conclusion that in its actual condition our tobacco is not marketable.

Q. And the only way to get our tobacco into proper condition will be to have it assorted or packed by re-handlers?

A. By some one of experience.

Q. Are you aware that in the United States the manufacturers never buy their tobacco from the growers, but from the re-handlers or packers?

A. It happens sometimes that the prevailing price not suiting the grower—I have seen that in Wisconsin—he will not sell his crop, but will sort it and put it in fermentation himself and wait for his price. But that is seldom the case.

Q. That is not the regular way?

A. That is seldom the case. In that instance the manufacturer buys directly from the farmer who has prepared his tobacco.

Q. According to your experience you scarcely ever see the farmers preparing their own tobacco themselves?

A. Seldom.

By Mr. Clarke:

Q. There are two questions I would like to ask. They use the expression 'Cavendish' in the Act. Do you know what that is?

A. I don't know exactly what it is.

Q. There is one more matter I would like to know from either you or Mr. Labelle as to the extent of rebate is paid on clippings?

A. Mr. Labelle will answer that.

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

J. B. DUGAS,
Tobacco Farmer.

THE IMPROVEMENT OF RURAL CONDITIONS.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 62,

WEDNESDAY, May 27, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock a.m., Mr. McKenzie, chairman, presiding.

THE CHAIRMAN.—Gentlemen: We are very much pleased to have present to-day Doctor James W. Robertson, C.M.G., Principal of Macdonald College, Ste. Anne's, who will address us on a very interesting subject. Doctor Robertson is not by any means a stranger to the committee and the mere mention of his name promises us an address of far more than ordinary interest. The committee, I know, are always pleased to hear from him and without further delay I have great pleasure in introducing him to you.

DR. ROBERTSON.—Mr. Chairman and Gentlemen:—It has always been a pleasure to me to come before this committee. I appreciate very highly the quality of its work. Its reports have been a means whereby sound information on rural conditions has been spread over the Dominion. For our students in agriculture at Macdonald College I provide the reports of this committee as the best history of the progress of agriculture in Canada which can be obtained—a record of important developments and extensions in rural industries. This committee has also, through its reports, been a very efficient agent for creating sound public opinion regarding agriculture in Canada. A good deal is said boasting sometimes about the ancient nobility of agriculture and the glories of the occupation and the volume of the wealth it produces. Much of that is what we, in college parlance, call hot air; it does not drive any engine. But the reports of this committee have been the means of creating sound public opinion as to the relationship of agriculture to the prosperity of Canada, and of creating a right attitude on the part of railway companies and steamship men towards agriculture. I am quite sure that my own feeble efforts, when Commissioner of Agriculture and Dairying, would not have accomplished so much in the improvement of transportation for dairy products, meats, fruit, and poultry products, carried through the House as the policies and proposals were under the kindly guidance of the Minister of Agriculture—if these had not been endorsed and supported by this committee. I add my testimony as to the immense value of the carefully edited reports of this committee, through which guidance has been given to the public, and to railway and steamship companies and the producers of wealth from the soil. I am glad to come here and lay before you some convictions and suggestions regarding the still further improvement of conditions for rural communities, and for the advancement of agriculture. While that is one of my objects in coming here, the primary purpose of my visit is to renew, in most respectful earnestness, the invitation to the committee itself which I had the honour of offering to your chairman: It would give us who are the staff of Macdonald College very great pleasure if this committee would come in a body to that institution and see the place; see its activities, see its farms, live stock and crops, see its buildings and equipment; and see the possible range of its usefulness for every part of Canada. I do not know any institution in Canada from a visit to which the members would derive more pleasure and more benefit, as members

of this committee, and perhaps even as members of the House of Commons and the Senate of Canada. It is one of the new forces which has come into existence in Canada for the betterment of rural conditions, to move the rural population in a far-reaching and in a powerful way. It is not competing with any other institution, because there is none other like it anywhere as yet. It has entered upon a field hitherto uncultivated in large part. It, however, is co-operating with every other institution that makes for the betterment of rural conditions in Canada; and it is complementary to them in so far as it undertakes things which they have not hitherto attempted.

I need not tell you—it might seem like boasting to tell you—the size and the cost of our place. Sir William C. Macdonald has spent over two and a half million dollars, and the whole college plant is not yet completed. Sir William also transferred to our trustees—the Governors of McGill University—two millions of dollars as an endowment. Not a dollar has been knowingly wasted; we have put up the best buildings and put in the best equipment for the purpose which could be procured. I do not know of any other instance where a private citizen has given so much of his time and his thought and his wealth, as has Sir William C. Macdonald, wholly and solely for the public good and absolutely without any effort to secure gain or fame or honour for himself.

THE MACDONALD COLLEGE LABORATORIES.

Macdonald College is not only an institution for the instruction of young men and women in class rooms and laboratories. Of that side of its work I do not propose to speak to-day, because when I had the honour of being before you last year I spoke of Macdonald College, to some extent, as a college of instruction for rural life. But Macdonald College has great research departments and departments of illustration for the various activities of rural life. It has been planned to obtain further knowledge, applicable to the conditions of rural life, as a means of making that life more satisfying to the people. For instance, there is no other institution in Canada with laboratories for the bacteriology of agriculture that may be compared with those of Macdonald College. We have just come to know in agriculture, as medical men have come to know in medicine, that a knowledge of the science of bacteriology is indispensable for an understanding of its principles and methods. The laboratories for biology, physics and chemistry are equally well equipped for their purposes; and the professors in charge have zeal, with knowledge and practical ability. The facts of prime importance in agriculture are not the numbers of bushels per acre in any one year.

It is fundamental to continued prosperity in Canada that the teachers, the leaders, the guides in farming, should hereafter know more than anybody has hitherto known regarding the life content of soil for profitable agriculture. Such a wise and strong statesman as Lord Salisbury said in one of his masterly speeches, that the great problem, not only of England but of all humanity, is to maintain the fertility of the soil by the activity of plants and the activity of bacteria. That is the problem of humanity; otherwise human life must disappear from the face of the earth; and in the process poverty must prevail while the land becomes increasingly poor. The laboratories are only one branch of what has been planned for at Macdonald College. It would be worth your while coming to see what we have in those and in other departments.

I would like to refer to another department for a moment. In association with our Department of Bacteriology (which, as you all know, is under Professor Harrison, formerly of the Ontario Agricultural College), research work is being looked into in what is called Parasitology. There are several obscure diseases that do much harm to live stock in Canada, the cause of which nobody knows, and nobody knows the remedy. Dr. John L. Todd has come to work in our laboratory. His appointment

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was to an associate professorship in McGill University. He is a Canadian by birth, a graduate of McGill and for a time belonged to the School of Tropical Medicine, Liverpool. For some three years he was in Africa, where he was engaged in research work. He will make a study of the diseases caused by animal parasites. While much attention will be devoted to the study of human diseases in the Faculty of Medicine of McGill, it is intended that a part of his energies will be spent in the investigation of diseases of domestic animals. I would like to put in evidence a memorandum by Dr. Todd in which he asks that veterinary surgeons, ranchmen and farmers everywhere, if they have knowledge of an obscure disease, will give him information in reference to the same, and will send him specimens in order that he may be able, through us, to render good service to Canada. Dr. Todd says:

'1. The majority of the causal agents which are at present known to produce disease are vegetable parasites—*bacteria*, e.g., the bacilli of tuberculosis, typhoid and diphtheria; the causes of many of the diseases of warm climates and of some of those occurring in temperate zones have recently been found to be small animal parasites—*protozoa*, e.g., the parasites causing malaria, sleeping sickness, syphilis, and, probably, scarlet fever and smallpox in men, as well as those producing dourine and Texas cattle fever or red water and various poultry diseases in domestic animals.

'2. In consequence of the great importance of this class of diseases, McGill University has established an associate professorship in Parasitology with the object of studying means for the prevention and cure of diseases caused by animal parasites.

'3. While much attention will be devoted to the study of human disease, it is intended that a large part of the energies of the department will be spent in the investigation of diseases of domestic animals.

'4. At present only a few of the diseases of Canadian stock and poultry are known to be caused by protozoa, but it seems very probable that some of the diseases of an obscure nature, present in this country among domestic animals, may be caused by such parasites. It is believed that the investigation, along these lines, of such diseases will yield good results.

'5. These investigations cannot be successfully undertaken without the cooperation of those, such as veterinary surgeons, farmers and ranchers, who frequently come in contact with diseased animals. It is through them only that information concerning the existence of disease can reach the Department of Parasitology.

'6. It is therefore requested that those who have personal knowledge of any disease of an obscure nature in domestic animals of any sort will report its existence and nature to the address given below.

'7. At present information is particularly wanted concerning "loco" and "swamp-fever" of cattle and horses, and of "black-head" of turkeys; information concerning their distribution, spread and frequency of occurrence is especially requested.

'8. It is trusted that this effort to combat Canadian cattle disease will be fitly appreciated and assisted by those whom its success would especially benefit.'

9. Address:

Dr. John L. Todd,
Macdonald College,
Que.

CEREAL HUSBANDRY.

Let me allude briefly to one or two matters which may increase your desire to visit us. In the Cereal Husbandry Department we are attempting to provide improved seeds for cereals for the Province of Quebec, and to some extent for the Maritime Provinces. The Agricultural College at Guelph does that for the province of Ontario; and the Central Experimental Farm largely for the eastern portion of that

province. We have come to recognize by experiment and research that the seed grown in any locality, when improved by systematic selection, brings the largest and best crops in that locality. There does not appear to be any certainty of permanent improvement from occasionally bringing in seed new to the district and letting it go at that. I threshed out that idea before this committee some ten years ago; and I read the report of my evidence lately to see if I wanted to modify the opinions expressed then. After ten years of further observation, investigation and reflection, I regard the character of those opinions as sound with reference to improvements, possible and desirable improvements, in the growing of grain crops in Canada. One of the methods advocated was the improvement of seed grain, by selecting the best seed from the best crop in the locality for seed for subsequent crops in the locality, and by keeping up the process annually. That practice is now in a fair way of becoming general throughout Canada.

At Macdonald College we are carrying on many other experiments and illustrations. For instance with oats, we found last year that the percentage of weight of hull to total weight of kernel ran from 48 per cent of hull, when the oats were cut unripe, down to only 28 per cent in the same field with the same variety when the oats were thoroughly ripened. What a difference there is in the value of a bushel of oats for feed if you have 48 per cent of hull (poorer than straw) in the one case, and only 28 per cent of similar hull in the other.

Another instance of illustration or experimental work has been to show to what extent the yield and quality of wheat are affected by the date of seeding. On our farm last year the earliest seeding of wheat gave us 25 bushels to the acre, and with similar seed of the same variety, on the same soil and with every other condition alike, the latest date of seeding, four weeks later than the earliest, gave us only 10 bushels to the acre. There was a heap of ten-bushel wheat reaped in Eastern Canada last year for want of the seed being put in in good time. The point is this, that in the case of wheat the earlier it can be sown on a suitable seed bed the better the crop. Of all the cereals that applies particularly to wheat.

The work is under the direction of Professor L. S. Klinck, our professor of Cereal Husbandry. In comparing the productiveness of varieties of grain, chosen because promising for our locality, Professor Klinck reports the best variety of good milling wheat (Red Fife) as yielding 34 bushels per acre, the poorest (Huron) 19 bushels. The best variety of oats (Early Triumph) yielded 84 bushels per acre, the poorest (Fifty Pound Black) 39 bushels. The best variety of barley (Mandscheuri) yielded 67 bushels per acre, the poorest (Success) 31 bushels.

We have a Research Department in Animal Husbandry, under the direction of Professor H. S. Arkell. We are only beginning in it, because that unfortunate fire, when lightning struck our barn last September, consumed our barns, cattle stables and piggery. We had to put up temporary buildings for the winter; but now we are putting up permanent and, so far as practicable, fireproof buildings for live stock, granaries and implements.

THE POULTRY DEPARTMENT.

In the Poultry Department, under Mr. F. C. Elford, we have carried on research and illustration work since October, 1906; and in that we have something of interest for you. I have had a good deal of enquiry regarding what I said before this committee last year about hens that laid eggs during winter in colony houses one board thick, with the thermometer sometimes as low as 17 degrees below zero in the colony houses. These enquirers—perhaps I should say these sceptics, in the kindest sense of that word—pointed out that the eggs would get frozen. It so happened that the eggs did not get frozen, because with our trap nests the hen cannot get off the nest until the man comes, which he does twice at least in the forenoon, and takes the hens

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off the nests. I might now report further on how these hens have behaved. I am able to say from the records during the past winter that the egg production of which I spoke last year was not at all spasmodic or for the one winter only. We had the same hens in the same houses during the winter just ended and they kept on laying eggs from December. In 1906 they were pullets and began in November. To show you the slight effect of intense cold—and the value of this lesson is especially great for Manitoba and the Northwest, where the people have supposed that they could not keep poultry profitably during the winter and feed them on their frosted wheat and waste grains—I cite the case of 125 laying hens in these simple colony houses, one board thick with no artificial heat of any kind except the hens themselves all winter. The hens never got any soft food in the form of mash nor any of those troublesome concoctions of any sort. They never saw water from the time the freezing weather came in November until the warm weather of March or April. Instead of water they picked snow, and during the few times when they couldn't run out it was shoveled in to them. As a whole, the flock were not laying quite as well last winter (1907-8) as they were the winter before. I need not detain the committee by many statistics. On January 26th they gave 49 eggs; on the 27th, 56 eggs; on the 28th, 46 eggs; on the 29th, when it was 18 below zero in the house, they gave 52 eggs; the next day, 56 eggs; the following day 56 eggs; there was no shrinkage because of that temperature of 18 below zero in the house. Then on February 4th they gave 58 eggs; on February 5th, 35 eggs; on the 6th, when it was 20 below zero in the house, they gave 48 eggs; on the 7th, 26 eggs; on the 8th, 43 eggs. I give these records for a few days on both sides of two very cold days. Following a severe drop in the temperature there was a falling off in the egg production the next day. But it went up again the day after to the average production.

By Mr. Crawford

Q. On what are you feeding them?

A. Feeding them chiefly on Manitoba frosted wheat; it is very good stuff.

By Mr. Telford:

Q. Are these houses covered with paper?

A. They are only one board thick; but we put roofing-paper on the roof to keep the rain out. There is nothing on the sides except the one board of one-inch thickness, tongued and grooved and shrunken at that.

By Mr. Lewis:

Q. Do you use any artificial heat?

A. No; the colony houses were out in the field without even shelter. At the end where the roosts are, we put two-ply of lumber with paper between so that there shall not be any draft. A cotton curtain is let down in front of the roosts on very cold nights.

EGGS FROM DAMAGED WHEAT.

Now as to the frozen or frosted wheat. I have great faith in the value of poultry to use up otherwise unsaleable grain. I am not one of those men who contend that a dairy farmer or a meat-producing farmer should not sell any grain. It is often profitable in dairying, beef raising, pig feeding and chicken feeding, to have some of the best of the grain for sale; the remainder being disposed of in the form of animal products. Last winter we brought down a car load of frosted wheat from the northwest. It costs us 26 cents a bushel at the purchasing point, which was not a high price, and about 60 cents a bushel at Ste. Anne de Bellevue. Our object was not to buy an especially cheap feed, but to feed the frosted wheat to poultry and find out

what could be done with it. Here are some of the results. Taking the months of March, April and up to the 24th of May, those 680 hens consumed 177 bushels of frosted wheat. Then they were given also 1,700 pounds of wheat bran which cost \$21.25. In addition to that they were given 850 pounds of meat scraps which we buy from the packing house. This cost us \$21.25. They also got grit and oyster shells which cost \$21.25. We gathered from those hens 27,211 eggs, over 2,267 dozens, which could have been sold for from 25 to 50 cents a dozen. Every bushel of that frozen wheat gave us 8 dozens of eggs; that is the point. That was in a climate which some times went down to 22 below zero in the colony houses where the hens were kept. I would not be afraid of Manitoba and the Northwest under those circumstances. It shows that frozen wheat fed to poultry in that way is far more profitable and satisfying than when fed to larger stock such as cattle and pigs.

Q. You will admit that the production was a much larger one than the farmer usually has from his hens?

A. But not larger than the farmer usually could have.

Q. To what do you ascribe your large production?

A. Largely to two things. First of all to the selection of these hens, for a good many generations, out of hens that have lived under cold conditions and laid eggs through the winter. Then to the low temperature, fresh air with sunshine, dry feed and necessary labour by the hens. They cannot get enough to eat without scratching for it.

Q. Dry feed?

A. Yes dry feed. Then necessary labour, preferable to artificial exercise. The hens could not get enough to eat without scratching among four inches of roughage to get their feed. These are simple conditions, nothing but what the ordinary farmer could have and make use of. If it were a case of building expensive houses and employing a lot of labour the farmer might be excused from adopting this plan; but we have simplified it down to a point where any farmer can easily go and do likewise. But he must exercise care and carry on the work with intelligent thoroughness.

Q. Did you have any special breed?

A. We had six breeds.

A word to show you there is no deterioration in the stock. The hens that were kept under these cold conditions during the winter of 1906-7 laid eggs that tested between 87 and 93 per cent of fertility. Then the pullets from those hens are as good as their mothers. There is no deterioration. The mothers in 1906-7 gave on the average 28 eggs apiece during the coldest weather before the end of February. The pullets in 1907-8, which was a severer winter, gave 25 eggs apiece before the end of February.

Q. What were the breeds?

A. Barred Plymouth Rocks, White Wyandottes, Buff Orpingtons and Rhode Island Reds. We have also two other breeds—Black Minorcas and White Leghorns—but they did not do as well through the winter.

By Mr. Monk:

Q. How many hens do you keep in each house?

A. There are from 50 to 25 according to the size of the house. The larger colony houses are 20 ft. x 14 ft. x 7 ft. high; the smaller 12 ft. x 8 ft. 7 ft. high.

By Mr. Schell (Oxford):

Q. Did the Rocks prove to be a good quality of fowl?

A. Capital. The Rocks last year gave us eggs that sold for \$4.27 per hen. The cost for feed was \$1.44 per hen. There you see is a big margin for labour. I would not dwell upon this hen business if it were a small thing; but the trend of civiliza-

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tion is towards eating the finer and not the coarser foods. The products of the farm that are coming to have more and more value are pigs and poultry—bacon and cold chicken. Those are branches of live stock that we look forward to improve. We hope to see Quebec and other provinces supplied from our selected strains of poultry. We shall have a good many cockerels at \$1 a head, bred from these strains. I do not want to be beguiled into giving you a statement at the same length as this for every department of Macdonald College or I would occupy several sessions of the committee.

By Mr. Lewis:

Q. Do you allow your hens to go outside during the winter?

A. There is a small door in each colony house through which they can pass in and out whenever they like.

Q. Do they not suffer from wet or cold feet?

A. Not in the least. We have not had any serious illness or sickness. We lost a few hens by accident. I do not say that we have found a panacea; we have gone back to the simple life for poultry—low temperature, fresh air, sunshine, dry feed of suitable quality and necessary work.

Q. When allowed outside do the combs of the fowls not get frozen?

A. It is about as cold inside as outside. Our thermometer registered 22 degrees below zero last winter in the houses where they were. A sparrow does not get frozen although it is often out in winter when it is 30 degrees below zero. The Black Minorcas and White Leghorns with larger combs were kept in a warmer building. Their combs would have been injured.

By Mr. McIntyre (Strathcona):

Q. How do you produce the necessary labour by the hens?

A. By throwing their feed on the floor, which is covered by a roughage of four inches of cut straw and chaff. The hen has to scratch in order to get a meal.

Q. Do you change that straw periodically?

A. It is removed from under the roosting place, pushed over and renewed in that way over the whole floor about once every month. It does not get foul.

By Mr. Lewis:

Q. There have been statements made in the newspapers with regard to the value of poultry products to the effect that it is as great as that of the grain production; do you know whether that is the fact or not?

A. I do not know; it is difficult to ascertain. The total value of the production of eggs and poultry in the United Kingdom was, according to the latest returns, \$57,000,000; in France, \$85,000,000; in Canada, \$16,000,000; and in the United States, \$295,000,000. The estimate of the annual value of the world's production of eggs and poultry has been put at \$990,000,000. I did look into this matter comparatively to some extent. For instance, the province of Nova Scotia, where a large number of barrels of apples are packed every year, is rated in nearly all descriptions of Canada as a great fruit-producing province. Now, the poultry products of Nova Scotia are greater in value annually than the apple production. But the poultry production of that province is hardly ever heard of, and the reason of that is that the hen is doing business in small numbers and in a humble way in a great many places. The aggregate of her production is more than the whole apple crop. If you could have improved the methods applied to all Canada, thereby increasing the production from poultry to the extent of only \$25 per farm you would have done much to increase the national prosperity.

By Mr. Schell (Oxford):

Q. What grain would you advise the use of?

A. There is nothing better than a mixture of wheat, barley, oats, corn and some buckwheat. One of the very wasteful practices of the Canadian farmer has been the selling of grain that is not properly cleaned by the fanning-mill. We take the fanning-mill and we take out one-fourth of the grain, more or less. That gives a superb sample of grain to dispose of at the highest price, and the one-quarter that is left is capital feed for the poultry. Superior crops on the farm come by using the cleaned selected seed; and the use of the inferior portion as feed for animals is true economy in agriculture.

By Mr. Lake:

Q. How much wheat did the poultry consume per head?

A. These hens consumed 19 pounds per head in the three months, March, April and May; 177 bushels were consumed by the 680 hens from 1st March to 24th May, and, as I mentioned a moment ago, the product was at the rate of eight dozens of eggs per bushel of wheat consumed.

By Mr. Monk:

Q. Do you intend to refer to vegetable gardening, or do you do any of that?

A. We do a good deal, but time will not permit me to go into details. First of all, we have the school gardens for children and teachers in order that they may be trained not merely to manage the production of plants, but to understand the principles of seed selection, of cultivation of soil, of rotation of crops and of protection against weeds, plant diseases and insects. Then we have the kitchen garden for women who come for the courses in household science. Then we have about 70 acres of land given up to small fruits, large fruits and vegetables. We carry on experimental research while we grow supplies for the college dining-room.

The horticultural farm covers an area of about 70 acres. Of this 30 acres are orchard, 20 of which are devoted to hardy varieties of apples; the aim being to determine the best way to grow them to develop not only productive but long-lived trees. To determine this a series of cultural experiments are begun this season. Each row running north and south represents a variety, and the orchard is divided into plots taking three rows east and west for a cultural or fertilizing test as the case may be.

The variety apple orchard covers about five acres, four trees of each variety being planted. The pear and plum orchard occupies about three acres. The plums in this orchard are principally those of American origin. Plums of European origin, and also cherries, are planted as fillers in a part of the commercial orchard.

The area devoted to small fruits and grapes covers about five acres, one acre of which is in strawberries, now one year planted, and one and a half acres planted this year. Three-quarters of an acre are in grapes, and the balance in bush and cane fruits. These are being grown on a commercial scale, and experiments to determine the most profitable way of growing them are in progress.

Vegetables of various kinds are also grown. Four acres are devoted to the root crops, such as carrots, turnips, beets and parsnips. One acre to the crops such as melons, cucumbers, squash and pumpkins, and one acre to tomatoes.

Three acres are planted to onions and about half an acre to celery. About 30 acres are in potatoes. The space between the fruit trees is planted principally to this crop, leaving a space of four feet at each side of the trees. Garden peas and beans occupy four acres. Two acres are planted with asparagus. One acre is devoted to a small nursery of ornamental stock for planting on the college grounds. The area under cultivated crop embraces about sixty acres.

The laboratories and greenhouses give the student an opportunity of gaining

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horticultural knowledge in a practical way during the winter months. One greenhouse is devoted entirely to giving the students actual work in the laying out, planting, care and management of trees, small fruits, and vegetables. The other greenhouses are utilized for the development of greenhouse crops, both flowers and vegetables, which are grown along commercial lines; at the same time experiments to determine, if possible, how best to develop these crops for the greatest profit are being conducted.

The horticultural department is under the care of Professor Saxby Blair. His work while horticulturist at the branch experimental farm at Nappan, N.S., was of immense benefit to horticulture in the Maritime Provinces.

MACDONALD COLLEGE TRIPODS.

We are standing at Macdonald College for research work and for illustration work in three of the important matters in agriculture. The use of selected seed on suitably prepared soil; the proper rotation of crops (which is hardly understood and certainly is not practiced in the eastern part of Canada, excepting in parts of Ontario); and the protection of crops against weeds, insects and diseases. Each one of these three might increase the average yield of crops as much as 25 per cent within ten years wherever put into intelligent, careful practice. Our policy at Macdonald College is not merely to have research work along these lines, but to give illustrations along these lines wherever our students go, and we hope by and by to make every graduate of our college a leader to carry out that system of farming on his farm, under college direction. He shall have selected seed (if need be furnished by the college), grown on suitably prepared soil; he shall follow a rotation of crops properly adapted to his locality; and he shall be capable of fighting the weeds, insects and diseases. Such illustrations on his farm will be a beacon light to the whole locality, and thus the lessons will be brought home in an effective way.

In our research work because we have the means and the men we want to make the benefactions of Macdonald College for rural communities extend as widely as possible. We carry on the work of the college in three departments or schools. In connection with the School of Agriculture we have the research and illustration departments of which I have spoken. Then we have Household Science, with research, and instruction for the homes of the people. That branch treats of the three prime necessities of life—food, raiment and housing. It is just as important that the woman should be educated for her sphere of management as the man for his. In the School for Teachers the instruction and training are for teachers preparing for city and rural schools. It is important that the rural school and its teacher should stand in with those two other activities, viz., the occupations and the homes of the parents, and that the children should be thoroughly trained towards ability for, as well as an understanding of, what will be required of them in the fields and in the homes. The three-fold character of the college fits it to train leaders for rural communities.

TENDENCY TOWARDS RURAL LIFE.

We are now at a time in the history of Canada when there is not merely need for a great advance in agriculture, but such a chance for it has never occurred before in the history of the race. Only recently have we come into possession of the intimate knowledge of nature that enables a man to apply his intelligence in its widest ranges to agriculture with satisfaction. Until the close of the last century it had been largely a question of muscular labour and a little bit of intellectual direction, but not very much. Nowadays, through the great advances which have been made in the control of natural forces, there is growing up an intelligent preference for life on land by educated people. That condition again calls for modifications in education in order that

they and their children may be able to utilize the personal experiences of the schools in making the best of their lives and opportunities afterwards. A feeling of restlessness, of change, of chafing under existing conditions is abroad among the people. That is not wholly new, but there is a comparatively new feature in the unrest. Instead of the movement being all city-ward, there is now a tendency, an instinct, an inclination to get back to the land, to stay on the land for the sake of the homes and the families, for the sake of health and security in opportunity of employment and for the advancement of worthy education. To advance the agricultural and industrial education of the people of Canada is the highest privilege as it is one of the important duties of statesmanship. Of all forms of help which a government, representing all the people, may with safety and benefit give to individuals, the best are those which help to develop intelligence, power, ability, skill and co-operation with good-will.

ARE WE GOING UP OR DOWN.

It is a question of serious concern to us all whether there is a distinct deterioration of the English-speaking rural population in progress in the areas of Canada which lie east of the Great Lakes. That would not be a popular question to discuss if one were in public life seeking the suffrages of the people. But then the truth should be told. There is no good reason at least why a Scotchman should not speak it, speak it as he sees it—remembering the sacred admonition ‘speaking the truth in love.’ Eastern Canada could sustain no greater loss than a reduction in its rural population; for an intelligent, prosperous and contented rural population is the greatest asset of any state. Young men have been leaving the rural districts in large numbers every year. I will not say one disparaging word as to the attractions which have drawn them elsewhere, but where the strong, vigorous, enterprising and ambitious young men and women continue to leave for twenty or thirty years the human life of the locality is left greatly weakened. The heaps of skulls from France in Northern Italy and the sprinkling of bleached bones from Napoleon’s army in retreat from the frozen steppes of Russia together left degeneration in France. When Napoleon robbed the land of its best youth and left their bodies in trenches from Egypt to Waterloo, what could be expected but a Sedan and the decadence from which France is now only recovering. The well-born, well-bred and well-educated youth are our best asset. If the education of the schools beguiles them to leave the land in larger numbers than is mete, we should change the education. If the west lures them they should be given correct information about the west—and also sound information, interpreted with insight, about the east. Varied and reliable information regarding the Canada east of Lake Huron should be put systematically and extensively before the people of Great Britain.

It is worth while looking the conditions of rural life in Eastern Canada square in the face and seeing what can be done to make them better. Matters can be mended in two ways: (1) By making the occupation in each locality more attractive and profitable to those engaged in farming. That can be done by the spread of knowledge and the giving of practicable and economical illustrations of application of that knowledge to local conditions. (2) By such an adjustment of schools and of training that the children will be attracted to rural occupations and will be qualified to be successful in them. The best asset we have anywhere is an intelligent, prosperous and contented population, with the children being brought up for life at its best in the locality.

IS WASTE NECESSARY?

There has been much said about the development of the west; we have not yet much evidence of development. We have occupied parts of the west; there is no doubt about that. But the occupation of a country is not the same as the development of

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it through making the most of its resources or its population or its social organizations. I would like to have this committee forward some constructive statesmanship in agriculture which would look towards improving the fertility and cleanness of the fields while the immediate crops gave a satisfying return to the farmers. It is considered by many that the wastefulness of pioneers is in keeping with the prodigality of nature; and that the pioneer has the right to dissipate natural resources if he has thereby improved himself and the prospects for his family. Take an illustration in a large way from the use of coal. During millions of years it was prepared and then stored in the earth—we suppose for human use. And we have been using it with fine prodigality, boasting of the millions of tons we mine every year. Yet we learn from the best authorities that the probabilities are that in 75 years the coal measures of the United States will be pretty well exhausted, except those at lower levels more difficult of access and more costly to obtain. Of course, it seems all right for civilization in the meantime to be using the coal which has given man to a large extent control over metals and the knowledge of and control over electrical energy. Thereby he has acquired ability to use the inexhaustible resources of water-powers and wind-powers—and perhaps by and by he may be able to use sun-power direct. We can now harness the water-powers of the country and generate heat, light and power from them, which man could never have done, so far as we can see, except for the use he had of coal in a large prodigal way during all these experimental years. There is a justification, if you please, for extravagant use of a great natural resource, because of what has resulted from it in gaining control over other still more valuable resources. But when you exhaust the soil, what do you do? You make the people more careless and less competent; you leave them less power and more poverty in every respect. On the other hand, when you preserve and increase the fertility of the soil the people thereby become increasingly efficient and capable. These two go together. It is for us to see that the wealth which we have in the fertility of our soil shall be maintained, and that there shall be continuously improving conditions for the rural population. The soil fertility, already in our brief term of occupation, is so badly depleted that the average crop of wheat in Canada gives just a little more than one-half of the average yield per acre in old England. That is what occupation of this great heritage of ours by wasteful methods has done for us.

A GREAT HERITAGE.

Lest any one might think that I underestimate the west, or that I value lightly the prospects of Canada, which are for the present in a large way bound up with and determined by the progress of the west, let me briefly review the situation. We have in Canada in our natural resources for agriculture two vast areas. We have, coming eastward from the Atlantic, practically a thousand miles where apple trees thrive and where the summer is fragrant with clover blossoms. These indicate natural conditions that make human life and human civilization capable of permanence at their best. I do not know any other two sets of conditions that indicate the suitability of climate and soil for human life at its best, with equal simplicity and aptness, as do apple blossoms and clover.

Then we have a region to the north of Lake Superior which may be full of minerals, with forests and streams suited for great pulp and paper production. That area reaching to James Bay and Hudson Bay has other resources and on its southern edge some good agricultural lands.

Beyond that region, towards the setting sun, we have a thousand miles of prairie lands, with the accumulated fertility for wheat gathered into their surface through thousands of years. There, as elsewhere, agriculture is not the breaking of clods. It is the harnessing of sunshine into crops and products for the profit, service and pleasure of mankind.

Beyond the prairies we have 500 miles of the most magnificent mountain scenery in the world. Great hills pregnant with gold and lead and silver, and some other minerals; and then small valleys in between with wheat and even peaches as products. I have great faith in Canada, but let us have due regard to the relative values of great areas and their possible development. I do not know any part of Canada that has been overpraised as part of the national asset, but what I want to emphasise this morning is that in all of eastern Canada, where the bulk of our people have been living, we have great areas of land which have been neglected and impoverished to their loss and to the nation's loss in a very serious way, and that state of affairs should be amended.

In playing this great national game of developing Canada let us play it square, with our convictions clear and unalterable that we are playing it as honourable trustees for posterity.

PROGRESS IN YIELDS PER ACRE.

There were in 1906 in Canada 611,493 people living on land as occupiers, and the value of the agricultural property in that year was put at \$2,300,000,000. The annual value of all agricultural products, on the average for a few years, is something like \$520,000,000 from the farms of the Dominion. I would not detain you with statistics about that. I want to come to a point that is of more definite interest. Taking the four chief crops, spring wheat, fall wheat, oats and barley, 14,757,118 acres were grown in Canada in 1907. In the province of Ontario I take a period of ten years from 1887 to 1896 for comparison with the ten years from 1897 to 1906. I compare the average yields per acre in those two ten-year periods. In that way you may get a reasonable index of progress or of the opposite. In the province of Ontario, where most work has been done in the diffusion of knowledge regarding agriculture, the increased yield per acre on the average during the latter ten years over the former is quite marked. In fall wheat the increase on the average was at the rate of 13 per cent. The increased yield of oats was 18.9 per cent. The increased yield of barley was 23.4 per cent. The majority of farmers on whose farms the increases have occurred would account for them by saying: 'We use better seed; we are following a sensible rotation, applying manure to the hoed or green crops, and we keep down the weeds as far as we can.' These are the three things that count. Some farmers still remain unmoved by the progress, but the best of them have made so much progress that these are the gains reported on the average for the whole province. If similar rates of improvement were applied to all the wheat, oats and barley crops in the other parts of Canada, the total yield last year would have been 52,000,000 bushels more than was actually harvested. I mean with the same acreage, the same climate and the same markets. Fifty-two million bushels of grain are worth thinking about.

Take the case of potatoes. The crop last year from 503,546 acres was rated at 66,704,595 bushels. Might I illustrate by quoting the results of experiments and experience at some of the twenty-nine school gardens which were established under the Macdonald Rural Schools Fund?

INSTANCES FROM SCHOOL GARDENS.

At most of the gardens two plots, side by side, were planted with potatoes under similar conditions. The treatment of both plots was alike, except in regard to the spraying with Paris green to destroy the potato beetles and with Bordeaux mixture to prevent blight. One plot in each garden was sprayed with the mixture three or five times, as the case might require, whereas the other plot was left unsprayed. In every case the yield of potatoes from the sprayed lot was larger than the other. The following list shows the increased yield resulting from spraying at six gardens: Knowlton,

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Que., 111 per cent; Richmond, Ont., 100 per cent; Carp, Ont., 85 per cent; March, Ont., 81 per cent; Guelph, Ont., 43 per cent; Brome, Que., 41 per cent.

If an increase of 40 per cent could be obtained (that is less than the lowest of the school gardens), think what an immense addition to the value of the crop in Canada that would bring. And such a result, in a very large way, has been revealed at Bowesville in Ontario. In that locality the potato industry has been put on a new footing of profit by the work done at the Macdonald School Garden in that locality. I take the following extract from the report of the principal of that school, not only in regard to the potato crop, but in regard to all ordinary crops on the farms:

'Bowesville, Ont., which is situated six miles south of the Dominion capital, has long been regarded as one of the most progressive sections in the progressive county of Carleton, and it is to the active interest of its people in the welfare of their school that the credit for a large measure of the success of the movement here is due. They have never interfered but to aid. Land sufficient to make a school ground comprising two and one-half acres was purchased and this was enclosed by a neat fence with turned posts and attractive gates.

'The daily attendance at Bowesville school may be placed at approximately fifty children, ages ranging from six to sixteen. The plan of dual ownership of garden plots has been followed here, a senior and junior pupil having joint ownership in a piece of ground (ten feet by twenty feet), working in conjunction and making a just division of the spoils at time of harvest. This plan gets over the difficulty experienced when juniors are shouldered with the entire responsibility of managing a plot, while it does not destroy the sense of ownership which makes proud the juvenile gardener. In laying out and cultivating the garden plots the entire work, with the exception of the ploughing of the ground, was performed by children, and, it may be added, cheerfully performed. Neighbouring farmers brought manure for the garden and ploughed the ground.

'The experimental plots, belonging to the senior class, deserve special notice. Experiments in crop rotation, in the effect of clover growth and in potato spraying, have been carried on and results carefully noted. Bowesville is the centre of the largest potato producing section in eastern Canada, so particular attention was paid to potato spraying experiments. In addition to the class experimental plots mentioned, three of the oldest pupils carried on an independent experiment in spraying. Care was taken that the crop receive neither more nor less attention, other than the spraying, than did the crop in a neighbouring field. Rows of potatoes sprayed with Bordeaux mixture were grown beside rows receiving ordinary attention. When the resulting crops were piled side by side in the tool-house showing an increase equivalent to more than fifty bushels per acre for the sprayed over the unsprayed crops, and also a decided improvement in size and quality, the farmers sat up and did more thinking than would have been the case had they read of the same results in some agricultural publication. It is not so much what these plots teach as it is the trend of thought induced.'

Some of you might find it worth while to spend a few days in investigating the progress at Bowesville for yourselves. The increased yield of potatoes on two plots grown side by side, where potatoes were sprayed properly by the children compared with those left unsprayed, ranged all the way from 111 per cent to 41 per cent. That was not merely in one garden, but taking the range of all the gardens the increase was from 111 to 41 per cent. Forty per cent increase in the yield of potatoes in Canada means over 26,000,000 bushels. Think what that represents! That is not merely reasoning in the abstract, counting all the chickens before they are hatched. I do not think you could spend a few hours more profitably than by driving out and seeing the Bowesville locality. If you talk to the farmers they will tell you that since the establishment of that school garden they have increased the yield on their farms throughout the locality. These farmers have copied the school garden fence around their homes throughout the locality. You can there observe some of the facts from

a definite piece of research illustration work. Men have come all the way from the United States to Bowesville to see the results.

By Mr. Monk:

Q. Are there any school gardens in Quebec?

A. There are some ten in that province now.

By Mr. Telford:

Q. Do you propose to insert directions for the raising of potatoes in your address?

A. You will find those set out in an excellent bulletin by Mr. William T. Macoun, of the Experimental Farm. The point I want to make is this: That while first-rate information has been given in print and spoken of at Farmers' Institute meetings and conventions, there has been an absence of definite systematic effort to find instances of the best things that have been done in agriculture and to give practical illustrations which will cause them to be repeated elsewhere. That is the next step in the organization of agriculture—to make full inquiry and, after patient, thorough investigation as to where and how the best things are being done, to give illustrations of them so that the farmers of other localities may be able to do equally well and may be stimulated to do equally well. I might go on by the hour, I suppose, giving you instances of improvements in the operations on farms and in the management of farms, but that would not be a wise use of your valuable time. I could give you the names of men who have told me that within ten years, since they have put into operation that plan of agricultural management—selected seed on properly prepared soil, a suitable rotation of crops and protection against insects, disease and weeds—they have doubled the quantity of their crops and improved the quality. This within ten years with no greater area of land. What has been done by a few men can be done by every man who will bring to bear on local conditions similar methods of intelligent management.

THE ORGANIZATION OF ILLUSTRATIONS.

There is room and need for improvement in the organization of agriculture as an industry on each farm and also for the organization of agriculture as a national interest. I mean by this that you may have one man in every township using selected seed suited to his locality, following a fine rotation of crops, and possessing knowledge and skill and power to suppress weeds and insects and keep back diseases. That is advantageous so far as it goes. Its influence might be made to go much further. What is being done to make the best methods followed by that good man available to every other man in the township? And not merely to make them available, but to have them presented in such a way that every other man will want to adopt equally good methods in his practice? Farmers' Institutes do a great deal. Lectures are useful, and articles in the press direct attention and encourage study. But the definite object lessons preferably on illustration farms chosen for that purpose, are also needed and would supplement the usefulness of all these other agencies. There ought to be some means of organizing rural life in such a way that fine illustrations of good farming would be effectively brought before all the people. It is of fundamental importance that we should provide this illustrative education in agriculture for those who labour on the land; it is essential for the maintenance of prosperity, of contentment and of progress.

By Mr. Lewis:

Q. Where does the ordinary farmer get his selected seed?

A. He may grow it himself. For some years there has been a Canadian Seed Growers' Association, the members of which select year after year the best heads out

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of their growing crops on a hand-selected seed grain plot. By continuous selection they keep on improving the mother plot. The grain from that goes out as registered seed—like foundation registered live stock.

The experimental farms have done great good in the distribution of improved seed grain and in many other ways, but you know their purpose is largely for experiment and research rather than for illustration. It has always seemed to me that we have not illustrations enough, in addition to the experiments, for the benefit of the man who cannot translate and apply the published results of experiments to his own conditions, but who could copy if he had opportunities of observing in his own locality. What further would I recommend? Not merely a counsel perfection in the abstract. I know of no better body than this committee to seek out by scientific enquiry—an enquiry which shall be thorough, painstaking and careful—the place or places in every province where agriculture—where rural life—is at its best in regard to the production of crops, in regard to the disposal of crops, in regard to the maintenance of soil fertility, in regard to the efficiency of the people in their social relationship and in regard to the contentment of the people with their conditions. There are many places in Canada like that.

It is worth while to bring about an illustration farm, in every way providing satisfying occupation in a rural district at its best. Such a farm would cause its essential features, and the fundamental principles that determine its quality, to be repeated and applied over and over again. Wherever it prevailed would thereby become part of the new earth. It is worth while to try to have an illustration rural home at its very best in all its appointments, in all its activities, and in all its spirit. It is worth while to help bring about one really good rural school, in every way adapted to the needs of the people of the locality. It is worth while to endeavour to have such a school repeated, over and over again, until the whole land is in the way of being transformed by their influence. Where the school, the farm and the home are each at their best, and in numbers at their best in any locality, there you would have an illustration rural community worth studying by all men who are concerned for the weal of their fellows. Where it prevailed would become part of the new heaven, and of the new earth wherein dwelleth righteousness. To have seen such places, to have known of their real merits, would bring to every intelligent toiler for the betterment of conditions and of life fresh confidence, renewed courage and enlarged enthusiasm for education and for rural life. Let me throw a further light on this and then come back to further discussion of it.

INSTANCE FROM DENMARK.

Some twenty-two years ago I paid a brief visit to the little kingdom of Denmark, which had then started on a course of development by improved agriculture. Denmark had become one of the poorest nations in Europe. Two of her richest provinces had been taken by Germany, but the courageous and tenacious Danes were not altogether cast down on that account. Under the leadership of public-spirited citizens they started in to improve the agriculture of the nation as a means of saving it from stagnation. Under the Royal Agricultural Society they selected a number of the best farmers and farms they could find, and arranged to have selected young men spend three months or longer on a number of those farms in turn. These young men, who might be called apprentice students, wrote articles on what they observed, what they did and what they learned. Returning to their own homes they helped to put into practice the best methods they had acquired. In a short time the knowledge of the best farming methods in the kingdom was available to the farmers in every locality. At the same time they carried on a systematic improvement of the education in their rural schools, looking towards training the young people into ability for life at its best in their own locality.

The little kingdom of Denmark sends to England some of the same sort of products as Canada. And Denmark received in 1903 \$8,400,000 *more* than other competing countries would have received in the same markets for an equal quantity of the three products, butter, bacon and eggs. That was the premium obtained by the Danes for superiority of quality and condition. Denmark has had illustration farms and schools for thirty years. The rural population has been educated towards ability, intelligence in regard to rural life, and the public spirit that makes for successful co-operation. That little kingdom receives from England an immensely larger amount for her farm products than any other country for equal quantities. That is the premium for superior education of her rural population. Much of it originates in the rural schools. It leads on to co-operation in many rural activities. Co-operative creameries, co-operative bacon-curing establishments, cow-testing associations, are but instances.

OUTLINE OF SCHEME FOR ILLUSTRATIONS.

I think it is possible in Canada to have similar or greater progress in agriculture. A systematic enquiry conducted under this committee or by a commission would pave the way for the organization of illustrations. These illustration farms would be no more remarkable in fifty years or less than are the public schools of to-day. It is not so long ago since only children who could be sent far from home could obtain a good education. Now the opportunity is close by everybody's door. I think a similar development for the service of the fundamental occupation of the people—agriculture—is coming. In the meantime much would be accomplished by even a few illustration farms in each province. As a bare outline of what might be undertaken I would propose say five illustration farms, each with a specialty as well as with good general agriculture. For an illustration dairy farm I would pick out some young farmer of intelligence and public spirit. His place should be easy of access to visiting farmers. Then if he needed a little financial help to put his farm buildings or herd into good shape that might be arranged. A sum up to \$1,000 might be lent to him for those purposes under an advisory committee. In consideration he would undertake to carry on his farming according to the counsel and plans of the committee and to let visiting farmers observe and learn. For such service \$200 of the loan might be remitted annually. He should also furnish an annual report of progress for publication. If he failed in those respects there would be no cancellation of the loan. Under such skilled advice and supervision as would be furnished, I think it is quite within probability that within five years that young farmer would have doubled his farm revenue, and if the whole \$1,000 were cancelled to him in five years in return for the labour expended in initiating the new system of farming, in showing visitors what he was doing and in preparing reports, it would be money well spent. If his success were seen by many and proclaimed lucidly it would be repeated over and over again; thousands of men would want to do the same thing with their stables and their cows and their products.

Another young farmer might be engaged to give similar illustrations with a specialty of fruit farming; a third man with a poultry farm and pigs; and a fourth with improved farm machinery and the growing of special seed grain. Another farm might particularly illustrate the production of beef and horses. A few thousand dollars expended through the right men in the right places for such illustration work would have a mighty effect upon rural conditions in the whole Dominion. I would do likewise if I could with farm homes and with rural schools. The illustrations would be immensely helpful. But I must not detain the committee with details concerning these; and at any rate they lie rather on the borderland of subjects with which the committee deals.

Except in work for research and for instruction of students, the operations of agriculture can be carried on most economically by those who follow it for what they

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can make out of it. But these men can be helped by expert counsel and supervision, and if need be a little money, to give fine illustrations of what may be done when the counsel of highly-trained experts, the knowledge of local conditions, and unselfish energy with economy are united in the effort to render definite public service. With illustrations of the occupation at its best, of the rural home at its best, and the rural school at its best for the children, we should be in a fair way to make real progress worthy of our heritage and of our obligations. If I have said a single word about any part of Canada which might be interpreted as unsympathetic, it was not meant in that spirit, but was rather the prosaic expression of the warning of Goldsmith's lines:—

'Ill fares the land to hastening ills a prey,
Where wealth accumulates and men decay.'

Because I have looked into the homes, the schools and the farms of Canada, and watched the incoming crowds from the steamers, I go back with renewed zest to labour for the improvement of conditions for rural life in Canada.

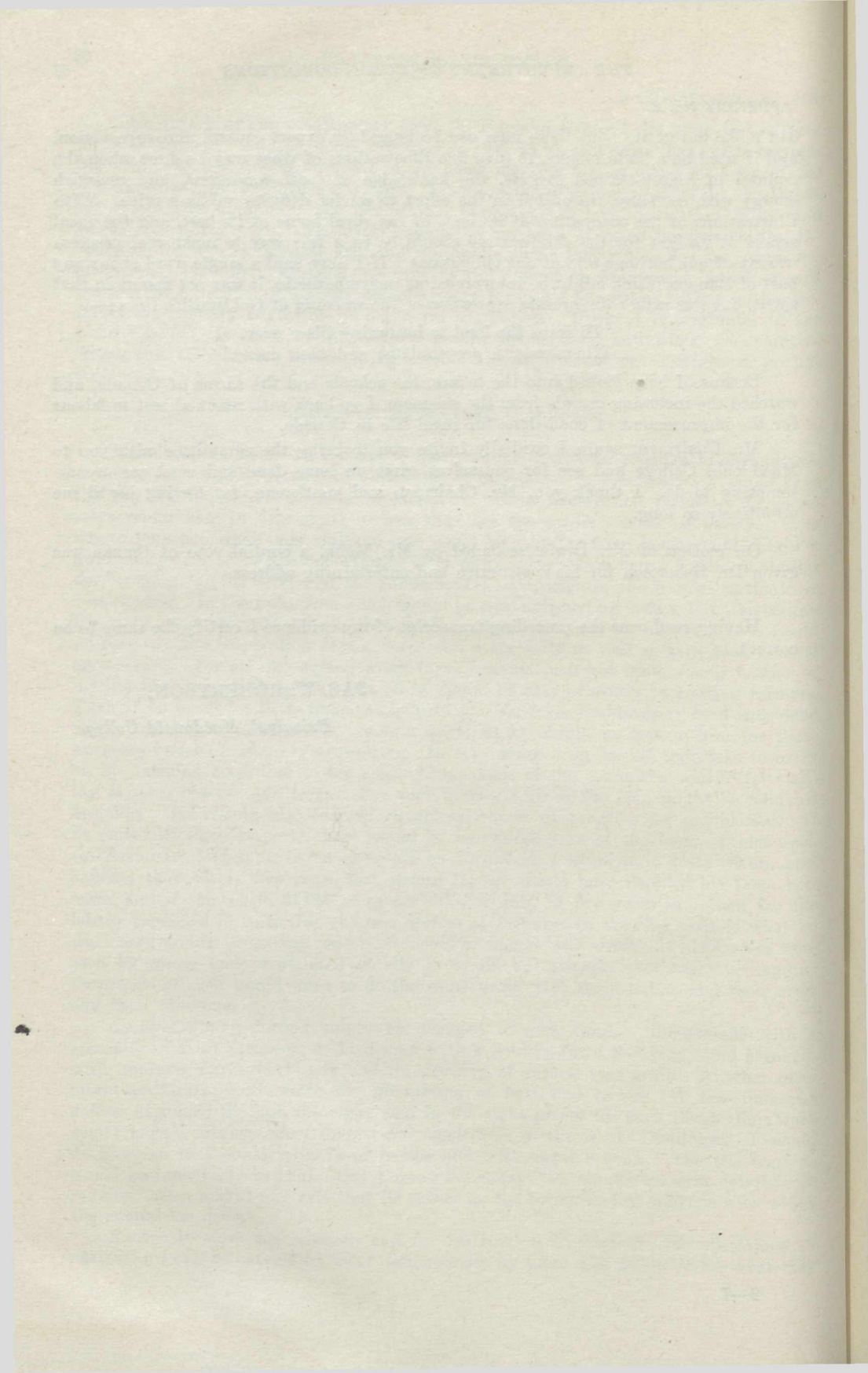
Mr. Chairman, again I cordially invite you to bring the committee with you to Macdonald College and see for yourselves what we have done and what we are attempting to do. I thank you, Mr. Chairman and gentleman, for having heard me attentively so long.

On motion of Mr. Lewis, seconded by Mr. Monk, a cordial vote of thanks was given Dr. Robertson for his instructive and entertaining address.

Having read over the preceding transcript of my evidence I certify the same to be correct.

JAS. W. ROBERTSON,

Principal, Macdonald College.



DEVELOPMENT OF THE DAIRY INDUSTRY IN CANADA.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

WEDNESDAY, July 8, 1908.

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

The CHAIRMAN.—I have much pleasure in informing the committee that Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, has come to-day to address us, as you will observe by the notices for this meeting, upon the subject of the 'Present Conditions of the Dairy Industry in Canada.'

Mr. J. A. RUDDICK.—Mr. Chairman and Gentlemen of the Committee, I am pleased to have this opportunity of putting before you a few facts concerning the dairying industry. It has been suggested to me that on this occasion I might confine my evidence to the present status of the dairy industry in Canada. In previous years I have covered the ground pretty well in regard to the work carried on by the branch of the Department of Agriculture, of which I have the honour to be the chief officer.

GROWTH OF CO-OPERATIVE DAIRYING IN CANADA.

First of all, I would draw the attention of the committee to the extent of the growth of the factory system of dairying in this country. If you will look at this map (indicating map on the wall), which has been published with the report of the Dairy and Cold Storage Commissioner for 1907, you will observe that it is nearly covered in some places with red, green and blue dots. The red dots represent creameries, the blue cheese factories and the location of the combined factories is shown by green dots.

Beginning in the east we find a number of factories in Prince Edward Island, a few in Nova Scotia and more again in New Brunswick.

Passing into the province of Quebec, the factories are very numerous in the St. Lawrence valley and in the Eastern Townships. I would also draw your attention to the large number of cheese factories in the Lake St. John region. It will be observed also that there are a large number of creameries in the province of Quebec, especially in the Eastern Townships and on the north shore of the St. Lawrence immediately below Montreal. Many of the factories in Quebec are also combined factories, making both cheese and butter as circumstances seem to warrant.

Passing westward into Ontario, the eastern portion is occupied almost entirely by cheese factories. There are a few combined factories and only a few creameries.

Factory dairying has not developed much in the counties immediately around Toronto, but in southwestern Ontario, the home of the cheese factory, we find a large number of the largest factories in Canada. The northwestern counties of old Ontario, including Lambton, Grey and Bruce, constitute the principal butter-making district of Ontario, although the creameries are located in all the counties throughout the western peninsula.

The factory system has been well established in Manitoba, where there are a number of successful cheese factories and creameries.

The farmers in the province of Saskatchewan have not yet shown much inclination to take up dairy work, but northern Alberta is fast becoming one of the important dairying districts of Canada, and there are now over 50 creameries in that part of the province.

In British Columbia there are a number of well organized creameries doing a good business. As a matter of fact the creameries in British Columbia average as large as those in any other part of the country.

The total number of cheese factories and creameries in Canada, by provinces, is as follows :—

CHEESE FACTORIES AND CREAMERIES IN CANADA, 1907.

Province.	Cheese Factories.	Combined Cheese and Butter Factories.	Creameries.	Skimming Stations.	Total.
Ontario	1,096	86	102	.....	1,284
Quebec	1,392	736	627	51	2,806
Prince Edward Island	23	16	8	.....	47
Nova Scotia	7	.....	10	.....	17
New Brunswick	33	.....	35	.....	68
Manitoba	36	.....	21	.....	57
Saskatchewan	1	.....	6	.....	7
Alberta	8	.....	45	.....	53
British Columbia .....	.....	.....	16	.....	16
	2,506	838	870	51	4,355

The first cheese factory, as some of you know, was started in 1864 in Mr. Schell's constituency (South Oxford). There was another one started in Hastings county in 1866, and it is claimed that the first cheese factory in the Brockville district was started about the same time. The factory system grew rapidly from the first in western and central Ontario. A cheese factory was started in Missisquoi county, Quebec, also in 1864, but the growth of the industry was very slow until after the year 1880, when the factory system spread rapidly over the settled portions of the whole province.

THE FACTORY SYSTEM DOES NOT INDICATE GROWTH OF THE INDUSTRY.

It has been the practice to estimate the progress of the dairy industry partly on the factory end of the business and partly on the export trade in butter and cheese. While the growth of the population was small and the home consumption therefore about the same one year with another, the export figures indicated with fair accuracy the increased production from year to year, but during recent years the large annual increase in population, and the increased purchasing power of the people, have added so much to the home consumption that the former basis of calculation no longer serves to indicate the progress of the industry. As a matter of fact, the exports of butter and cheese from Canada have declined in recent years, the maximum having been reached in 1903. It has been thought by some that because of this decrease in the export trade that the industry, as a whole, was declining. I wish, however, to point out to the committee to-day that this conclusion is not justified. In order to make this point clear I desire to submit the following figures:—

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EXPORTS YEARS ENDING JUNE 30, 1903, AND MARCH 31, 1908.

	Lbs.	Value.
Cheese, 1903..	229,099,925	\$24,712,943
“ 1908..	189,987,365	22,887,237
Butter, 1903..	34,128,944	6,954,618
“ 1908..	4,858,276	1,068,703
Condensed milk, 1903..	3,083,810	242,539
“ 1908..	472,824	43,874
Total values of all products, 1903..		\$31,910,154
“ “ 1908..		23,999,814
Decrease..		\$ 7,910,340

It is true that these figures show that there has been a decline in five years in the value of the dairy products exported of \$7,910,340, but against that decline the industry may be credited with an increased consumption as follows:

Increased consumption of:

Milk..	\$4,500,000
Butter (20 lbs. per head)..	4,000,000
Cheese..	200,000
Condensed milk..	300,000
	<hr/>
	\$9,000,000

The above estimates of consumption are based on increased population only.

By Mr. Schell (Oxford):

Q. This calculation is based entirely on the increased population?

A. Yes, and does not take into account the increased purchasing power of the people generally, which, if the amount were known, would I feel certain be surprisingly large.

Q. I think that would amount to at least 100 per cent, that is the increased purchasing power and the tendency to use more.

A. And the tendency to use more butter because it is of better quality, is an important factor.

By Mr. McColl:

Q. Perhaps with regard to butter that is not exactly correct. When a butter factory is established in a neighbourhood the farmers' wives who formerly made butter and brought it into the local market themselves, send their cream to the creamery, and then you get a record of it, but you would not have a record of the amount manufactured under ordinary circumstances?

A. These figures that I have given you are export figures only and there is a small amount of dairy butter included.

By Mr. Brown:

Q. In regard to the gathering of cream, do you think it is ahead of the old system?

A. I do not think it is ahead of the separator system, but there are many districts in Canada where it is the only practical system. It has been adopted and it is

successful in these districts. But where the separator system is practicable, my advice is to stick to that system.

By Mr. McColl:

Q. I have a butter factory recently established in my riding where they separate the milk on the farms, each farmer has a separator, and the reason they adopted that system is that they are enabled in that way to keep the separated milk at home and use it while it is fresh; it appears that if it is sent to the factory and separated there, if it stands for some time, it becomes deteriorated and it is not fit for the raising of calves?

A. Through the courtesy of Mr. Blue, the chief of the Census and Statistical Branch, I am able to give the committee some new figures relating to dairy production. The Census Branch has just completed a return of the dairy industry in Canada for 1907, and in order to make a comparison the figures of the census of 1900, and also the figures of the census of manufactures which was taken in 1905 are given. The figures furnished by the Census Branch, as I have just stated, are as follows:—

Creamery butter and cheese, value of	\$29,462,402	\$32,402,265	\$34,546,701
Condensed milk, value of	269,520	855,409	910,842
Totals	\$29,731,922	\$33,257,674	\$35,457,543
Increase in seven years		\$5,725,621	
Increase in last two years		2,199,869	

This table does not include milk for direct consumption, nor does it include dairy butter, the value of which amounts to about \$22,000,000. Therefore, I do not think there is any doubt that the dairy production has increased since 1900, to the extent at least of \$10,000,000 or \$12,000,000, which is very considerably more than the decline in the exports. Calculate it any way you like and you will find that the production is still increasing.

I have noticed references in the press deploring the decline in the export trade, on the assumption that the country is losing on that account. I do not take that view of it at all, it seems to me that there is quite as much money and just as good profit in supplying the Canadian public with dairy produce as there is in supplying the people of any other country. Take the experience of the United States. At one time they exported a great deal more butter and cheese than we did, although their maximum never was as high as ours. At the present time, their export trade is almost nil, yet we find that they are continuing to increase their production very largely. The increase in the total value of the dairy products of the United States between 1900 and 1905 was 28 per cent; the total value in 1900 was \$130,783,349, and in 1905 the total value was \$168,182,789. One of the marked increases is in the growth of the condensed milk production; the total value of the condensed milk produced in the United States in 1905 was \$20,149,282, showing an increase in five years of 69.5 per cent. That leads me to say a word or two about the condensed milk industry in this country. I think it is likely to be a very much more important factor in our dairy trade than it has been in the past. It has been so small in the past that we have not paid very much attention to it, and we have not taken it into account in any calculation with regard to our dairying industry.

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CONDENSED MILK.

By Mr. Smith (Oxford):

Q. Will you indicate what condensed milk is and how it is made?

A. There are two kinds made in Canada, 'sweetened' and 'unsweetened.' In making the sweetened article, 400 lbs. of milk is condensed by evaporation to 100 lbs. and 75 lbs. of sugar is added, so that out of the 400 lbs. of milk you have 175 lbs. of sweetened condensed milk. The unsweetened milk is simply condensed to about the same proportion, perhaps a little thicker, because the sugar adds considerably to the consistency of the sweetened milk. They also make a condensed coffee, condensed cocoa and other drinks. In 1900 there were only four establishments in Canada turning out \$269,000 worth of condensed milk. This industry has gradually increased and in 1908 there are nine or ten condensed milk factories in operation, and one powdered milk factory. It is stated that they will make considerably over \$1,000,000 worth of condensed milk this year.

By Mr. Schell (Oxford):

Q. There is a factory in Ingersoll which is taking in 10,000 gallons of milk worth \$1,000 per day.

A. The Aylmer establishment reports that they will turn out \$400,000 worth this year.

The growth of the condensed milk industry is shown by these figures:

Condensed Milk.

	1900.	1905.	1907.	1908.
Establishments.....	4	5	7	9
Value of products.....	\$269,520	\$855,409	\$910,842	Over 1 million.

Imports and Exports of Condensed Milk.

	1900.	1905.	1908.
	\$	\$	\$
Imports.....	254,176	11,955	268
Exports.....	Nil.	268,899	43,874
Consumed in Canada.....	523,696	598,465	866,700

These figures give us an excellent idea of the development of this industry. In 1900 there was consumed in Canada condensed milk to the value of \$523,696 and in 1905 the consumption had increased to \$598,465, but in the year ending the 31st March, 1908, the consumption had increased to \$866,700, which shows how our home consumption is increasing. If we had the actual figures of the home consumption, and the production of milk and milk products on farms in Canada, we would find

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that the total volume of the trade is very much larger than most of us suppose it to be. I am pleased to say that the Census Bureau has undertaken to collect complete statistics of the question. I have made an estimate of the total value of the entire annual production of milk and milk products in Canada and I put it about like this:

ESTIMATED TOTAL VALUE OF THE ANNUAL PRODUCTION OF MILK AND MILK PRODUCTS
IN CANADA.

Creamery butter and cheese..	\$36,000,000
Dairy butter..	22,000,000
Condensed milk..	1,000,000
Milk for direct consumption..	35,000,000
	\$94,000,000

By Mr. Maclaren:

Q. What do you value the milk at? For direct consumption?

A. At twenty cents a gallon.

Q. Will it go at that all over the country?

A. I think it will, winter and summer. Of course it is very difficult to arrive at the total consumption of milk in Canada; I have tried two or three different ways of getting at it. In the first place we will take it on the basis of the consumption per head, and I have figured that the average consumption of milk would be about a half a pint per head per day. I find that in the city of London, England, with a population almost equal to the population of Canada, the total consumption of milk is 112,000,000 gallons per year. They have the figures of all the milk brought into the city each day.

Q. What is the average figure of production per cow?

A. It has been figured at about 3,000 lbs., but I think it is slightly above that. Our records would show that it is.

By Mr. McColl:

Q. You say that you have taken the milk at 20 cents per gallon, that will be the average price to the consumer, not to the producer.

A. To the producer.

Q. To the farmer?

A. I think it will average that. Of course it does not average that if the milk is sold at the factory, but for milk used for direct consumption will. A great many of the producers sell it direct to the consumer, and others sell it to the dealers in the city, and I think that is a pretty fair price. In some parts of the country consumers are paying much higher prices.

By Mr. Maclaren:

Q. A cow is a pretty good machine to have according to those figures at the present time?

A. The cow is all right.

I have some other figures which I have taken from the recent census:

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VALUE OF THE CREAMERY BUTTER AND CHEESE PRODUCED IN CERTAIN COUNTIES IN 1907.

County.	Number of Factories.	Value of Creamery Butter and Cheese produced.	Area of County in acres.	Production of Creamery Butter and Cheese per acre.
<i>Ontario.</i>		\$		\$ cts.
Oxford.....	50	1,461,333	489,300	2 98
Hastings.....	91	1,266,421	1,486,700	0 85
Leeds.....	90	1,262,598	576,000	2 19
Dundas.....	70	1,034,798	245,200	4 22
Russell.....	74	590,159	260,600	2 26
Prescott.....	69	546,809	316,350	1 72
<i>Quebec.</i>				
Beauce.....	164	750,362	1,210,266	0 62
Shefford.....	52	653,374	363,008	1 79

Thus we find there are four counties in Ontario which produce over a million dollars worth of creamery butter and cheese in a year. At the top of the list is the county of Oxford which produced \$1,461,333 worth of butter and cheese, mainly cheese, last year. I think it is a record for that county and a record for any county in Canada. In one important respect Dundas county leads them all, and that is in the high production per acre. I have given the whole area of the county in each case. Oxford and Dundas are pretty good counties with very little, if any, waste land. The county of Hastings, on the other hand, has a good deal of waste land and water surfaces and there is a considerable area in the north in which there are no factories. The yield for that county is only 85 cents per acre. The county of Dundas, which is probably the greatest district in Canada for the production of milk, produced cheese and creamery butter to the value of \$4.22 per acre. The county of Russell produced only \$2.26 per acre. Then in the province of Quebec the county of Shefford, one of the best counties, produced \$1.79 per acre. There is also a large amount of waste land in Shefford.

By Mr. Maclaren (Perth):

Q. What about the milk in that county, are they converting it into butter and cheese or sending it into the city?

A. They are making both butter and cheese, more butter than cheese. That is what they are doing this year. Last year they probably produced more cheese than butter.

Q. Are there any condensed milk factories in that part of the province?

A. Not in Shefford. There are two condensed milk factories in the province of Quebec, one in Huntingdon and one in L'Assomption.

Q. How do you find these condensed milk factories affecting the cheese and butter factories in the different parts of the Dominion?

A. The condensed milk factories pay more money for milk than cheese factories can do and they are taking the milk away from where they are established.

Q. They are closing up the cheese and butter factories?

A. Yes, to some extent.

Q. When farmers have the opportunity of selling to condensed milk factories it increases the value of the milk?

A. It does, but it is only in a very small proportion of the whole.

Q. That helps to put Oxford county at the head of the list?

A. I think it would be there even if all the milk were made into cheese.

COW TESTING ASSOCIATIONS.

I have not very much more time and I want to refer briefly to one phase of the work which my branch of the department is carrying on at the present time. I quoted some figures to show you the difference in production in different parts of the country. I might go further than that and quote the records of the Cow Testing Associations and show that there is a tremendous difference in the yield per cow in different sections of Canada. We are getting some of the very best records from the county of Oxford, where one of these associations is organized. We are trying to carry this information to the farmers in other parts of the country, where they are not producing as much as they should, in order to show them how they can improve the profits from dairying by giving more attention to improving their herds. We have during the last four or five years been organizing the dairy farmers into associations for the purpose of weighing and testing the yields of the individual cows in their herds and I think we have been fairly successful in this work. I will not trouble you with any details of the work this morning but simply give you an idea of how far it has been organized. There are this year in operation 82 associations located as follows: In Ontario 31, Quebec 31, New Brunswick 10, Prince Edward Island 2, British Columbia 7, Nova Scotia 1. We have not done anything in the three prairie provinces because the local governments there are doing that work. We have, however, been giving them some assistance.

Q. How many are there altogether?

A. Eighty-two. The total number of cows tested in June was 7,817. We find that besides the members of these associations, a very large number of individual farmers throughout the country have taken this matter up on their own account, and I feel confident that in a very short time it will have a very profound effect upon the production of milk in this country.

EXPERIMENTS IN CARING FOR MILK.

There is another way in which we hope to increase the profits from milk production, in connection with the cheese factories, by getting more accurate and definite information as to how milk should be handled at the farms to produce the most cheese of the best quality. Therefore, I have arranged with the owners of a cheese factory at Smith's Falls to have members of my staff carry on there an extensive series of experiments in the handling of milk on the farm; handling the milk as it is very often, too often, done, and then handling it by proper methods in order to determine the difference in the quality and the increased amount of cheese made from the milk when properly handled. I think this information, which will be available for distribution among the farmers, will be of very great benefit indeed. I must say that there has been in the past a good deal of guesswork in advising the dairymen as to how milk should be taken care of. It is only within the last few years that science has been brought to bear on the question through the study of bacteriology. Before that no rule prevailed, it was simply rule of thumb methods that were followed and there was no accurate information concerning it.

MARKETS FOR DAIRY PRODUCE.

I would like to say a word about the markets for Canadian dairy produce. Great Britain will always be our principal market. We have a very good market for a comparatively small quantity in the West Indies. Our friends in the Maritime

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Provinces have taken advantage of that market and are supplying it with a good article. They practically control the trade in many of the islands and adjacent countries. There is another opening for a small quantity of butter in the Orient, and the Western Provinces are sending some butter to that market. But Great Britain is bound to be the principal market, and as it is the best in the world there is no reason why we should not devote our chief attention to meeting the demand there.

SHIPMENT OF GREEN CHEESE.

Q. You are supplying that market with green cheese. Why not stop that practice?

A. I think we have succeeded in checking that practice this season.

Q. Is there no arrangement whereby the government can interfere so as to compel people not to ship their cheese from factories under a certain age, or has any action been taken in the matter? I think it is a most serious question. Some of us have spent our lives in trying to improve the quality and raise the reputation of Canadian cheese, and when success has been attained careless people endanger that reputation and ruin the market by sending over the product in a green state. I think something should be done to stop it?

A. I quite agree with Mr. Maclaren that something should be done. I do not see very well how it can be made a matter of direct legislation. It is impossible for anyone to say just how long cheese should remain in the factory.

Q. Certainly cheese should remain more than one day in the factory.

A. Some cheese cure much more rapidly than others, depending on the temperature and the way the cheese is made. Certain cheese would be more ready to ship in 10 days than others would be in 3 weeks. I think the matter might be controlled if a law were enacted to compel the cheesemaker to put the day and the month of manufacture on the cheese.

Q. We have that law now have we not?

A. It is only permissible, it is not compulsory. It is against the law to make any misrepresentations as to the date of manufacture but there is nothing to compel the dating of all cheese. If all cheese and the packages were dated, then the man who receives them on the other side of the Atlantic would know what was the matter with them if they were too new. If such a law were enacted it would make a good deal of difficulty in the trade for a year or two, but I believe in the end it would work out well and would put a stop to the practice of shipping the cheese in too green a condition. The dating of cheese has been urged on other grounds with which I have not been in sympathy, but this question puts a new face on the matter. I might say that this year there has not been nearly as much fault to find with green cheese shipments as there has been in the last two years. The milk producers themselves, the patrons of factories, are beginning to see it is in their interest to look after these things. They are beginning to see that they will be the losers in the end if anything is done to injure the market. I have referred at length to this question in all my recent reports and have taken every possible means of warning the producers against a continuance of the practice. I beg to submit a copy of the last circular issued in relation to this question.

(Circular.)

‘DEPARTMENT OF AGRICULTURE.

‘BRANCH OF THE DAIRY AND COLD STORAGE COMMISSIONER.

‘THE SHIPPING OF GREEN CHEESE.

‘To whom it may concern:

‘The writer has lost no opportunity during the past two years of calling attention to the danger of injuring the Canadian cheese trade by the practice of

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shipping the cheese in a green condition. The question is treated at some length in my last annual report, where I was able to quote the opinions of leading merchants in Great Britain, all opposed to the practice.

'I am now able to quote from communications on the subject recently addressed to the Honourable Mr. Fisher, Minister of Agriculture, by The Home and Foreign Produce Exchange of London, England, and The Bristol Provision Trade Association, in words which would indicate that harm has already been done to the cheese trade by this "penny wise, pound foolish" practice.

'The first-mentioned association writes in part as follows:

"LONDON, May 2nd, 1908.

"Importers of Canadian cheese into London met in conference to consider what steps should be taken to bring into prominence the damage which is being occasioned to the reputation of Canadian cheese owing to the persistent practice on the part of Factorymen of sending out their makes before the goods have had time to mature, and I have been instructed to lay the matter before you in the hope that prompt and efficient steps may be taken to effect a remedy.

It is unquestionable that there is an increasing tendency for makers to get quit of their cheese as quickly as possible. In a great many instances goods are moved out much too soon, in some cases even within two or three days of manufacture. The result has been that the natural process of maturing has been arrested and such cheese arrive here insipid in flavour and in a condition which reflects anything but credit upon the product. In addition to this, the excessive moisture militates severely against the sale. In no circumstances should cheese be allowed to leave the Factory until ten days after manufacture. That is the minimum of time which should elapse before the goods are moved, and unless stringent measures are adopted to prevent the Factorymen sending their cheese out earlier, the position of the Canadian article on the London market will become depreciated."

'The foregoing is from a body of merchants who handle nearly one-half of the cheese exported from Canada.

'The Bristol Provision Trade Association's letter contains the following sentence:

"This means the forcing into consumption of immature, or in other words, inferior cheese, resulting in widespread dissatisfaction. Needless to say, the tendency of this is to bring Canadian cheese into disfavour, and if persisted in, it is bound greatly to curtail consumption."

'It would seem to be unnecessary to add anything to these statements made by those who are in the best position to speak with authority on the question.

'I would only say that while I was in Great Britain last fall, I found plenty of evidence to prove that the trade has already been injured by the unbusiness-like policy of shipping the cheese before they are fit to eat. Whenever this question is brought up among dairymen, there seems to be an inclination to put the blame on the buyer and let it go at that. The buyers are certainly responsible for encouraging the movement of green cheese, but the dairymen who have been the losers, and who will be the losers again, should not allow their business to be injured in this way.

J. A. RUDDICK,

Dairy and Cold Storage Commissioner.

Ottawa, Ont., May 19, 1908.'

Now to return to the question of markets. I notice there is very often a tendency to discuss a great many things in connection with the marketing of cheese and butter, but the more experience I have of this question and the more information I

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get regarding it, the more I am convinced that there is only one thing that is of any real importance. The channels of trade are well organized, there is no difficulty about the shipping of produce, the transportation facilities are excellent, and all the machinery for the export and for trading in dairy products is well organized between this country and Great Britain—splendidly organized. There is only one thing that producers need give special attention to and that is to make an article of superior quality. If they do that, there will be no trouble about selling at the highest market value at all times. People worry themselves about whether we shall have cheese boards or farmers' exchanges, or whether we shall have inspection here or inspection there; it does not amount to anything at all compared with what I have mentioned.

Q. What is the good of making the quality of the highest possible grade when people are shipping cheese that is only a day old?

A. That is being stopped.

Now, as I have only about ten minutes more, I would like to tell the committee something about the International Dairy Congress which was held at the Hague last September and which I attended as representative of this country.

THE THIRD INTERNATIONAL DAIRY CONGRESS.

I have prepared for my annual report, which is now in the press, a full account of this meeting containing all the resolutions which were given effect to by the various sections.

Q. When will that report be out?

A. I do not know. It is now in the hands of the King's Printer. I might say that this was a very interesting meeting. Some 26 different countries were represented by official delegates, and there were voluntary delegates from societies and different interests making up a total of about 600. The official language was French, but discussions were carried on in English, Dutch, German and French. To give you an idea of the international character of the meeting let me tell you that at the Congress banquet there were 22 nationalities represented and the chairman spoke in 7 languages. The most interesting and useful feature of the Congress to me was to meet so many men from different parts of the world engaged in the same line of work as myself. I think that is the chief value of these gatherings. The actual proceedings are often unimportant, and I noticed in this case that the resolutions, before they were finally passed, were generally amended to meet the different views until there was not very much in them. The discussions were rather of a cut and dried character as far as the programme was concerned; but the meeting together of delegates, the discussions in the hotels, and the excursions taken with different people from all over the civilized world—these things were all very interesting and very valuable. The committee in charge organized a large number of excursions covering nearly the whole of Holland. Of course, in view of the small extent of country, that is not a very big undertaking, but we spent some most interesting days visiting the different dairying districts. Dairying is the national industry of Holland and although the country is only about as big as that part of Ontario lying west and south of a line drawn from Southampton to Toronto, they export just about as much dairy produce as we do and feed over five millions at home, nearly as large a population as our own. They exported in 1906, \$27,042,432 worth of butter and cheese. Of course, the Dutch people do not eat as much butter as we do, because they consume a large quantity of margarine, the manufacture of which is a big industry in that country. We visited some of the large farms and the creamery districts. I would like to have every owner of a cheese factory and creamery in Canada see some of the buildings in that country. I saw buildings in Friesland that cost \$50,000, creamery buildings erected by the farmers themselves. They organize co-operative associations and

borrow the money to pay for those buildings and then repay the loan at the rate of about one-fiftieth every year until fully repaid. They have no share capital but become each and severally responsible for the loan and repay it out of the profits of the creamery.

By Mr. McIntyre (Perth):

Q. I suppose the cleanliness was very noticeable?

A. Decidedly so. I visited farms where the cows are kept in one room of the house, animals and family all under one roof. That is in the winter time, of course, in the summer time they are out on pasture. The room which was set aside for the cows was right alongside of the kitchen and the kitchen door opened into it. In the summer time then they make cheese, they use the stable as a cheese curing room, and make the cheese in a little room next to the kitchen. The stable is finished with glazed earthenware and was as clean as it could possibly be. There were lace curtains on the windows and everything was as neat as you could possibly imagine. Those are the old Dutch farms. I saw one modern stable near Amsterdam in which there were 200 cows kept to supply milk for that city. For cleanliness, convenience and appearance, I have never seen anything better than this stable. The cows were of Dutch breed similar to the Holsteins, but rather coarser. The Hollanders say that the black and white cows in America are Dutch and not Holstein. The Holsteins come from that part of Germany which adjoins the mainland of Denmark. I saw the record at one creamery where 1,150 cows averaged over 8,000 lbs. of milk a year. Of course, they have marvellous pastures in that low-lying country where the water line is only about 2 feet below the surface.

Q. Are the cattle limited to certain parts of the pasture or do they wander over the whole field?

A. In Holland the cattle wander over the whole field. In some parts of Europe they are tethered, particularly in Denmark where they have no fences, but in Holland the ditches and canals take the place of fences. The country is divided into small plots in that way.

By Mr. Telford:

Q. Is any part of the country irrigated?

A. There is none of it that you would call irrigated. There are large districts known as polders, which are really below the level of the sea. These areas have been reclaimed by the erection of great dykes which keep back the sea. These wonderful Dutchmen are now at work reclaiming the Zuider Zee in this manner. These low-lying districts are drained only by means of a system of pumps, which keep the water down to a certain level—about two feet below the surface. You will understand, therefore, that drought is unknown. I do not think there is very much in the methods or practices of any of these countries which can be blindly copied in Canada, but there are many things we can learn from the Dutch farmers. The wonderful economies which they practice in many ways would be a very good object lesson to some of our Canadian farmers. I do not mean the economy of doing without things, but rather the economy of utilizing waste spaces and materials. Their labour conditions are quite different, and that must always be taken into account. Labour is very cheap there and the women do a great deal of work on the farm, so that we cannot apply their methods to our conditions in this country. I might say for the information of the committee, because I think you take some interest in immigration matters, that there is a desire on the part of many Dutch farmers to come to this country. I found a good deal of interest was being taken in Canada. Whenever I was introduced as the representative of Canada I could see that people became interested at once. I had a letter from a friend of mine in Holland the other day

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asking me if I thought he would be justified in accepting a commission from the Dutch government to come over here and look into Northwest lands, as there were a large number of their farmers—men possessed of money who could not buy land in Holland because there is no land available—and who would like to come to Canada. I don't think we could do better than encourage these Dutch farmers to come here.

Mr. MACLAREN (Perth).—There is lots of room in Ontario and Quebec for dairy farmers.

Mr. RUDDICK.—I do not know that I have anything more to say unless members of the committee would like to ask questions.

Mr. MACLAREN (Perth).—There is a gentleman here from New Zealand. In that country they are producing a lot of cheese. Are they going to swamp us?

Mr. RUDDICK.—I do not think so. A good deal has been said about the supply of cheese on the British market from New Zealand last winter and certainly the percentage increase is very considerable. I think it amounts to about 70 per cent over their previous year's record. That amounts to only 160,000 boxes of cheese, but the shrinkage in butter more than makes up for the extra shipments of cheese. The tendency now is to go back to butter. Many factories have found they made a mistake in establishing cheese plants and making cheese last year and they are going back again to butter because it now gives relatively a better price. I do not think it is likely there will be very much of a permanent increase in the exports of cheese from New Zealand. There is no doubt it did have some influence on the market last year, and I think it cost some of the big holders in London considerable money to buy up the New Zealand cheese on the market in order to keep up the price.

Having read over the preceding transcript of my evidence, I certify the same to be correct.

J. A. RUDDICK,
Dairy and Cold Storage Commissioner.

The first part of the report is devoted to a general description of the country and its resources. It is followed by a detailed account of the various industries and occupations of the people. The author then discusses the state of agriculture and the progress of commerce. The report concludes with a summary of the principal facts and a list of the names of the persons who have been instrumental in the progress of the country.

APPENDIX

This appendix contains a list of the names of the persons who have been instrumental in the progress of the country. It is arranged in alphabetical order and includes the names of the principal officers and members of the various societies and associations. It also contains a list of the names of the persons who have been instrumental in the progress of the country.

SOWING AND REAPING.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

WEDNESDAY, February 19, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock, a.m., Mr. McKenzie, chairman, presiding.

The CHAIRMAN.—I am pleased to announce to the committee to-day that Mr. G. H. Clark, Seed Commissioner, is present and will address us upon 'The vitality of wheat, oats and barley in Manitoba, Saskatchewan and Alberta in relation to the crops of the year 1907.' This, I think, will prove a very interesting subject. Mr. Clark is doing very good work in his branch, and I have no doubt that his address will prove both interesting and instructive. I was particularly struck with Mr. Clark's investigations when I visited his department last week, and I think it would be an excellent idea for as many members of the committee as possible to call at his branch in the Canadian Building on Slater street and see the nature of the work that he is carrying on. I do not know of anything more important in connection with agriculture than the testing and improvement of seeds and seed grain. I would like to say a word or two upon another matter. My attention has been drawn by readers of our reports to the fact that the interjection of questions while a speaker is addressing the committee destroys the continuity of his narrative and draws the speaker into channels somewhat foreign to the subject with which he is immediately dealing. Now, I would ask the members of the committee to confine their questions to matters having a direct bearing upon the subject under discussion, and to put their questions at such a time that the sequence or form of the narrative shall not be impaired. The reports of our meetings will then read more intelligently and appropriately. I know that I need only draw your attention to the matter and the desired end will be reached.

THE WHEAT CROP OF 1907 IN WESTERN CANADA.

Mr. CLARK.—Mr. Chairman, Hon. Mr. Fisher, and gentlemen. It always gives me pleasure to respond to a summons to address this committee. It is a matter of some regret to me this morning that I have to bring to your notice a slight misfortune that has happened to a comparatively few of our people in the Canadian west. I say a comparatively few. I have estimated that the number of farmers who have suffered hardship west of Lake Superior and east of the Rocky mountains would not exceed 12 per cent of the population, and of that 12 per cent only those who are carrying their proverbial eggs in the one grain basket. You may remember that a few years ago Professor Robertson did considerable towards establishing creameries in that western country. I have heard many unfavourable comments concerning those creameries in grain districts, but I venture to say that those farmers who are located within a radius of 20 miles from those creameries and who have maintained their dairy herds will this year have no cause for regret on account of their establishment. It seems to me that the weal of the people of the west will ultimately depend largely on their tendency towards diversified or mixed farming, although grain growing will doubtless predominate.

By Mr. Schaffner:

Q. I would like to ask what you mean by that 12 per cent?

A. Taking the total number of farmers between Winnipeg and the Rocky mountains, I am quite sure that the number who have suffered hardship this year will not exceed 12 per cent.

Q. Do you mean from frost?

A. From frost, from unfavourable climatic conditions.

NARROW-MINDED CONCEPTIONS.

By Mr. Jackson (Selkirk):

Q. You say between Winnipeg and the Rocky mountains. Ought not the 100 miles east of Winnipeg be considered as well?

A. I should say between Port Arthur and the Rocky mountains. I want to mention this fact in particular because you are all aware that when a few farmers have suffered on account of the frost or from any other cause, we hear a great deal about their difficulties. That has been the case this year. We have heard this year much more from that 12 per cent of farmers than we have heard from the remaining 88 per cent who have been favoured with really satisfactory crops. Many of that 88 per cent have had perhaps more profitable crops than at any other time during the last five years. During a recent trip from Minneapolis to Chicago I was forced to listen to the conversation among a number of American business men who claimed to know all about our Canadian conditions, and they were all agreed that the whole of our grain crop in the west was injured by frost and that the great problem which confronted the governing bodies of Canada was how to feed the people and carry them over to the next year. I did not make any remark, but I thought of the adage 'what fools these people be.' I have found, as a rule, that the citizens of the United States have a very limited and narrow idea of the conditions in Canada; and I want to assert here before this committee, that it is my judgment, having travelled many times over the west of Canada in all conditions of climate, that a season of general misfortune in the west, even in such an unfavourable season as we have had during the past year, is not possible—at least it is highly improbable. I would consider that there is no more danger of a general crop failure between Port Arthur and the Rocky mountains in our Canadian west, than there would be between the Missouri river and the Rocky mountains in the United States or in the north of Europe. In the north of Europe the hardships experienced by the farmers this past year are if anything greater than they have been in our Canadian west even in some of the districts which suffered most.

THE GRAIN CROP OF GREAT BRITAIN, IN 1907.

I had an opportunity a few days ago to read a letter bearing a November date which was written by the wife of one of my good brother Scotchmen in Scotland in which she said, writing on a Sunday evening, that she had been to the kirk in the morning, the preacher had opened the service with a short prayer, and he then told the congregation to go home and get in their grain. He himself proceeded to his own farm and got in his grain,—a very sensible man in my opinion. The writer of the letter went on to say that the grain was scarcely worth the trouble of bringing it in, because it was almost spoiled with the wet. On the ground that misery likes company, it would be well for our farmers in the west who have suffered somewhat on account of the frost in certain areas this year to reflect on the condition of the farmers in Europe who have suffered even greater hardships, through continued wet.

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It was on the 11th September that I received a communication from my district assistant located at Calgary. I have three district assistants, one in Winnipeg for the province of Manitoba, one in Regina for the province of Saskatchewan, and one in Calgary for the province of Alberta, who devote all their time to their respective districts. I received a communication from my officer at Calgary stating that they had had a slight frost about the 21st August, a heavy frost in some districts on the 31st August and a heavier frost again in September. While much of the crop on the light land and in the districts where they had not too much rainfall promised well, he intimated to me that it would be necessary this year to investigate and find out exactly where the farmers would be at in regard to their seed supply for the spring of 1908. I was then authorized to issue orders to each of my assistants to spend five weeks in travelling through their respective districts, to secure samples of some of the best grain and some of the grain that had been injured, and forward it to Ottawa for vitality tests. We have received up to the present time more than 4,800 samples. We had tested up to the 1st January nearly 2,000 samples, which were reported on in bulletin form. Of this bulletin we have distributed 60,000 copies to the farmers in all parts of the west. For this purpose we availed ourselves of the census schedules, taking in the farmers in the districts where the frosted grain was most prevalent.

By Mr. Broder:

Q. The conditions in the west, I suppose, were largely due to the backward spring?

A. The spring was exceptionally backward this year. Not since 1888, I think, has there been a season during which the climatic conditions approached those which prevailed in the west this past year. The spring was late, the summer was cool and cloudy and there was too much precipitation of rain in some districts and that kept the grain green and growing. Then the early frosts which came earlier and were more severe than usual did the rest. The northeast part of the province of Manitoba (pointing to the map), is of comparatively low altitude, and we have found in the Dauphin district oats of this year's growth on light soils that will germinate 99 per cent and others on heavier soils that will not germinate more than 10 or 15 per cent. A line from somewhere near Dauphin, coming down to about the middle of Marquette, and then into Saskatchewan, near Moosomin, and extending south of the main line of the Canadian Pacific Railway, and across at about Arcola in an irregular line to about 50 miles from what is called the semi-arid belt, thence northwest to include the heavy clayey land about Regina would roughly include the greater part of the area that suffered from autumn frosts.

SEEDING THE SOIL.

North of Calgary in Alberta the conditions in respect to frost are variable. Around Clover Bar in central Alberta there are some very good seed oats this year.

What we undertook to do was to make it clear this year to the farmers of those western provinces the necessity of having their seed grain tested as to vitality, so that they could better estimate the quantity of seed that should be sown, having regard to its percentage of vitality. I am inclined to believe that it would be wise for the farmers in the west who have clean farms to use their own frosted seed oats, if they will produce as high as fifty per cent of strong growth, and sow them at the rate of four bushels per acre. At the best it is very difficult to get seed that is absolutely free from noxious weed seeds. By seeding at the rate of four or five bushels per acre of oats or barley that will germinate 50 per cent or better, unless the spring season be very cold and backward, should give a satisfactory crop.

By Mr. Blain:

Q. Would five bushels per acre be sufficient, do you think?

A. Yes, of oats or barley that will give 50 per cent strong growth under greenhouse conditions and during the first six days.

By Mr. Wilson (Lennox):

Q. To make a really good showing how much do you require per acre of sound seed?

A. Two bushels.

Hon. Mr. FISHER.—That is of oats.

By Mr. Wilson (Lennox):

Q. And of wheat, how much do you require?

A. About a bushel and a half of good Red Fife wheat would be sufficient. I based my estimate of the shortage in seed supply on the actual areas as provided to me by the Census Commissioner. His figures were based on the actual census areas for 1901 and 1906, and these were increased in geometrical ratio to 1908. I took the Census Commissioner's figures and by a calculation and estimate worked out, as well as I could, those areas within the belts in which the grain would not come up to a 50 per cent vitality in the case of oats, and a 60 per cent vitality with reasonably plump seed, in the case of wheat. Those figures were used in calculating the amount of seed supply that would be needed in the northwest this year.

By Hon. Mr. Derbyshire:

Q. Of the 12 per cent that failed, how much later than usual was the seeding done?

A. At least a month.

By Mr. McIntyre (Strathcona):

Q. Was it not the conditions that prevailed after seeding?

A. The conditions after seeding had more to do with the late maturity than the date of seeding.

Q. The seed ought to be sown earlier?

A. Fairly early. Oats should not be sown until at least after the middle of April. Oats that are sown in the middle of May will ripen within a few days of oats sown about the middle of April, because rapid growth does not commence until about the first of June.

By Mr. Crawford:

Q. Is that not the case with all kinds of grain?

A. Yes, but not in all climates.

By Hon. Mr. Perley:

Q. The seed that is sown early ripens first?

A. Yes, but there is not as much difference in the ripening as there may be in the time of sowing. You can sow wheat in March, say, and again in May, but they would not be a month apart in dates of ripening.

By Mr. Schaffner:

Q. Are you referring to wheat now?

A. Wheat, oats and barley.

Q. It is more important to get the wheat in early than the oats?

A. It is important, but I do not believe that it is advisable to sow wheat much before the 1st April. I would say 7th April. It should be sown as soon as possible after that date. I do not think it is advisable to sow oats until after the middle of April, say the 20th April for the western provinces.

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Q. There were a lot of oats in the west sown in June last year?

A. Probably.

By Mr. Owen:

Q. Tell us the percentage of wheat, oats and barley which was injured by the frosting of the crops?

A. There were different degrees of injury. I estimate the area that was injured so badly that it will not be fit for seed, as not more than 10 per cent. There are between ten and eleven million bushels of seed wheat required each year for the provinces of Manitoba, Saskatchewan and Alberta.

Q. According to your statement then there should be a sufficient quantity of grain in the northwest at the present time?

A. They have in the west all of the wheat they want for seed. All the wheat that is being asked for, I think, is 1,300,000 bushels, and that is estimated for use at the rate of two bushels per acre.

By Mr. Wilson (Lennox):

Q. You say that the farmers in the west have now enough seed?

A. They have enough of wheat, but not of oats.

Mr. WILSON (Lennox).—That is news to me.

By Mr. Owens:

Q. Cannot the people purchase all the wheat they require for seed up there?

A. I would not like to be too positive upon that point. Let me say that although the process of buying at the present time is pretty well advanced, it would be well in the interest of the farmers of the west not to make too detailed a statement regarding the supplies of seed grain.

By Hon. Mr. Perley:

Q. How much is he paying for wheat now?

A. I do not know.

By Mr. Lake:

Q. When you speak of the northwest, do you refer from the country westward, or the country westward from Winnipeg?

A. I refer to the country between Port Arthur and the Rocky mountains. The one chief risk in sowing seed oats that are slightly frosted, is the weather conditions that may occur during the first three weeks after seeding. If the weather conditions be favourable for rapid growth during that period, there should not be so much risk in sowing oats that will germinate more than 50 per cent and which are not slow to germinate. The rapidity of germination, or what technically is called the vital energy of the seed, is influenced a great deal by the weather conditions which prevail during the first month after seeding. I have brought to-day some oats in process of test in soil to show you. These are of about fourteen days' growth. They will enable you to see a difference between weak growth and strong growth. These are 100 plants of relatively strong growth. Here is a lot that gave only about 30 per cent of strong growth. You can see a large proportion of weak plants in the latter sample. Even in the poorest samples we usually find some good grain and some that is inferior. Here, however, is another lot of uniformly weak spindly plants.

By Mr. Owen:

Q. Where do you grow those?

A. We grew those in the seed laboratory under greenhouse conditions.

Q. At what temperature?

A. Between 64 and 68 degrees.

Q. They are not as healthy to look at as if they were grown in the open air?

A. No, the colour is not quite so good. But under greenhouse conditions we get more rapid growth than would be obtained under field conditions, because we have better moisture and we have control over the heat.

By Mr. Broder:

Q. It is more uniform?

A. Yes. This (showing specimens) is an illustration of the relative vital energy of the seed. The one shows about 98 per cent of germination in six days. From 100 grains of the other only three came up in six days. The latter, if sown under field conditions, considering the average moisture in the soil and the climate in the west, could not be counted on to give a very good crop. If the soil is sufficiently moist and the weather is warm and continues warm for three weeks after seeding, there is not so much risk in sowing seed grain of comparatively weak growth; but with frosty weather and a dry soil the sowing of these weak oats or shrunken wheat, although the wheat will germinate fairly high, would be disastrous from the point of view of the satisfactory crop.

I would like to speak for a few minutes on the principles of making germination tests.

SUPPLEMENTING SEED SUPPLY FOR 1908.

By Mr. Owen:

Q. I understood you to say there was plenty of wheat in the northwest for seeding this year, plenty of good wheat that will germinate after having been sown?

A. Yes.

Q. Of oats what percentage is short? About how many bushels will need to be purchased elsewhere?

A. The provinces have said that they must have seed grain that is free from noxious weeds. Mr. Castle, as I understand it, who is doing the buying, must adhere to the conditions named by the provinces who are to pay for that seed. To get the total quantity of seed oats which they may need and of the quality that they desire, which is important, they may have to get perhaps two-thirds of the quantity outside of the provinces of Manitoba, Saskatchewan and Alberta. If the provinces should modify—

By Hon. Mr. Perley:

Q. Do they require any seed in Manitoba?

A. They will need seed oats in northern Manitoba. To get the quantity of seed oats required from western sources it would be necessary that the provinces should modify their conditions in respect of wild oats in the seed oats. You will understand that at the present quite a large quantity of the oats have gone forward and have been mixed with commercial lots in the elevators at Fort William. I think it would be advisable not to discuss the matter at the present time. Of course, I will answer any question which this committee may approve of, but I do not want to interfere with Mr. Castle's operations.

By Mr. Wilson (Lennox):

Q. I understood that Manitoba was not covered by this arrangement?

A. Manitoba, as I understand, is looking after her own seed grain provincially. That is to say, the provincial authorities are carrying out the work.

APPENDIX No. 2

Q. And we have nothing to do with that?

A. In looking up supplies of seed I may say in a general way that there is a question of the advisability of bringing seed grain from the coast climates of other countries. This year there may be considerable really high-class seed go into the west from England and from Prince Edward Island.

Those oats under western conditions will not do quite so well the first year. They will not be up to their normal condition even in the second year, but in the third year they will do quite as well in the west as they do in their native country, and the farmers in the west can count upon having good results for the next twenty years as the result of importation. The difficulty with oats, wheat and barley in the west has been that year after year, the grain is cut a little on the green side. That tends to a natural deterioration in the stamina and productiveness of the plant. The grain that will be taken into the west this year will be of exceptionally good quality, having for generations back reached its full maturity before being harvested. Although for the first year or two, as I said, it may not give quite as satisfactory a crop as it did in the climate from which it came, after three years it will give and continue to give excellent results in the west.

By Mr. Martin (Wellington):

Q. Does the seed taken up from Ontario do as well as the seed you speak of?

A. Not as well the first year as does the home grown seed, but there is not so great a difference between Ontario importations and importations from coast climates.

By Mr. Blain:

Q. Are we to understand that the oats in England are of a higher standard than those in Canada?

A. They are thoroughly matured oats, and perhaps plumper than the western grown oats. Perhaps on account of their more careful system of farming in Great Britain their oats are purer as to variety and, I think, better than our own.

By Hon. Mr. Derbyshire:

Q. Do they weigh much more?

A. Yes, per measured bushel.

Q. How much do they weigh per measured bushel?

A. Forty to fifty pounds.

There are usually many grains of oats in frosted samples in which the germ in the kernel is not dead, but it is unable to make use of the plant food in the kernel. The enzymes of the kernel act as a digestive fluid upon the nutritive qualities in the kernel itself when the germ starts into life. The germ has to depend during the first four or five days upon the nutriment in the kernel for its sustenance. Now, in these frosted oats in which the germ is still alive the enzymes are partially destroyed. When planted in good soil the germ of frosted oats can draw some slight nutrition from the vegetable mould, and on that account may grow a little faster in the soil under greenhouse conditions than under the regular methods of germinating seeds. We have the authority of Noble, Hartz and many others who have given much time to the study of processes of seed germination, when we say that to give the farmer an accurate measure of the value of seed to him in respect to its vitality the test is better made in the standard seed germinator. Report should be made of the proportion of grain that will germinate in four, five or six days and at the end of ten days.

The soil tests of frosted grain, if conducted under greenhouse conditions, is in part a measure of the extent to which a particular soil is able to feed a germ that has lost the ability to feed itself naturally. We can see what this soil will do to feed

frosted germs of oats that are not able to feed themselves, but I cannot undertake to say whether these oats that will germinate and give satisfactory growth in this soil will germinate and grow equally fast under the soil conditions that the farmers have in the west. On account of these conditions I desire to urge upon all the farmers in the west the necessity of testing their own oats and barley in their own soil at their own homes and under their own observation. If the farmers could come to our office they would see their seed growing in boxes, such as I have here to-day, and they would get more information as to its condition than they would get from the usual germinator tests. We use the standard seed germinators because they give a more accurate measure to the farmer of the vitality and strength of growth of the seed than the soil test, and the returns from the germinators are more quickly obtained at much less cost for labour.

From our investigation into the condition of the seed supply for the western provinces I would say that looking to the future crop of 1908, although there are small areas for which the governments have undertaken to procure supplies of seed for the farmers, I have no hesitation in saying that the condition of the seed supply in the west to-day, with what will be added, will not detract in the slightest from the prospects of a good crop.

By Mr. Broder:

Q. You would not advise sowing any doubtful seed?

A. I strongly advise no farmer to sow any oats or barley this year, no matter whether he be in southern Manitoba or in the northern part of Saskatchewan, without himself, in his own home, testing the grain in the soil, for the purpose of determining its vitality.

By Mr. Schaffner:

Q. It is not likely when the farmer sows a bushel and a half of wheat, which is the proportion they sow in the west as a rule—it is not likely that it will all germinate. But taking that quantity of the ordinary seed sown every year, what percentage of that would germinate?

A. Under field conditions I would think that what would germinate 100 per cent in four days in the seed laboratory, will perhaps give 85 plants in the western soil.

Q. Then if 85 per cent of the wheat will germinate, that will be all right?

A. That is taking high-class seed, No. 1 Northern.

Q. Would 85 per cent germinate?

A. Yes.

Q. Then as to oats, you say that if the percentage was 50 per cent it would be better to sow four bushels to the acre?

A. Yes. Sow four or five or even six bushels of seed that will give fifty, forty or even thirty per cent of relatively strong growth when tested in their own soil.

By Hon. Mr. Perley:

Q. That would be on account of the cost. If he sows four bushels to the acre, which he may get at 25 to 30 cents, it is better than by sowing two bushels which will cost him more?

A. Not so much on account of the cost as on account of the difficulty of procuring pure seeds. To get seed which is clean—that is what is wanted—I doubt very much if it will be possible to get all the supply that is asked for.

By Mr. Blain:

Q. Is your department taking any special pains to communicate the information to the farmers in the northwest as to making these special home tests?

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A. Yes, we have issued 60,000 copies of this bulletin. I brought up two packages of them this morning.

Q. I understand that, but has the department taken a list of farmers throughout the west and mailed a copy to every one?

A. We took the census schedules and mailed the bulletin to the farmers whose names appeared thereon.

Q. It seems to me that it would be money well expended for the government to send fifty or sixty men out to the west to give special instructions to the farmers on that point. The idea of making such tests will not suggest itself to the average farmer, I think?

A. We have held this year in the province of Alberta 34 special meetings on seed, in the province of Saskatchewan 36 special seed fairs, and in the province of Manitoba the Seed Branch assisted with eleven. The provincial department of Manitoba has also had a number of seed grain exhibitions in that province.

By Mr. Broder:

Q. Were those exhibitions well attended?

A. Yes, and they were better attended this year than usual on account of the existing conditions.

By Mr. Blain:

Q. Then I think we may conclude that the information is pretty well disseminated among the farmers in the northwest as to these suggested home tests?

A. I feel quite sure that it is. We have done everything that we possibly could to have that information well disseminated because of the danger of the farmers sowing without testing. If the farmers will test their seed and ascertain what proportion of it will germinate and sow it accordingly, they will do much to eliminate the possibility of crop failure.

Q. Have the farmers in the west heretofore adopted any such policy?

A. They have had repeated partial failures of crop in Alberta and Saskatchewan on account perhaps of there being no seed laboratory from which they could be advised, no special organization in the west looking after seed grain and prompting them to do this work. This special investigation was started, as I said a few minutes ago, by my assistants in Alberta, Saskatchewan and Manitoba, commencing after the first frosts occurred, and they have been working at it continuously ever since.

Q. Just this year?

A. This last year. Of course, we had no seed laboratory until 1902.

By Mr. Jackson (Selkirk):

Q. Has the department been doing any testing at suitable points in the west?

A. We have quite a large seed laboratory at Calgary which was established last year. I have had also to establish a temporary staff at Winnipeg, not to test for the farmers in general, but for Mr. Castle who is buying at Winnipeg.

By Mr. McIntyre (Strathcona):

Q. We have had seed fairs for some years?

A. It is four years since seed fairs were started. They have been very useful as well as educational to the farmers, a special marked day for seed grain. The field competitions in seed grain have also had an exceedingly wholesome influence.

By Mr. Jackson (Selkirk):

Q. What arrangements did your agents adopt to get samples of grain?

A. The first trips of inspection from their district headquarters was made about the middle of September. At that time the harvest was not very well advanced, but they collected some samples of grain and forwarded them to the seed laboratory. They also issued letters to secretaries of agricultural societies and men who had been attending any of the seed fairs in previous years, asking them to forward samples of their grain to the laboratory for testing.

Q. I notice you have not been getting any samples from northeastern Manitoba, say about Selkirk?

A. We have had quite a large number from Selkirk since the 1st January.

Q. Your bulletin does not show that?

A. Up to the 20th or 25th December we had no samples from Selkirk. The usual letters had been sent in to the electoral district of Selkirk, but no response had come from it. I presume, like some of the other constituencies in southern Manitoba

By Mr. Schaffner:

Q. There are practically none from southwestern Manitoba?

A. I suppose the farmers there considered the grain was not severely frosted and immediate action was not necessary.

By Mr. Jackson (Selkirk):

Q. There was not frost at all in our district?

A. I would not like to say there was no frost at all.

Q. There has been none whatever that we have heard of?

A. I think in the constituency of Selkirk they have not suffered materially.

By Mr. Christie:

Q. Have you made any tests of the grain grown in the province of Ontario?

A. This year?

Q. Yes?

A. Not very many for vitality. I don't think the grain needs it.

Q. I think the oat crop in a great many parts of Ontario has been a failure for the last few years?

A. A failure in yield?

Q. A failure in yield and in weight?

A. They were about 83,000,000 bushels short of the average yield in the province of Ontario last year. On that account the price of oats and barley in the province is high. I think the percentage of vitality of the grain in Ontario is satisfactory.

Q. I think the crop has been a failure for two or three years in some parts?

A. On account of the climatic conditions.

By Mr. Crawford:

Q. Were your samples well cleaned?

A. The samples sent are tested in the condition in which the farmers send them.

Q. The farmer would not possibly clean them, but it might raise the standard if the samples were thoroughly cleaned?

A. We report to him that the standard of vitality would be raised by a thorough cleaning.

Q. That would apply more to oats?

A. It applies more to oats.

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

GEO. H. CLARK,
Seed Commissioner.

EXPLORATIONS IN THE VICINITY OF THE SASKATCHEWAN RIVER.

HOUSE OF COMMONS,
COMMITTEE ROOM No. 34,

February 26, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock, a.m., the Chairman, Mr. McKenzie, presiding.

The CHAIRMAN.—The business before us to-day is to hear an address from Mr. W. McInnes, Geologist, Geological Survey of Canada, upon his explorations of the region lying south of the Saskatchewan river, and drained by the Carrot and Pasquia rivers; also of the district northwest of Lake Winnipeg and east of the province of Saskatchewan.

Mr. McINNES.—Mr. Chairman and gentlemen: The district explored by me last summer about which I have to say something this morning, is the area lying to the south of the Saskatchewan, between that river and the Canadian Northern Railway Company's Prince Albert branch; and more particularly the region lying immediately to the south of the Saskatchewan and drained by the Carrot and the Pasquia rivers. This great region may be divided for convenience, perhaps, into two areas, the lower area, lying at a height of 900 feet above the sea, consisting of a broad undrained plain, and a higher area from 1,000 to 1,200 feet above the sea, which contains excellent land for the purpose of general agriculture.

By Mr. Lewis:

Q. What is the distance between the railway and the river?

A. The area is a triangular one. At Prince Albert the distance is nothing, but it is about eighty miles when you get down to the mouth of the Carrot river, which joins the Saskatchewan at the Pas Mission, a little over 100 miles from the mouth of the river at Lake Winnipeg. This great plain that I spoke of extends from the base of the Pasquia hills, easterly, and northeasterly and north to a considerable distance beyond the Saskatchewan. It is underlaid by Silurian limestone, with a gentle dip southwesterly, the limestone overlaid in turn by an irregular formation of boulder clay which comes to the surface in places, but is generally covered by more recent lacustrine deposits consisting of clays that have been laid down on an ancient lake bottom. The higher area that I spoke of is underlaid by cretaceous sediments and really belongs to the great plains. Over these cretaceous sediments is the same irregular formation of boulder clay, and over that again the same deposits of lacustrine clays with the addition of a vegetable humus—a deep black surface soil, two feet and upwards in thickness, exactly the same as that which provides the agricultural soil of the plains generally. The boulder clay extends to the very summit of the Pasquia hills. The overlying clays, which really furnish the soil of the plains, are not found on the very summit of the Pasquia hills. They are laid down at just as high an elevation further west, but as a matter of fact it is only the boulder clay that is seen on the very summit of the Pasquia hills at their eastern end.

By Mr. Lewis:

Q. What is boulder clay?

A. It is supposed to be the ground moraine of the glacier. That is, it is the material carried along by the great glacier, made up of detritus abraded from the

underlying rocks and boulders, picked up as it was traversing the country, and laid down in a mass without any stratification or regular arrangement, the boulders lying at various angles and not in layers, as we find the lake deposits or deposits laid down under water.

Q. Is that clay mixed with boulders?

A. What I have described as the boulder clay is, but that is not the surface clay of the region.

By Mr. McIntyre (Strathcona):

Q. Then for agricultural purposes the vegetable humus that overlies the hills is not generally stony, the surface is easily cultivateable all over?

A. Yes. I might say that the extreme northeastern portion of the Pasquia hills have an elevation of about 2,100 feet. The plain at the base of them is only about 900 feet high. The hills rise first by a gradual slope for perhaps 300 feet above the low land; and then by a very steep slope, often with scarped faces. Some of these faces are of boulder clay and some of the cretaceous shales, very often quite steep and precipitous. These deposits are very readily eroded by the streams running down from the hills which cut deep gulches in them, producing a country of steep valleys and uneven surface. The northeastern side is consequently very much cut up and would afford very little land that could be easily cultivated. I mean that it is cut up into saw-shaped edges. As you go further west the slopes become more gradual and the hills merge gradually into the great plains, the elevation of the two becoming approximately the same. The elevation where the Canadian Northern railway crosses the summit is about 1,600 feet. The railway crosses the summit by very moderate gradients, merely climbing over a broad, low hill or swell in the surface.

Q. Is there any timber on these hills?

A. Yes, very good timber.

By Mr. Jackson (Selkirk):

Q. What is the elevation at Prince Albert?

A. I think it is in the vicinity of 1,400 feet.

Q. So you go down from the swell to Prince Albert?

A. Yes. The summit is about Peesane Sta., 100 miles east of Prince Albert, and then it is a rolling country from there to Prince Albert.

Q. And where is the Saskatchewan river just there?

A. The Saskatchewan at Prince Albert is just close to the railway and at the height of land spoken of it is 40 miles to the north.

Q. Is the Saskatchewan navigable at high water?

A. It is navigable clear away to Prince Albert, with the exception of the rapids known as Grand Rapids, near the mouth of the river.

By Mr. Sinclair:

Q. Could you go by water to Edmonton?

A. Yes, at high water. Last summer I went down in the Hudson Bay boat from Prince Albert. This is the way I reached the country.

By Mr. Jackson (Selkirk):

Q. The pilots of that country require to learn the conditions every year, owing to the existence of sand banks?

A. To a certain extent. There are a number of shifting sand banks, but that does not apply when the water is moderately high. A person can then travel with ordinary freedom down the river. Very often in July the water is very high and not infrequently it remains at a good height practically all summer.

APPENDIX No. 2

By Mr. Lewis:

Q. Would you say the country is well wooded?

A. Perhaps I might describe my route last summer. Upon entering this country I came down the Saskatchewan by a Hudson Bay Company's steamer from Prince Albert and was brought to the mouth of the Sipanok channel with my canoes, a distance of, approximately about 140 or 150 miles. We put our canoes in the water at the mouth of the Sipanok channel. The Sipanok channel is a very curious feature of the topography of that region. It is a winding channel 60 miles long which flows from the Saskatchewan to the Carrot river. At low water there is no overflow from the Saskatchewan, but at high water there is a very considerable river, quite large enough for good sized scows by which some of the fur companies take in their supplies.

Q. How far is that from the Pas?

A. By the Saskatchewan it is a little over 100 miles, and by the Carrot river about 60 miles.

Q. There is no land there fit for agricultural purposes?

A. No. I was going to say that this higher bench, which represents the eastern edge of the cretaceous sediments, crosses the Carrot river about ten miles above what is known as the Pas mountain, Indian reserve, or just at the foot of the first heavy rapid on the Carrot river, and crosses the Saskatchewan river at Birch island. Above that, this whole country is very excellent agricultural land. Below it is not an agricultural country because of the imperfect drainage. Standing on the top of the Pas mountains and looking north, northeast, and east, one sees a vast plain extending for thirty or forty miles in each direction, absolutely flat, and made up almost entirely of hay marsh with very numerous large and smaller lakes, and diversified by occasional small groves of willow and aspen.

By Mr. Jackson (Selkirk):

Q. Point out on the map where that plain is?

A. It covers all the country here extending from the base of the hills, north-westerly, northerly and northeasterly to the low hills beyond the Saskatchewan river (indicating on the map.) Standing here on the edge of the escarpment and looking out in the indicated directions, the first high land is that away beyond the Saskatchewan here, and that is not very high.

Q. That is near the eastern boundary of Saskatchewan?

A. Yes, from the eastern boundary westward for about 50 miles and eastward for over a hundred.

Q. How is the territory that you have just described drained?

A. It is only drained by the Saskatchewan river and its tributaries.

Q. Could any system of drainage be adopted there which would recover that land?

A. I was going to suggest—it is a very important matter and one which I think is very well worth serious consideration—whether it would not be possible by dealing with the rapids at the mouth of the Saskatchewan river and lowering its level, to give adequate drainage. There is a fall of about 100 feet. Lake Winnipeg is about 100 feet lower than the Saskatchewan above the rapids. The main rapid which occurs three or four miles from the mouth is only about three miles long. Almost the entire fall occurs in that distance. If it were possible to accomplish this drainage, an area of 5,000 square miles or more—which would mean over three million acres—could be rendered fit for cultivation. This I anticipate would have a soil quite similar to the vegetable humus which covers the plains. It is now being deposited in exactly the same way that we think the surface soil of the plains was accumulated.

By Mr. Staples:

Q. What is the depth of water in the river above the rapids?

A. Just above the rapids? I don't know. I was not there. I came up by Lake Winnipegosis and did not pass that part of the country. The river generally is comparatively deep, that is 30 feet, with shoals here and there. It is a very rapid flowing river.

Q. That territory in the province of Saskatchewan is it?

A. The eastern boundary of that province runs through it. Part of it lies north of the boundary of Manitoba in the unapportioned district which still lies in the Northwest Territories.

Q. What portion of this territory would be in the Northwest Territories?

A. About one-half of it. This is the boundary line (indicating on the map). This part of the area would be in Saskatchewan and this part in Manitoba.

By Mr. Ratz:

Q. Is the bottom of the river at the rapids rock?

A. Yes: It is a hard magnesium limestone, a dolomite. It is very possible and not at all improbable, I think, that there may be a pre-glacial outlet where the river originally ran and which is now filled up with drift. The Grand Rapids of the Saskatchewan now are cut through a gorge in this limestone formation, like the Niagara gorge on a small scale; and in very many of these cases we find that where a river has worn its way through a rocky gorge of that sort it is because its old channel has been filled up at the close of the glacial period by accumulations of glacial drift, sands and clays, and it had to seek a new channel. The old channel if it could be found, and if there is one in this case, would probably be low enough to allow the proper drainage.

Q. My idea was that if the water was deep enough above the rapids it would be a small thing to blast out the rapids, but if there is a rock bottom all the way along it would be a different matter?

A. That has not been entirely ascertained. We know there are two points where rocks do occur. There are two points between Cedar Lake and the Grand Rapids where there are smaller rapids also over limestone.

By Mr. Jackson (Selkirk):

Q. Then your idea would be that just between the boundary of the Northwest Territories and Saskatchewan there may be an old channel which has been filled up where the Saskatchewan takes a bend to the south?

A. At that point? No, I do not think that is the place, because I was through that country and I did not see any place where there would have been a channel.

Q. There seems to be a natural water-course to the north just on the boundary line?

A. It is very much higher country when you get in there.

By Mr. Lewis:

Q. Point out on the map where you think there might be a possible channel?

A. I thought it possible that there might be a channel running into Lake Winnipeg. It is not very far from the present channel, probably running from Moose Lake out to the shore of Lake Winnipeg, or northeasterly by the Minago river to the Nelson. But that is a country that I have never been over. It did not come into my area of exploration at all last summer, and I have never seen it.

By Mr. Jackson (Selkirk):

Q. Have you been down the Nelson river?

A. Yes.

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Q. As far as Cross lake?

A. Yes, as far as Split lake, 140 miles beyond Cross lake.

By Mr. Zimmerman:

Q. The Saskatchewan actually empties into Cedar lake and through Cedar lake into Lake Winnipeg. Cedar lake is really an expansion of the river?

A. Yes, but a very wide one, as much as 20 miles in width, and having an area quite justifying its being termed a lake.

By Mr. Sinclair:

Q. You said the same process was going on in that region which had made the plains fertile. What do you say is the process?

A. I imagine that the process is by the accumulation of all sorts of marsh growth—of marsh grasses and all sorts of vegetable matter; the growth being luxuriant, the accumulation is comparatively rapid and it is protected from destruction by fire by the wet nature of the country. This decayed vegetable matter is mixed to a certain extent, very probably, with fine silt and fine clays, deposited by flood waters.

By Mr. Zimmerman:

Q. That is what has formed the banks in the Saskatchewan, has it not?

A. Yes, and I might speak of that. I did not realize until I examined the conditions there rather closely, why it is that the immediate banks of these rivers are built up so much higher than the low-lying lands behind. I found by practical experience last summer that during high water when the Carrot river, for instance, was in flood, and carrying down an immense amount of sediment, that the clear water in the back country which ordinarily flows out into the Carrot river is backed up and fills all that flat country; that really the turbid water which is capable of dropping sediment only extends back from the bank of the river for three or four chains. Here it meets the back or clear water and prevents its running off, so that all this great flat that I speak of is practically receiving no sedimentation or very little, from the flood waters. During the time of flood, the water covering it is clear and not depositing any sediment even to within a very short distance back from the bank; but close to the river this sedimentation is going on, and higher banks are, therefore, built up.

Q. This low flat land then is practically on a level with the river, and the shores of the river have been practically formed by the accumulation of sand and silt?

A. Quite so.

By Mr. Jackson (Selkirk):

Q. Is all that country which you mention, 5,000 square miles, only 900 feet above Lake Winnipeg?

A. Nine hundred feet or thereabouts.

Q. What is the height of Lake Winnipeg above the sea?

A. Seven hundred and ten feet I think is the latest figure. At Cedar lake above the head of the Grand rapids the elevation is about 840 feet, but there is a general westerly rise in that country, the Saskatchewan being a quick flowing river; and 100 miles up stream, even where there are no rapids, it would be something like 100 feet higher.

By Mr. Lewis:

Q. How high are the banks of the Saskatchewan?

A. Through this area that I spoke of, the banks are very low, only four or five feet in height, and flooded always at high water. There is a ridge at the Pas, a little over 100 miles from the mouth of the river which is taken advantage by the railway to cross part of this low land.

Q. What is the Pas?

A. The Pas is an old English Church mission and also a Hudson Bay post. It is now of interest chiefly because it is the point selected by the Canadian Northern Railway for crossing the Saskatchewan with their Hudson Bay branch.

By Mr. Sinclair:

Q. How long would it take the waters to get down from Edmonton to Lake Winnipeg. Assuming the water rises at Edmonton four feet on a certain day in June, when will that rise take place at the mouth of the river?

A. I have this data as to that: Before leaving Prince Albert we had a telegram from Edmonton that there was extremely high water there on Sunday night. On Friday afternoon and Friday night the water was coming up very fast in the Sipanok channel. That would be a distance as the river runs of 600 miles traversed by the flood water in five days, or perhaps a little longer as, though our advice told of high water at Edmonton on Sunday night, it may have reached there earlier.

By Mr. Zimmerman:

Q. There is no timber in the neighbourhood of Cedar lake and Cumberland House on the North Saskatchewan?

A. When I was in the region north of the Saskatchewan the summer before last, I saw several small areas of good timber there. The region covered last summer on the Sipanok channel and Carrot river has some very good timber on the narrow belt along the banks of the rivers, and extending in places for some distance inland. Between the two main branches of the Pasquia river also there is an area of spruce that would furnish timber.

Q. That is on the other side of the Pas?

A. That is above the Pas. I think there is no timber below.

Q. There is a little black birch but there is no land to grow timber on?

A. That is all a part of this low land that we have been considering.

Q. There is a ridge, is there not, between the Pas and Moose lake, and on that ridge there is a little timber?

A. Yes, that belongs to the other area, the more elevated, limestone covered country.

By Mr. Staples:

Q. You spoke of the country being covered with grass and you say it is probably hay marsh?

A. It is mostly a low hay marsh, the grasses often growing in the water or on very wet land.

MR. ZIMMERMAN.—It is beautiful meadow grass, there is no finer in the world.

By Mr. Staples:

Q. What is it—a species of blue-joint?

A. There is some blue-joint grass. There are a couple of marsh grasses that I really do not remember the names of, very excellent grasses though.

Q. What is the temperature of the country? Have you any idea as to whether it would be fit for horse ranching or cattle ranching without involving the erection of extensive buildings?

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Mr. ZIMMERMAN.—If you could get land that would not drown the horses you could get an immense quantity of hay.

A. The winters are rather long, but the summers are warm, and during the growing season there are about seventeen hours of possible sunshine per diem.

By Mr. Jackson (Selkirk):

Q. Did you get any information as to that from the Hudson Bay people? Is the land always covered with water?

A. It is always too wet to be of any great value in its present state, but there are small areas here and there which are capable of cultivation.

By Mr. Sinclair:

Q. Is it a swampy meadow which you cannot cross? Could a horse travel over it?

A. There are certain parts where, in an extremely dry season, you could get areas of that character particularly near the banks of the rivers. At the Pas they cut quite a lot of hay and at the Indian reserves on the Carrot river. There the Indians have 80 head of cattle and a number of horses which they own themselves, and they cut a lot of hay for this stock.

Q. Grass can be cut on the river banks and transported to other points?

A. The Indians cut their hay on their own reserve. They have quite an area at the back end of the reserve which is high enough for the purpose. The immediate banks of the rivers, the more elevated ridges, are for the most part wooded.

By Mr. McCraney:

Q. Are these marshes produced by the waters of the river?

A. Yes, they are produced by the absence of any adequate drainage. The water that covers them does not necessarily come from the river, but it is prevented from flowing out into the river owing to the relatively high level of the banks and of the river itself.

Q. What area of country is relatively marsh?

A. This low country I estimated to be about 5,000 square miles.

Q. What would be the effect of deepening the river channel at particular points?

A. If it could be accomplished it would probably drain this area and make it very excellent agricultural country.

Q. Are there any particular points on the river which came under your observation which would seem to permit of deepening the channel?

A. I spoke some time ago about the Grand rapids at the mouth of the river. If by any means a better channel could be made there it might possibly be accomplished. Of course, there are points in the river above, where it flows over harder rock where the channel would also have to be deepened.

By Mr. Lewis:

Q. There is no question that if that country were drained it would make good farming land?

A. Not in my mind. The land close to the banks is often pretty sandy, but that is due to this deposit by the flood waters of the river when the river is running very fast and carrying a somewhat sandy deposit. As soon as you get back of that strip it is a sort of black muck.

By Mr. Sinclair:

Q. Is there any gold in that country?

A. I did not find any.

By Mr. Zimmerman:

Q. I was informed that if the Canadian Northern Railway were built out to the Pas immense quantities of hay could be harvested there?

A. I am sure there could.

Q. There is a settler located between Moose lake and the Pas who has started horse ranching. He told me himself that he cuts his hay in certain parts there with a mowing machine?

A. They have a mowing machine at the Pas I know. I saw the mowing machine in use there on one of the flats.

By Mr. Staples:

Q. You do not mean to say that you cannot operate a mower on those marshes?

A. It is too wet over the greater part, over limited areas one could be used.

Q. Then it is practically of no value?

A. Of course, this area I was speaking of, this lower area, must not be confounded with that lying west of the first rapids on the Carrot river which has a much higher elevation. In the case of that whole area extending from the rapids just spoken of westerly to the settled lands of the upper Carrot river I think that no better land could be found. It is quite the same character as the ordinary good lands of the plains.

By Mr. Lewis:

Q. That is the prairie lands?

A. Yes, the prairie lands.

Q. Where is that land, to the south?

A. No, it is to the east of this area of land which has already been sub-divided (indicating on the map) further down the Carrot river.

Q. It is bounded on the north by the Carrot river, is it?

A. It extends away on both sides of the Carrot, across towards Saskatchewan on the north, and in towards the Pas mountains on the other side.

By Mr. Staples:

Q. What quantity of that higher land is good?

A. Of course, a lot of land here (indicating on the map the upper portion of the Carrot river) has been sub-divided and occasional settlers have gone in there. The good undivided portion would make up an area perhaps of 1,000 square miles.

By Mr. Lewis:

Q. Is that the same kind of land as in the Carrot river valley which has been laid out and settled?

A. It is the same.

Q. It is just as good soil?

A. Just as good. In going up the river I really thought it was finer country below the settled district; it was rather a heavier soil. It is exactly the same surface, but is underlain by a little heavier clay and is not so sandy.

Q. How high are the banks of the Carrot river?

A. The immediate banks are from ten to fifteen feet, and within 200 or 300 yards it rises by a gentle slope to 70 feet.

Q. Is that the wooded part of country which you spoke about?

A. That is covered by a second growth, chiefly of aspen poplar. It is quite small and it could really be described as a half wooded country, because there are patches

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every here and there of prairie and the forest growth is small and sparse so that it could be cleared with little labour.

Q. Was it burned over originally?

A. It has been burned over very frequently.

By Mr. Staples:

Q. Is there any spruce there?

A. Not in the upper part of it. There is some very excellent spruce along this part of the Carrot river (indicating on the map the portion of the Carrot river immediately above the first long rapid).

Q. What is it like around Cedar lake, what quality of timber is to be found there?

A. I made no exploration at Cedar lake, but I should doubt whether there is much timber there; it is for the most part too low for it.

By Mr. Lewis:

Q. You spoke of a part of the country where there was timber. Where is that and what kind of timber is it?

A. The timber of that country is white spruce. There is a belt on either side of the Sipanok channel, a narrow belt on the more elevated land on the immediate banks, of white spruce and two sorts of poplar—aspens poplar and balsam poplar. These all grow to large, clean stemmed trees. Besides these, elm, oak, ash and ash-leaved maple grow to a fair size, but not so large as the first mentioned trees.

Q. What size would the white spruce be at the bottom?

A. As much as two feet; not averaging that, of course, but averaging fifteen inches and generally tall and straight.

Q. How large an area would be covered by that white spruce?

A. That I could not say; I do not think a very large area. I went in over this flat country adjoining the Sipanok channel and I found that the belt of good spruce varied from a few chains to half a mile or so in width. Back of that the land is too low and swampy to grow very good timber. Upon the Pasquia hills I saw some very good timber. At an elevation of 500 feet I saw the best timber that I noticed anywhere in that district. It was white spruce, very tall and clean-stemmed and of large size.

By Mr. Jackson (Selkirk):

Q. At an elevation of 500 feet?

A. I mean above the plain.

Q. Is there any tamarack in that country?

A. There is some tamarack. I saw a few good tamarack trees, but no large area of tamarack.

By Mr. Zimmerman:

Q. Not sufficient to justify lumbering operations?

A. Not in the case of tamarack. Land has been acquired just below the Pas by the Pigeon River Lumber Company, and they expect to put in a mill during the coming summer, I understand. This would be for the sawing of white spruce mainly.

By Mr. Sinclair:

Q. Where will they deliver their lumber?

A. It will be carried by the Hudson Bay branch of the Canadian Northern Railway which is graded into the Pas. The steel was laid last autumn within twenty miles of that point.

Q. How far is the Pas from Prince Albert?

A. It is a little over 200 miles.

By Mr. Staples:

Q. How far is it from the Pas to Fort Churchill on the Hudson bay?

A. It is about 500 miles to the mouth of the Churchill at Hudson Bay and about 250 miles to where the Churchill river drainage is first struck.

Q. That is about half way, is it?

A. About that. I went over that country in 1906.

By Mr. Sinclair:

Q. Do you mean half way to Churchill from Prince Albert? That is not what you mean?

A. The railway line projected really does not start from Prince Albert. It starts from a point on the Canadian Northern railway about 150 miles east of Prince Albert.

Q. The Canadian Northern goes to Prince Albert?

A. Yes, the Hudson Bay branch starts from a point on that line and takes a northeasterly course crossing the Saskatchewan at the Pas and continuing in about the same direction to Hudson's Bay at the mouth of the Churchill river.

By Mr. Lewis:

Q. What is the name of that place it starts from?

A. Etiamami is the name of the station on the Canadian Northern railway near which Hudson Bay junction, the point of departure, is situated. The Canadian Northern now is within 250 miles of the Churchill river, and within about 500 miles of Churchill harbour on Hudson's bay.

By Mr. Zimmerman:

Q. How far is it from the Canadian Northern station at Etiamami to the Pas?

A. About 80 miles; 50 miles of that is constructed. It may have been all constructed, because when I left, in the autumn, the line had been graded practically to the Saskatchewan, and the steel laid for nearly 60 miles. The part which had the steel on it had not been ballasted at the time I saw it.

By Mr. Jackson (Selkirk):

Q. I should imagine there would be difficulty in that low country in getting a railway through?

A. Well, the line leaves Etiamami on the flanks of the Pasquia hills and follows those flanks down to the Pasquia river. Then it strikes a tract of boulder-clay which extends with intervals of swamp right into the Pas at the Saskatchewan.

By Mr. Lewis:

Q. The railway does not get into that low country then?

A. The company had very great difficulty in finding a practicable road over that country. The surveyors were at work a great many years and made a great many explorations before they found a feasible route across to the Pas. For a long time they thought they would not be able to find one. Even then it was in places only a very narrow ridge of even comparatively dry country, and if they went off to the right or left to any great distance they would get into this low country.

Q. The swamp?

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A. Yes, they cut through swampy land for a considerable distance. Along that ridge, or rather on parts of it, where they are on the flanks of the Pasquia hills there is some country that could possibly be settled, but it is very little.

By Mr. Sinclair:

Q. Are they operating that railroad now in the winter season?

A. The intention was to open by January 1, as some of the fish companies wanted to get their fish out, but I have not heard whether that has been done.

By Mr. Lewis:

Q. Where is the fish to be found?

A. In all of the larger lakes lying north of the Saskatchewan in the vicinity of the Pas, and beyond.

By Mr. Jackson (Selkirk):

Q. I would like to get your opinion as to the country between Norway House and Cross lake?

A. That will be a part that I will take up now.

Q. I should think that that would be away east of the line of railway?

A. It is, but that is the way I went into that country. In order to reach this area through which the Hudson Bay railway will pass, I went down Lake Winnipeg to Norway House and down the Nelson river. The Nelson river lies just at the edge of a large basin occupied by lacustrine deposits so that there are limited areas that could possibly be cultivated. The larger areas are almost bare archean rock—granites, gneisses and schists. The area through which the railway will run north of the Pas may be roughly divided into three different tracts of country. There is first the limestone country, extending from the Pas north for about 40 miles, which is overlaid by flat-lying limestone or hard dolomites of Cambro-Silurian age. The limestone on all the higher lands, comes almost to the surface. It has very little soil cover and is absolutely bare for long distances. On the top of some of the hills one can walk on absolutely bare limestone. North of that for the next 100 miles is a clay covered country which represents the sediments accumulated in the basin of a glacial lake—a lake which at the close of the glacial period was held back in the north by a high dam of ice, and on the west by higher lands. This clay has a thickness of about 100 feet at the thickest part, gradually becoming thinner and thinner as the land gets higher until, at about the 950 feet contour the clay disappears and we get the marginal deposits of the old lake, sands and gravels. The country of this character would be about 10,000 square miles in extent; approximately that. I do not mean to say that the 10,000 square miles would be all very excellent country, but the land which is covered by these lacustrine deposits has that area. The Nelson river being on its eastern edge it extends westerly to about the foot of Burntwood lake, northerly to the Churchill river, and southerly to a little south of the Grass river. There is a limestone escarpment that marks approximately the southern edge of the clay basin, and it follows a nearly east and west line just touching the southern end of Reed and Wekusko lakes.

By Mr. McCraney:

Q. As I understand you there is an old lake basin, and its altitude is lower than the surrounding country?

A. I mean that the sediments which now form the surface of that country were accumulated in the basin of an ancient lake. They are now 100 or 150 feet deep in some places in the valleys, just covering the tops of some of the hills, reducing what was, prior to the glacial time, a country with a somewhat hilly surface to almost a

plain, by filling all the valleys almost to the level of the hills. It is a country absolutely devoid of rock or boulders. One can travel up the Burntwood river, for instance, for 100 miles and not see rock at all.

By Mr. Jackson (Selkirk):

Q. Is there timber there?

A. Very little, but there has been timber there. I may say that the river takes its name from the fact that the country has been burnt over so much. I saw indications there of three different burnings within 60 years, an old one, a more recent one, and one about 10 years old. Some of the stumps gave evidence that if the country could be protected from fire it would support a very good growth of timber. On some of the islands, or peninsulas cut off by the surrounding swamp, there are very good trees now.

Q. Principally birch and poplar, I suppose?

A. I am speaking of white spruce, which is the only merchantable timber we get in that country. There is said to be north of Moose lake a very good timber area. I saw an area north of Cormorant lake of very excellent timber, but limited in quantity. There is also timber west of Atikameg lake, but I saw only the edge of that. These timbered areas are all south of the good, clay-covered land.

By Mr. Staples:

Q. Take between the Nelson and the Churchill up to Hudson bay, what is the character of the soil?

A. This ancient lake that I was speaking of, as far as we can judge, was held up by an ice barrier on the northern and eastern sides and extended northerly about to the valley of the Churchill, as, from the description we have from the Indians, this clay country extends north just about to the Churchill river. North of that, for a considerable distance, it becomes gravelly again, marking probably the shore line of the old lake.

Q. What is the distance between the two rivers?

A. At Split lake, where the two are closest, it is about 50 miles. The railway after crossing the Saskatchewan at the Pas and following the elevated ridge from the north bank of the Saskatchewan westerly to Atikameg lake and Cormorant lake, crosses the latter at the narrows and runs northeasterly through the clay country until it strikes a branch of the Nelson river known as the Burntwood river, which it follows down to the vicinity of Split lake. From the vicinity of Split lake it crosses by an extension of the same clay land to a lake at the head of the Little Churchill river. It then follows the Little Churchill river down to near the head of the Deer river, another tributary of the main Churchill, and continues in the valley of the Deer river down to Churchill harbour on Hudson's bay. That is the route which they have projected.

By Mr. Lewis:

Q. Did you get any sight of coal or minerals in that section?

A. One object of my exploration in the Pasquia hills was to find out whether there was any probability of the occurrence of coal there. The Pasquia hills are made up of Cretaceous soft bitumenous clay shales which burn quite readily in a camp fire, but which have not enough hydro-carbons to be of any practical value as fuels. This shale belongs to what is known as the Niobrara division of the Cretaceous. That is about the middle of the upper Cretaceous. The productive coal areas of the west lie in the lower Cretaceous which is absent in the county under review, in what is called the Belly River series of the Upper Cretaceous, and in the Laramie and Edmonton beds still higher. Just here (in the Pasquia hills region) the beds are too low

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in the geological scale for the productive coal measures of the western plains, and the Lower Cretaceous beds, which hold the coals in the foot hills, are absent altogether, having never been deposited.

Q. Between the two?

A. Just between the two. Of course as you get west, we will say to the Prince Albert and upper Saskatchewan country and a little west of there, you get into a country where the Belly river coal measures should begin to appear.

Q. That is higher?

A. Still higher. There is a gentle slope southwesterly to all these beds, so that as you go westerly and southerly you get higher and higher beds at the surface. The beds on the Pasquia hills, the Niobrara, I found to be as high as 500 feet above the plain; and from the dip of the strata it would be probably 1,200 feet lower when you get west of the longitude at Prince Albert. You would thus have a depth of 1,200 feet up to the surface of the ground which would be almost, but not quite enough, to bring you up to the coal bearing measures of the Belly river series. That is the reason why I say one may expect to get into the upper coals further west.

By Mr. Sinclair:

Q. West of where? West of a line running south from the vicinity of Prince Albert.

Q. East of that you would not find coal?

A. No, I would not anticipate it. One cannot be dogmatic, but the measures that have elsewhere been found productive do not occur there.

By Mr. McCraney:

Q. Coal has been found in the Eagle Lake district west and southwest of Prince Albert?

A. Yes, I should judge that would be somewhere about the edge of it.

By the Chairman:

Q. Would you consider that it would be an expensive country to build a railway through from the Pas north?

A. No, not as compared with our railways in general. It is not a mountainous country at all, it is not a rough country and a large part of it consists of clay land, so that it would be comparatively easy to build a railway through it.

By Mr. Jackson (Selkirk):

Q. What about the rivers and lakes?

A. There are not very many and there would be but little heavy bridge work.

By Mr. Cash:

Q. Is there not lots of muskeg there?

A. There are some areas, but the low land which I spoke of on the Saskatchewan would not be encountered after leaving the Pas. There is no muskeg for which drainage could not be provided.

Q. I think you said this country was about the same for 50 miles north of the Pas?

A. The country for about 40 miles north of the Pas is the Silurian limestone country, where the limestones practically form the land surface.

Q. That is where it is raised. But between those ridges it is all muskeg so far as I can see?

A. There are a number of areas of muskeg, but I do not think any larger proportion than is characteristic of our northern country.

By Mr. Jackson (Selkirk):

Q. Is it as bad as that Judas muskeg east of Winnipeg?

A. You might strike the same areas of muskeg in any of our northern country. As far as I have been able to see it is not an exception; in fact, taking into consideration this area of clay country there will be less muskeg than the average of northern regions.

By Mr. Cash:

Q. You think, comparing this line with other railways, it would not be expensive to construct?

A. My impression is that as compared with other railways it would not be an expensive line to build. You must consider that it starts at an elevation of only 830 feet or so above sea level at the Saskatchewan, and that the distance is 500 miles from there to Hudson bay. That is a fall of only 800 feet in a distance of 500 miles, and there is no height of land to go over in the intervening distance; it is a gradual slope the whole way.

Q. Is it not a fact that in getting to the Pas mountains where the line follows the Pas ridge from Etiamami for 15 or 20 miles, there is difficult country?

A. They have a bad piece of country to cross there.

Q. It seems to me wherever they go in that direction that is true?

A. That applies to the country south of the Saskatchewan, between their present line and the Pas. It does not apply at all to the country north. There you get into an entirely different country.

Q. I thought it did?

A. No, there are not the same conditions at all. On the course of the projected railway the low land ends at the Saskatchewan.

Q. What do you say of the line that is projected from the Pas, do they go west of Moose lake?

A. There is a gravel ridge which runs from the Pas right over to Atikameg lake; it is about 90 feet above the Saskatchewan, and would furnish a most excellent roadbed.

Q. Does the line go west of Cormorant lake?

A. It goes west of Cormorant lake and thence northeasterly to Reed lake mostly over a dry rocky country.

By Mr. Jackson (Selkirk):

Q. I have often been interested in the geological formation of the shore of Lake Winnipeg consisting of granite and limestone. What is the explanation from a geological standpoint?

A. The limestone is a sedimentary series which was deposited on top of the old Archean gneisses.

Q. Of the granite?

A. Of the old granite. The old granite belongs to the Archean age. It is known as the Laurentian formation and forms the backbone of the continent. On this has been laid down the various sedimentary series. In this particular case we know from the fossils that the sediments are Lower Silurian limestones. These series, which consist of sediments accumulated on an ocean bottom, are laid down flat on top of the old Archean axis. Just how far they originally extended northerly across this Archean axis we are unable to say. We have another corresponding sedimentary series coming in from the Hudson bay side, consisting of similar flat Silurian limestone. It extends inland from Hudson bay for 40 or 50 miles, and south of James bay for over 100 miles, each of these sedimentary basins overlapping the old Archean which protrudes from underneath them and forms this axis which runs across northern Canada. Whether the sediments once covered the whole of this area or not we cannot say.

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positively. We know from the occurrence of outlying patches far inland that it has extended for 40 or 50 miles farther than it does now, having been eroded away simply by the ordinary weather erosion.

Q. Take the banks of Lake Winnipeg. Those composed of limestone are from 30 to 50 feet high, and the same way with the granite shores on the other side. It does not appear that the limestone banks are any higher than the granite banks?

A. I do not remember the particular locality you speak of, but with respect to the point you raise, it would mean that there had been a slight fault, that the limestone had dropped a little, that there had been a crack where the present river runs.

By Mr. Cash:

Q. Do you claim that the clay basin you spoke of is fit for agricultural purposes?

A. Yes, a very great deal of it.

Q. It is pretty level?

A. Yes, it rises from the rivers with a gentle slope, sometimes terraced, sometimes just with a gradual slope to heights of 70 and 80 feet, runs back for three or four miles with a very gradual rise to a little over 100 feet, and then extends for miles at about that height. One can walk over that country in many places for a great many miles—I have done so for seven or eight miles—and not see a rock at all.

Q. Is that country crossed by rivers and little lakes?

A. Yes, there are lakes and streams through it generally, not so many, of course, as in a rocky country like our ordinary northern country. The best agricultural land would be opened up by the Hudson Bay railroad, which will run right through it, dividing it almost in half. In all the northern lakes and streams the water is good—excellent water; there is no alkali at all. In reference to the Pasquia country, I neglected to say that just at the base of the Pasquia hills there is a belt of about one mile in width that is characterized by salt springs. The vegetation is that which grows in salt water, and the water is all brackish. One spring which I found near the shores of the Carrot river, the water from which I had analysed, contained about a quarter of a pound of sodium chloride—that is common salt—to the gallon. This is a little lower in salt content than many of the springs they have been using commercially down about Lake Winnipegosis, and higher than some of them.

By Mr. Lewis:

Q. How do you explain its presence?

A. We consider it comes from the underlying Silurian dolomites which we know contain crystals of common salt scattered through them. Sometimes where these rocks come to the surface we have been able to find the salt crystals in the rock. We consider it is the leaching out of these crystals of salt by percolating water that produces the brine.

By Mr. Cash:

Q. You spoke of this clay basin sloping in certain directions. In what direction is the general tendency of the slope?

A. I should say it slopes with the present slope of the rivers—the general slope of that clay country is easterly, with, of course, minor gradients towards the lakes and rivers.

Q. I did not catch exactly what you said about timber. Did you say there was not very much?

A. There is hardly any on this clay covered country. It is nearly all of quite recent second growth.

Q. After you get through the clay country is there any more agricultural land between there and Hudson bay?

A. I think not. You then get into the Archean, that is the old granite, and there would be very small areas.

Q. I read a report somewhere that along a ridge between the Nelson and the Churchill rivers there was some good agricultural land?

A. There is a ridge just where this railway proposes to go to the west of Split lake, that would be of the same clay country. But when you reach as high an altitude as Split lake you are getting into a climate which is really a little too severe for the purposes of general agriculture. That is just about the northern limit.

By Mr. Martin (Wellington):

Q. How hot would it be in the clay belt that you speak of?

A. I was very much surprised at the warmth of the summer I was there, the summer of 1906, there was no killing frost until September 29.

By Mr. Jackson (Selkirk):

Q. At what date were you there?

A. I spent one summer.

Q. Were you there late in August?

A. Yes.

Q. Was there any frost that killed the potatoes?

A. We had no frost until September 29. That was the summer before last, you will remember.

Q. No frost at all?

A. Last summer there was frost while I was in the country further south, that is on the Carrot river, on September 16. There was no July or August frost. On August 26 the thermometer just reached the freezing point. The water in a shallow dish formed a little scum of ice, but it was not sufficient to freeze even the most tender of the vegetation.

By Mr. Martin (Wellington):

Q. How about the spring frosts?

A. In 1906 on the Pas they had all their gardens well up on May 24, and did not suffer from frost after that time. Last spring on May 24 there was about three feet of snow where they had planted their garden previously. This does not mean that the whole country was covered with snow at that date, but only that this garden had drifted full of snow. However, last summer was not really one to judge by. The weather was exceptionally severe all through that country and the spring was very late.

By Mr. Cash:

Q. What was the vegetation on the clay belt while you were there, vetches, peas and so on?

A. Vetches, peas, bluejoint and wild rye were growing luxuriantly on the lower land and in the slopes of the low ridges. In some places they were to be found on the tops of the hills, but, of course, growing more sparsely.

By Mr. Jackson (Selkirk):

Q. On this plain are there the same prairie flowers that we have in Manitoba?

A. Most of them, not all.

Q. Did you notice the wild cucumber and any species of the convolvulus?

A. The convolvulus grows there and two or three kinds of vetches, together with very many other flowering plants whose names I cannot recall at the moment. Generally there is a very luxuriant growth.

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I have here the meteorological records which I kept during the summer, and, for comparison the meteorological bureau records taken at various points throughout northern and central Manitoba during the summer, which I obtained from Mr. Stupart, the Director of the Canadian Meteorological Service.

By Mr. Jackson (Selkirk):

Q. I suggest that these records be inserted in the report. Were they kept by the Hudson Bay officials?

A. No, I kept them myself, the instruments used being 10-inch maximum and minimum thermometers of United States Weather Bureau pattern. It will be noticed that the records of temperatures in this northern region compare not unfavourably with the records of the same date in many localities that are recognized wheat raising districts.

TABLE OF TEMPERATURES.

From a record kept by W. McInnes in the region N.W. of Lake Winnipeg during the summer of 1906.

Place.	N. Lat.	Date.	6-30 A.M.	Noon.	6 P.M.	—
	° \	1906.	°	°	°	
Valley of Nelson river....	54 15	June 19..	50	56	54	
" "	54 30	" 20..	50	55	52	
Cross lake.....	54 45	" 21..	46	48	46	Strong N.W. wind and rain.
" "	54 45	" 22..	46	48	46	" "
Valley of Nelson river....	54 45	" 23..	46	61	86	
" "	54 45	" 24..	58	68	64	
" "	54 45	" 25..	52	68	72	
Sipiwesk lake.....	55 ..	" 26..	58	70	72	
Valley of Nelson river....	55 30	" 27..	64	76	70	
" "	56 ..	" 28..	60	78	76	
Split lake.....	56 ..	" 29..	66	70	65	Strong S.E. wind
" "	56 ..	" 30..	58	64	61	" "
Averages for June			54½	63½	61½	
Split lake.....	56 15	July 1..	54	76	..	
" "	56 15	" 2..	61	..	..
" "	56 15	" 3..	60	72	70	
Lower Burntwood valley ..	56 ..	" 4..	62	84	80	
" "	56 ..	" 5..	63	82	82	
" "	56 ..	" 6..	64	74	72	
" "	56 ..	" 7..	62	64	72	Rain 7 A.M. to noon
" "	55 45	" 8..	64	72	72	
" "	55 45	" 9..	54	78	74	
Wuskwatim lake.....	55 30	" 10..	50	80	82	
" "	55 30	" 11..	66	84	76	
Lower Burntwood valley ..	55 45	" 12..	52	52	52	N.E. wind all A.M.
Footprint lake.....	55 45	" 13..	47	52	50	N.E. wind and rain.
" "	55 45	" 14..	52	56	60	N.E. wind & rain until noon.
" "	55 45	" 15..	46	66	62	
Upper Burntwood valley ..	55 30	" 16..	56	70	72	
" "	55 30	" 17..	60	76	74	
" "	55 30	" 18..	64	72	74	Two hours rain after noon.
" "	55 30	" 19..	60	72	74	
" "	55 30	" 20..	61	74	76	
" "	55 30	" 21..	57	67	66	Rain all day.
" "	55 30	" 22..	57	74	74	
" "	55 30	" 23..	60	74	76	
Burntwood lake.....	55 30	" 24..	58	78	78	
File River valley.....	55 15	" 25..	64	80	76	
File lake.....	55 ..	" 26..	58	84	78	
" "	55 ..	" 27..	65	78	77	
" "	55 ..	" 28..	62	76	76	
" "	55 ..	" 29..	60	69	68	
" "	55 ..	" 30..	58	66	73	
" "	55 ..	" 31..	58	80	76	
Averages for July.....			58½	73	72	

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TABLE OF TEMPERATURES—*Concluded.*

Place.	N. Lat.	Date.	6·30 A.M.	Noon.	6 P.M.	Min. for 24 hrs.	—
	° ' /	1906.	°	°	°	°	
The Pas, Saskatchewan.....	54 45	Oct. 1..	34	48	42	34	
" "	53 45	" 2..	45	56	48	42	
" "	53 45	" 3..	45	50	46	42	
" "	53 45	" 4..	34	48	42	30	
Saskatchewan river.....	53 45	" 5..	35	53	46	.....	Snow at night.
Cedar lake	53 15	" 6..	40	42	44	.....	Sleet at night.
High Portage.....	53 15	" 7..	38	46	46	.....	Frost at night.

ABSTRACT OF METEOROLOGICAL OBSERVATIONS, 1906.

MINNEDOSA.

1906.	TEMPERATURE.			MAXIMUM AND MINIMUM TEMPERAURE.				
	7 a.m.	2 p.m.	7 p.m.	Mean Max.	Mean Min.	Max.	Min.	Monthly Mean.
July.....	58·3	77·4	72·2	77·4	54·5	87·5	41·0	63·8
August.....	55·0	72·6	70·3	76·4	51·0	95·5	33·2	63·7
September.....	46·5	70·4	64·0	73·7	43·5	97·0	28·5	58·6

STONY MOUNTAIN.

	9 a.m.	2 p.m.						
July.....	68·9	76·3	.....	78·0	54·6	91·0	46·0	66·3
August.....	65·6	75·2	.....	77·0	51·9	95·0	33·0	64·4
September.....	.....	.....	.....	.....	.....	.....	.....	.....

HILLVIEW.

	7 a.m.	2 p.m.	9 p.m.					
July.....	56·3	75·9	63·4	76·1	53·2	87·0	43·0	64·6
August.....	55·1	75·4	62·5	75·8	50·6	97·0	35·0	63·2
September.....	47·3	73·1	58·2	74·1	44·1	98·0	23·0	59·1

BRANDON.

July.....	60·8	76·6	67·8	79·5	51·7	91·3	38·5	65·6
August.....	57·4	74·6	65·6	78·5	49·1	95·0	35·0	63·8
September.....	47·5	72·7	59·1	75·1	41·9	100·0	26·0	58·5

	Months.	MEAN.		EXTREMES.	
		Max.	Min.	Max.	Min.
Dauphin.	July.....	79.3	55.4	91.0	41.0
	August	78.1	51.1	94.0	35.0
Birtle	July.....	78.3	53.3	86.0	40.0
	August	75.8	49.0	94.0	34.0
	September	73.0	41.7	93.0	28.0
Auverne	July.....	84.4	54.9	97.0	42.5
	August	80.8	53.0	103.0	35.0
	September	77.8	45.5	101.5	29.0
Oakdale Park.....	July.....	76.4	53.0	87.0	41.0
	August	74.4	52.2	94.0	36.0
	September.....	73.7	47.1	96.0	28.0

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

WILLIAM McINNES,
Geologist, Geological Survey of Canada.

MAP
of part of the
PROVINCE OF SASKATCHEWAN
and
NORTH WEST TERRITORIES

to illustrate
Evidence of William McInnes

Scale of Miles

Base Map from plates of Map of Canada,
Dept. of Interior, 1908



ARCHAIC AREA

LACUSTRINE CLAY AREA
WITH MUCH GOOD LAND

LIMESTONE AREA WITH LITTLE
LAND SUITABLE FOR CULTIVATION

SASKATCHEWAN LOW LAND WITH HAY MARSHES
EXCELLENT AGRICULTURAL LAND

LOW SWAMPY LAND

WINNIEPegosia
WINNIEPeg
MANITOBA

EASTERN BOUNDARY OF SASKATCHEWAN

PROJECTED LINE OF HUBSON

NORTH

WEST

TERRITORIES

SASKATCHEWAN

LAKE

WINNIEPeg

WINNIEPegosia

MANITOBA

M.W. 710

Dauphin
Birtle...
Auverne
Oakdale

H



CANADA'S FERTILE NORTHLAND.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

WEDNESDAY, March 11, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock, a.m., Mr. McKenzie, Chairman, presiding.

The CHAIRMAN.—We have with us to-day Mr. R. E. Young, D.L.S., Superintendent of Railway Lands of the Department of the Interior, who will speak on 'Canada's Fertile Lands North of the Saskatchewan River.'

MR. YOUNG.—Mr. Chairman and Gentlemen: I think I should at the outset say that I have evidence at considerable length for every statement that I intend to make here. I would first explain the large map of the Dominion depending from the wall on my right on which I have coloured in red the townships that were surveyed on the 1st of January of this year, the townships of which plans have been published. The settlement is, of course, confined to the areas coloured in red. You will notice a small patch of darker red colour around the city of Winnipeg. That is the land that was surveyed according to a departmental map issued in the year 1873. I have the map here and I think it is interesting if you would look at it because immediately outside the limits of the surveyed townships the land is shown topographically in a very incorrect manner. According to that map the information about the country outside the surveyed area was very limited indeed. There are about 4,500,000 acres of land in that small tract that was surveyed in 1873.

The subject of my story to-day is the portion of the Northwest north of the coloured area. I would like you to look at the map on the other side of the room. That is what is known as the Homestead map published by the Department of the Interior. I want to devote a few minutes, if you would allow me, to an explanation of the progress in the coloured portion as shown on the large map. There are three reasons why I want to do that. I think that when I bring before you in the manner which I shall endeavour to do, the facts that I have in my possession to-day, the growth in that settled portion will appear surprising and interesting; and the growth that we may expect in the settled portion in the future will show that it is of great importance that we should know and investigate more about the country north of the coloured portion. If that region is as good as I think it is, investigation is very necessary, and if it is as bad as some people imagine, it is equally desirable that we should ascertain all that we can about it. There is another reason why I want to explain a little about this coloured portion on the map, and that is I think I can show you in a very brief way and with very few figures that the area of land available in the surveyed portion of the Northwest is much more limited than many people imagine. There is a third reason, and perhaps you will allow me to state it, and that is I was a resident of the Northwest for nearly twenty years and I lived there through all the dark years when we hoped that many things would happen which have since come to pass. I like to dilate upon the progress that has taken place and to tell you a little about what we expect will happen in the future. It is a little difficult to explain these things by figures without becoming wearisome, and I am going to illustrate some of my points by diagram.

First let me point out the railways on the Homestead map. There are nearly 7,000 miles of railway on that map. I think the exact figures were 6,400 odd on the

1st June last year, and, therefore, it will be safe to say there are 7,000 miles of railway now. When I landed in the Northwest on 1st May, 1880, there were not any miles of railway in the Northwest except a half finished line between Emerson and St. Boniface. We had to cross the Red river into Winnipeg on the ferry. The line was built by laying ties on the prairie and spiking the rails to them, and that is all the railway there was.

The population in the settled portion of these three provinces can be safely stated, I think, at 1,000,000 people. I have made a little effort to get the figures worked out, and I think that is a fair estimate and not very much outside of the mark. The Census Bureau has given me an estimate of 6,800,000 as the total population of Canada on the 1st January last, so that we have in the three provinces, excluding British Columbia, one-seventh of the population of the Dominion at this date.

Now, I want to illustrate by means of diagrams some of the figures to which I will draw your attention. There are 120,000,000 acres on the coloured portion of the map to my right, and I have converted that into a square on the same scale. I do not know that I could show it in any better way. Here is a square on the same scale representing the coloured area on the map (holding up square). The area of land alienated is 86,000,000 acres, which is represented by the somewhat smaller square and which I place in front of the larger square. The balance around the edge is what we have left in the surveyed portion of the Northwest. I am giving you round figures, although I have the figures exactly. Now, let us compare the area alienated with the area under cultivation of 8,500,000 acres represented by this much smaller square. The area under wheat is 5,000,000 acres represented on the same scale by this smaller square.

This smaller square represents, as I say, 5,000,000 acres of land, but it also represents 100,000,000 bushels of wheat in 1906. The figures of the Department of Agriculture are 110 odd millions. Those of the Winnipeg Grain Exchange are 92,000,000 or 93,000,000, so that I think I am safe in saying there were about 100,000,000 bushels of wheat raised in the Northwest in 1906. Supposing I take the 86,000,000 acres of land and cut off a quarter for the purpose of making a calculation which may seem to be a rather optimistic one. If I scale the 86,000,000 acres down in that way to 65,000,000 acres and divide the 5,000,000 acres into it it will go 13 times. Is it not a fair supposition that we can multiply 100,000,000 by 13 and get 1,300,000,000 bushels of wheat within a reasonable number of years? If you feel inclined to doubt that supposition, gentleman, there is just one point I ask you to remember; that is selected land. It is not land taken at random over an unexplored country; it is selected land. Over 31,000,000 acres of that land was selected by about 200,000 homesteaders. About the same amount was selected by seven or eight railways to satisfy their land subsidies, selected by expert land examiners, and while I would not pretend to be an authority on this subject and to make the statement that there will be raised annually $1\frac{1}{2}$ billions of bushels of wheat, for the purpose of my argument I want to just ask you to turn that amount into dollars and consider it for a moment. We are not taking into account oats, barley, flax or rye or the cattle products of that country at all. Take that area of land with the wheat which can be grown to a lesser extent even than my figures would give, and it seems a reasonable and safe statement to make that in the time of people now living there will be the equivalent in money of 1,300,000,000 bushels of wheat. Remember, there are over 50,000,000 acres of land that have not gone into that calculation. There are 120,000,000 acres of land surveyed, and I am only asking you to consider this as applied to 65,000,000 acres.

There is another aspect of this question that I would like to bring to your notice. I have a telegram here from a gentleman in Saskatoon, and he followed that message up by a letter. I got these figures because I knew the gentleman, and I particularly asked him to give me figures that I could absolutely rely upon and quote. I only get figures from that point, although similar results can be shown from many other points

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in the West. I have no interest in Saskatoon in any way; I do not own an acre of land there or anywhere else in the Northwest, and do not expect to. Now, this gentleman's statement, which I consider very striking, is: '375 acres wheat, net cash yield per acre \$14½.' He wrote me at greater length afterwards. Well, gentlemen, I think it is quite a striking thing to reflect upon. That man goes into that country and farms 375 acres. He spends \$6 or \$7 in raising wheat on it, and after the crop has been harvested he has over \$14 per acre to put into the bank.

By Mr. Jackson (Selkirk):

Q. What year was that? A. Last year. He has given me a number of other figures. Some of them are a great deal more. There is one of \$18, but this is a clean cut statement and that is the reason I took it.

By Mr. Wilson (Lennox):

Q. Was that for 1907? A. That is what I understand from his letter.

By Mr. Thompson:

Q. Are the 86,000,000 acres as yet unclaimed?—A. No, that is the land alienated from the Crown.

Q. There are about 120,000,000 acres in all? A. Yes, of surveyed land.

Now, about the north country. The first thing I would like to speak about in that connection is this: In considering the north country a great many people have the idea that latitude governs the climate. Of course, that is absolutely untrue. It is ridiculously untrue, particularly as compared with our country, it does not apply at all. I will go into the climate question in a few minutes, but in the meantime let me draw your attention to the fact that that northern region is practically all a wooded country. The knowledge we have of that country has been obtained by people who have travelled along the rivers in canoes almost entirely. I would like to ask any gentleman to try and imagine how much valuable knowledge would have been obtained of the great and wealthy province of Ontario by means of travelling along the St. Lawrence, the Ottawa and other rivers as men used to travel in canoes 200 years ago? And yet that is the kind of knowledge that we have about that north country almost entirely. Let me ask you to notice a small red star on the map, 14 miles outside the Arctic circle. That is Fort Good Hope on the Mackenzie river. The statement was made before the Senate Committee last Spring, which was investigating the north country, that potatoes, cabbages and onions were grown at Fort Good Hope.

A gentleman who gave evidence before the Senate Committee last spring was in my office about a week or ten days ago. He told me that he was at Fort Good Hope last summer and he said: 'I saw just as good vegetables growing there as I have seen in the province of Ontario.' The gentleman in question is Mr. Conroy, of the Indian Department. Now, the growth of vegetation is rapid, beyond belief to us, in that north country. I will quote you a statement made by Bishop Clut, who, I think, was stationed at Fort Providence for many years, and who gave evidence before the Senate Committee, which was presided over by the late Senator Schultz, in 1888. He said, speaking of vegetation at Fort Good Hope: 'I have observed this phenomenon: Towards 7th or 8th June vegetation commences and in five or six days the leaves of the trees had reached their natural size.'

Now, I am going to tell you what the red spots on this map mean. Those are points where wheat has been grown. They were not selected for any agricultural purpose because they are points where the fur trade has been carried on by the Hudson Bay Company. That is why they are selected. Another point I would like to mention to you is that the inhabitants of that country, and there are very few of them, are almost exclusively flesh eaters. They do not eat, and they do not desire to eat,

wheat or such products. I want to show you—no doubt many of you have seen it before, but it seems to me important—a sample of Ladoga wheat that was grown at Fort Simpson. Here it is (holding up sample). I got it from Dr. Saunders, Director of Experimental Farms. Fort Simpson is the farthest north of these red points just short of latitude 62 or just about it. I showed that wheat to a gentleman who is accounted an authority on the subject, and I don't think you could get a better authority; I am referring to Senator Finlay Young. I said 'Mr. Young, would you please look at that wheat, but do not refer to the label on the bottle, and tell me what you think of it?' Mr. Young examined the sample in the way that men who are experts on wheat often do. I think he saw nearly every grain of it; he took good care to do so. He said 'It is very nice wheat, I would call it good wheat. It has been slightly frosted but I think that wheat would go about 64 pounds to the bushel.' Well the label on the sample says 'Ladoga wheat, grown at Fort Simpson on the Mackenzie River, 62 pounds to the bushel.'

By Mr. Schaffner :

Q. How many days was it growing?—A. I could not tell you. I have seen the statement that wheat is grown in 86 days, that is in some points in the Northwest country, but I am not sure about that. Now, gentlemen, here is a sample of wheat from Fort Vermilion (displaying sample). I showed that also to Mr. Young and got his opinion on it. In both instances he expressed his opinion before he knew where either of the samples came from. He said 'That is pretty nice wheat. It is not so nice a wheat as the other but I think it would make first rate flour; it is good wheat.' Now, consider for a moment that the area enclosed by these red spots would be larger—I think considerably larger—than the entire Province of Ontario. I will just take a moment to enumerate these points. There is Fort Simpson on the Mackenzie river, Fort Providence—and a witness said before the Senate Committee last spring that he had seen wheat ready to cut at Fort Providence on the 28th July, 1906, and it was cut a few days later, and good crops of oats and barley at Fort Liard. You see in the report of the Senate Committee of 1888 that Ex-Judge McLeod gave evidence and quoted from his father's journal. His father was an official of the Hudson Bay Company and his journals extend from 1811 to 1849. He said: 'Wheat is a sure crop at Fort Liard four times out of five.' Then there is Fort Chipewyan. Wheat that was grown there took the highest award I think at the Centennial Exhibition in 1876. Then there is Fort Vermilion where a flour mill is turning out 35 barrels a day. That mill is electrically lighted and equipped in a modern manner. There were 25,000 bushels of wheat grown at Fort Vermilion in 1906. This farthest point west on the Peace river is Fort Dunvegan. (There are two or three other points Hudson's Hope, and Fort St. John, which I have omitted on account of their being down in the valley.) Proceeding with reference to the wheat points there are Lesser Slave Lake, Fort McMurray, and Ile a la Crose. At the latter point Professor Macoun found them growing wheat and grinding it with a horse power mill in 1875. Then there is Stanley Mission, 150 miles north of Prince Albert on the Churchill river, Archdeacon McKay gave evidence before the Senate Committee that wheat had been grown for seven years in succession at Stanley Mission. At Cumberland House, Sir John Richardson records that wheat was grown in 1820 when he passed through there. We also have the statements of witnesses before the Senate Committee that wheat has been grown at Norway House, Cross Lake and Nelson House.

There have been a great many statements made about the probable area available in that country for settlement. One gentleman, a member of the Alberta Legislature, Mr. Bredin, said that there was 100,000,000 acres of land—he was particularly referring to the area as far east as the Athabaska and west and north of it—available

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for settlement. Mr. Conroy of the Indian Department, who has travelled over that country a great deal, made the statement that there was as much land in that tract of country as was now settled west of Winnipeg. There is a great deal of evidence existing as to the probable area of land available in that country. The Minister of the Interior had an exploration made, I think it was in 1905, of the country between Pas Mission on the Saskatchewan and Fort Churchill. That party was sent out for the purpose of exploring the country. They were members of the Geological Survey of Canada and their statement—which I presume can be absolutely relied upon—amounts to this: That there are 10,000 square miles of good clay land between the Pas and Fort Churchill—6,000,000, odd acres of land. A surveyor of the Indian Department who had been around Lac la Ronge, told me that he considered the land surrounding its shores just as good as any land south of the Saskatchewan. There has been a great deal of other evidence given about that part of the country, which I will not take time to dwell upon this morning. I think it may be generally stated that south of the Churchill river, west of the Athabaska and Slave rivers and extending as far north as Fort Simpson, and perhaps a little farther, there is a good deal of good land all the way.

Now, as to the climate. Mr. R. F. Stupart, the Director of the Meteorological Service of Canada, has devoted a good deal of attention to this subject, and he says that he would consider the mean summer temperature of $57\frac{1}{2}$ degrees was a safe limit up to which you could grow wheat. He said that he would not dogmatize on the subject, but that that would be a safe limit. I think that Dr. Saunders would put it at a little lower. I have endeavoured to put on that line as near as I could get to it. I admit the information is not complete, but we have done the best we could from the evidence supplied by Mr. Stupart. I will trace a line on the map running from the northeast corner of the province of Manitoba—just outside the spots that I have mentioned—crossing the Mackenzie river about half way between Fort Wrigley and Fort Norman, and then following the eastern slope of the Rockies southerly. During his evidence before the Senate Committee last spring, Mr. Stupart furnished a table giving the summer temperature, and I think it is a very striking thing that the summer temperature of Fort Simpson, Fort Chipewyan and Winnipeg are nearly the same—that is, from the 1st June to the 20th August or thereabouts—the summer temperature would therefore be nearly the same as that of the city of Ottawa. It is hard to understand or believe that a man may be going about here in summer clothing and that if he could be transported to Fort Simpson in those months that he could wear the same clothing without discomfort. You may say that it is pretty cold in the winter. I do not think there is any doubt about it. It is somewhat colder than the North-west.

By Mr. Schaffner:

Q. Do you say that Ottawa is colder?—A. I do not think that Ottawa is colder than the North-west.

Q. I think it is this winter. In my opinion, there is no doubt about it?—A. However, as to that there is just one remark that was made by a witness before the Senate committee last spring that seems to me to be very pithy and to the point. He said: 'Things don't grow in the winter.'

Mr. JACKSON (Selkirk).—They do in British Columbia.

Mr. YOUNG.—If the agricultural possibilities are in that country, the fact that it is a cold climate won't deter people from settling there. I have read a few unfavourable expression of opinion about that country, but I never heard of any one saying that it was not a healthy country. I gave you the figures a few moments ago of the net result of growing wheat in the vicinity of Saskatoon. I believe that it would be a

reasonably safe statement to make that better wheat can be grown the further north you go. Many authorities agree that the further north you go, almost to the northern limit of the wheat-growing area, the better the wheat that is grown. I believe that the statement has been made that wheat has been grown at Fort Chipewyan weighing 68 lbs. to the bushel. Men have gone into the most undesirable places on the earth's surface in search of gold and to carry on gold mining. They have gone into the hottest and the coldest and the most unhealthy countries for this purpose. Surely there is no amount of gold mining equal to the results obtained at Saskatoon, viz., 14½ dollars net per acre?

I want to meet the point that would arise in a man's mind about the cold winter. I want to introduce to your notice at this stage something that I have prepared for this committee this morning. I will fasten it to the map so that you can see it in its relation to the subject. This is a map of the province of Tobolsk in Siberia. It is drawn to the same scale as map and placed in the same position as to latitude. That small dark spot, not quite one-third north of the south part of the province, is the city of Tobolsk. That city has a population of 20,427 people. The city of Onsk on the Great Siberian Railway, just on the south boundary and about 100 miles north of the latitude of Edmonton, has a population of 37,470. The city of Tomsk, which is not within the province of Tobolsk, but in an adjoining province and in a little lower latitude than Tobolsk, has a population of 52,005. The population of the province of Tobolsk was a million and a half of people in 1900.

By Mr. Duncan Ross:

Q. How far up does the line of habitation extend? A. I have a more complete map, but I am sorry I did not bring it over. I might say though that two-thirds of the way up we find a road marked on the map which would indicate settlement I suppose. I also have figures here of the population of some eight or ten town in the province of Tobolsk. There is one of 1,000, another of 3,000, another of 7,000, one of 8,000, and so on. The farthest north is the town of Bere-zoff with a population of 1,073 and in latitude 63.50.

By Mr. Jackson (Elgin):

Q. What information have you as to the number of convicts that were sent in to that country? A. I don't know as to that. Whether they were convicts or not in 1900 they raised 6,480,000 bushels of wheat, 3,000,000 odd bushels of rye, 972,000 bushels of barley and 10,617,000 bushels of oats. These figures are contained in the Encyclopedia Britannica.

By Mr. Armstrong:

Q. Can you give us any idea in what part of that province these crops were chiefly raised in; was it in the southern portion? A. It certainly would be. I don't think there is any question but that it would be in the most southerly portion. All the information I have would go to show that settlement would not extend to the most northerly regions. Still the fact that there were towns of 1,000 people in the northern portion would go to show that there must be something being done there that would support a town of that size. I have tried to work out some parallel between the climatic conditions there and our own country, but I am not able to give it to you exactly. I think that the figures given by the Russian government would probably be the most favourable that they could furnish. The mean temperature for the period from September 1 to June 1, which would include the winter months—I think that is all it is necessary to discuss—would for the province of Tobolsk be practically the same temperature as at Fort Simpson. It is a very striking thing that a million

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and a half of people live in that province and that they raised 6,480,000 bushels of wheat in 1900. Surely if our country is as good as we think it is, we ought to people it to as great and even a greater extent, and to complete the parallel between the two I think I can say without any hesitation that we must have something which they have not got, and that is the benefit of British institutions.

By Mr. McIntyre (Strathcona):

Q. The southern boundary of Tobolsk is 100 miles north of Edmonton? A. I think it would be. It would be just about 10 miles north of Athabaska Landing.

When I was discussing the wheat question in connection with these points that are coloured red on this map I drew attention to the fact that they were not selected for wheat raising. I want to discuss that point a little further. I say there are three reasons why we can expect better results in wheat raising in our northern country than has been accomplished up to the present time. I will quote what Professor Macoun has stated in a pamphlet relating to the Yukon (reads):

‘When grain ripens in the country and is again sown there, it will take on the conditions of its environment and mature earlier, and early frosts like those attributed to Manitoba, will have no effect as the crop will mature before they come. I may remark here that the wheat in the Northwest ripens earlier now than it did twenty years ago, and many people believe that it is the climate that has changed, whereas it is only the wheat that has adapted itself to its environment.’

I think that any gentleman who has been following the trend of affairs in the Northwest will agree with me that the conditions are better with respect to possible injury by summer frosts now than they were twenty years ago. I don't think that can be questioned. That is one reason that is given. Now, I asked a gentleman who is better able to express an opinion on the point than I am a few days ago what he thought of that statement of Professor Macoun's. He said: ‘I don't altogether agree with that statement. I do not hesitate at all in saying that the improvement is marked, but I will account for it in another way. If you raise wheat on virgin soil on the prairie it will grow to perhaps about the height of a man's shoulder the first year. The next year it will not be quite so high. The third year it will be perhaps not so high as the second year, but it will mature earlier. Devote that land to some other use for a year or two and then go back to the cultivation of wheat again, and you will get the wheat growing to the height of about the second or third year, but it will mature earlier. The soil is sharpened.’ He explained to me that in the Red River valley, where the land is heavier, it would take very many years to bring about that result, and it would not be of so much value to this generation, but in the lighter soil, farther west, it has a marked effect, and, as he argued, there is no question about it.

By Mr. Wright (Renfrew):

Q. Will you permit me to give you some information on this point? A. If you would kindly allow me I would ask you to first let me finish the point with which I was dealing. The third reason why we can expect better results in that north country is because the staff at the Experimental Farm have been steadily carrying on experiments with a view to obtaining a variety of wheat that will ripen a few days earlier, and if they can shorten the term for the ripening of wheat by four or five days or a week, it will bring into the certain line as to wheat growing an enormous area of land. There is no question about it. They have accomplished some good things already and they expect to accomplish a great deal more.

By Mr. Blain:

Q. What was the quality of the 6,480,000 bushels of wheat produced in Siberia?
—A. I could not tell you that. There are a great many other statistics about Siberia

that are interesting. For instance they exported 40,000 lbs. of honey from an adjoining province in Siberia in 1900 and so on; I have not the time to enlarge upon it.

There is no question about it that in the north country there are grasses of the greatest possible value to cattle raising, finer grasses than there are in other parts of the northwest. I could read from a letter written by Professor Macoun on that point. I do not like to pass Professor Macoun's name without saying that I believe that if there is a man whose name will be handed down to posterity in Canada with honour it is that of Professor John Macoun, because of the optimism he has always had with regard to that country from the first, (hear, hear.)

I want to draw your attention, or relate to you, a little incident that happened to me in the Spring of 1882. I was down at Warren's Landing, at the foot of Lake Winnipeg, about the 1st June, 1882. It was an isolated place, to some extent, and rather difficult to get at, and our arrival in June on the first steamer, was the first intimation they had there of a great many things which had been happening about the boom at Winnipeg. I was talking with a gentleman there who was connected with the fur trade and had been in it nearly all his life. He was a man of intelligence and was able to talk intelligently about any subject which you might mention, and he was perfectly sane except on one point. I will tell you what he said to me. I was telling him about all the things that were happening at Winnipeg and among others the fact that the Canadian Pacific Railway had built enormous shops. He then said, 'It doesn't make any difference, Mr. Young. They will be allowed to fall to pieces. That country is no good; it is only good for the fur trade. I have lived nearly all my life in this country and we old-timers know much better about the country than anyone else.' 'But,' I said, 'They are spending millions of dollars in building a line across the prairie.' He said, 'I don't care, you will find they will take up the tracks.' That man was able to talk sensibly about anything else, but there you see was the influence of the fur trade, the influence of the conditions that he was surrounded by; and you will find that time after time when gentlemen in that northern country who have been connected with the fur trade are asked about the country their inclination is always to detract from its value. We hear a lot about the 'Last West,' our Great West, and its value for settlement. I suppose it is the last West and I suppose that it is the last not only for the fur trade of the Hudson Bay Company, but also for other people who are interested in that trade.

By Mr. Barr :

Q. Their interest is to keep the country for the fur trade?—A. They are not enthusiastic about encouraging settlement.

By Mr. Jackson (Selkirk) :

Q. That gentleman might have been acquainted only with the country east of Warren's Landing?—A. He was not giving me any information regarding the North country that I am talking about, but of the prairie country that was not then settled.

Q. His opinion was influenced by the country that he had been in for so many years?—A. That might be. There is another point that I want to bring to your attention as to the conditions in the North-west country. About three weeks ago I wrote to Professor Macoun and gave him a list of questions about that country to which I asked him to give me answers. I think it is a very remarkable thing that in his reply he says: 'In my report to Mr. Alexander Mackenzie in 1877, just when I was fresh in the Northwest, I gave details about certain districts of the northland which I could not give in a letter, but I would suggest that extracts from this report may be taken and placed upon file with this letter, as my statements and conclusions as printed 30 years ago still remain without impeachment at the present time.' I think it is a

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remarkable thing that with respect to the country through which Professor Macoun went in 1872 and 1873, and which excited his enthusiasm—this is the country that I am trying to tell you about—he now says of it: 'My statements remain without impeachment at the present time.' Now, he speaks in this letter of two facts that I think are very striking. He says: 'In conclusion, I may say that the climate of the whole northland is a stable one, and as local conditions change it will improve, and where small spots are now called good land whole areas will take that term. The low altitude and the long day are fixed conditions and will always be the same. The forest will be cleared and the muskegs drained, and as the land becomes drier the frosty conditions will pass away and a good country will result.'

Now, there are some other sources of wealth in that country. I am going to place this pointer on the pencil lead line that I have drawn on the map extending from about the middle of Reindeer Island in Lake Winnipeg northwesterly and crossing the Peace River about 50 miles north of Peace River Landing. That is the line shown on a departmental publication issued a year or so ago, the mineral map of Canada as the northerly limit of prospecting. North of that line there is practically no prospecting as the note on the map says. The mineral wealth of that country is very great. There is no question about it but that there are a great variety of minerals. The first thing I want to touch on is petroleum. That has been frequently spoken of as the petroleum field of the world, and I will give you one point about that. Mr. McConnell made an examination of that field some years ago for the Geological Survey and he made a calculation of the amount of crude petroleum which it would have taken to have saturated the ground to the extent that he had discovered. He says that the amount of crude petroleum sufficient to saturate the area that he had examined would be $6\frac{1}{2}$ cubic miles. A witness before the Senate Committee in 1888, whom I quoted a few minutes ago, ex-Judge McLeod said that there was an area of 100,000 square miles in that country within which there were found indications of petroleum. There is a tar spring down at Great Slave Lake, there are some I think on the Mackenzie, and there are 75 miles, or thereabouts, along the Athabaska where these tar springs are found, caused by the oozing out of petroleum through centuries of time. I have a photograph here that I can show you of a bank of the Athabaska river, somewhere near Fort McMurray, and I think from the height of the man standing on the bank that it would be about 200 feet high. It has been represented to me as being solid tar or asphaltum. At any rate the soil is saturated with petroleum to the whole depth of the bank.

By Mr. Blain:

Q. Have you visited the country yourself?

A. I have not been in hardly any of the country which I have been describing. I have been studying a good deal, and I do not think I have got nearly to the end of my studies yet. There are about one hundred authorities in my office that I have not yet gone through.

Now as to natural gas. It is a matter well known to many people that there is natural gas in that country. There was a well sunk twelve years ago on the Athabaska and it has been burning ever since. It is spoken of as the largest gas well in the world. You will find that a great many travellers who have gone through that country lit natural gas along the banks of the river and used it for camp purposes. A gentleman who was there boring for oil told me that he had used natural gas constantly as it was escaping through cracks or openings in the soil.

Then there is salt. Let me quote again from the evidence given before the Senate Committee: 'Near Fort Smith there is a salt mine which is probably the most beautiful and the most abundant in the universe. There is here a veritable mountain

of salt. By digging a little in the earth, from 6 inches to a foot, rock salt can be found there.'

Gold has also been discovered there, also copper. There is no question but that copper exists at some points in the Barren Lands. Bishop Clut in his evidence before the Senate Committee spoke of Indians coming into Fort Providence and having crosses made of copper. I do not think that any white man has found out exactly where that copper came from. At any rate there is lots of copper.

There is also coal. In 1789 when Sir Alexander Mackenzie went down the Mackenzie river, he found that there was coal in the banks which was burning, and this extended for many miles along the river. That coal is burning yet.

Iron also exists in many parts of that country. Mr. Tyrrell, I think it is, described the country north of Lake Athabaska as being most promising from a mineral point of view. I cannot enlarge upon the subject of minerals just now, but I merely mention the fact of their existence. I want to ask your attention for a minute or two upon a point about the mineral question in that country which has impressed me, but I do not know whether I can convey that impression to you or not. I want you to consider Dawson City which is marked with a small red star on the map. I have here a clipping from the *Manitoba Free Press* of 20 years ago in which it says that miners had just discovered gold in the northwestern part of Canada up near Alaska. That was the first intimation that any gold was to be found there. I have the figures of the Geological Survey showing that over \$120,000,000 of gold were taken out from the Klondike fields up to 1st January last, and it is well known that that amount is far within the mark. As a matter of fact the output is a great deal more than that. So much for Dawson City.

Take Rossland, B.C. I lived in that city for two years and I am somewhat familiar with the conditions. The townsite of Rossland was ungranted land of the Crown in the year 1894. The Le Roi mine is just on the edge of the townsite and the total product of gold, silver and copper at Rossland up to the same date as I have given for Dawson was over \$40,000,000.

Now just for a moment let me refer to Fernie, B.C. The coal deposits at Fernie were unknown 25 or 30 years ago. I got some figures from Dr. Haanel about the coal at Fernie and from the figures which he gave me I make this calculation: There were 1,800,000 tons of coal mined either in the year 1906 or 1907—I am not quite sure which—in that field. Taking that as a basis it will take 12,222 years to exhaust the coal at Fernie at that annual production per year.

Another point farther east, not far from our own Ottawa Valley, is Sudbury, the discovery of the copper and nickel mines of Sudbury was coincident with the construction of the Canadian Pacific Railway, and the discovery of Cobalt, still nearer Ottawa, is a matter of about five or six years. Now I think that when you reflect upon the fact that these discoveries have been made in a prospected portion of Canada, and consider that probably more than one-third of the total area of the Dominion has not been prospected at all and that these discoveries have all been within the last 20 years, you will admit that it opens up great possibilities. We have the evidence from the staff of the Geological Survey as to the discoveries of the past and there is every reason to expect that there will be equally great mineral discoveries in the Northwest in the future.

The timber resources of the country I have not got time to dilate upon.

I just want to mention the water powers. There are beyond question water powers of enormous value in that country and with the development of electricity it is hard to set a limit on the value which those water powers may have.

I am going to mention one more subject, and that is the fish wealth of the north. If there was no other source of wealth in that country I think it would be of tremendous importance to the people of Canada to be made aware of the value of the

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fisheries of that country. There are in every lake, river and stream, enormous quantities of fish; whitefish, lake trout and jackfish in the clear waters and sturgeon in many rivers; salmon in the rivers running into Hudson Bay and the Arctic Ocean, and the salmon known as the Inconnu in the Mackenzie river and in Great Slave lake.

I have tried to compile figures that would impress upon you the value of the fisheries, but I do not know whether I have accomplished anything or not. With such meagre information as I had I tried to make an estimate of the water area in that country. Every lake, river and stream probably is full of fish. West of the Nelson river and north of the settled area, I estimate there are 63,000 square miles of water. There is a great deal more than that, because there are many smaller lakes that we have not got any information at all about. That is very nearly the same area as there is in Lakes Superior, Erie and Huron combined. There are two lakes, Great Slave lake and Great Bear lake each of which is larger than Lake Erie, considerably larger.

The natural system of waterways in that country attracts one's notice. I have not got the figures exactly at hand, but I think it is in the neighbourhood of 1,300 miles from Fort Smith to the mouth of the Mackenzie in which steamers drawing 6 feet can navigate at any time of the year when the river is open. Fourteen miles above Fort Smith you get into another system of waterways going up the Slave and up the Peace rivers, with falls not far from Vermilion. Above those falls you can go for 650 miles up the Peace river to the Rocky Mountains, all navigable. Then there is the Athabaska river, or a considerable portion of it. So we have very much over 2,000 miles of navigable waterways in that country.

Now, gentlemen, there is a deduction that seems to follow from all these statements if they amount to anything at all. That deduction is, that it is time that we knew more about the country. I think it is time more knowledge was acquired, and I am going to ask you to consider for a few moments a condition somewhat similar to that which we have here in another part of Canada—I refer to New Ontario. Previous to about the year 1899, I think, it would be the opinion of anybody who knows anything of Ontario that the region north of the Canadian Pacific Railway line was of no value whatever for any purpose practically speaking. I had always heard it so spoken of myself, but without dwelling upon it, let me say that it was a country which did not promise to be ever of any great value. Some six or eight years ago an exploration of that country was undertaken I believe that for departmental purposes New Ontario was considered to be the country lying north of the main line of the Canadian Pacific Railway. The country was divided into ten districts and there were surveyors appointed who took charge of each district for exploration purposes. Attached to each party was a land examiner, a geologist, and a timber expert. Well I have been told—I went to some trouble to find out—that the cost of that exploration was \$74,000. When the reports of these exploring parties were made up the government were able to announce that there were 16,000,000 acres of clay lands in New Ontario suitable for settlement. There were nearly 300,000,000 cords of pulp wood discovered in New Ontario, and I have the statement within the last few days of the Deputy Commissioner of Lands and Forests—I asked him the question and he said that the building of the Temiskaming and Northern Railway was a result of that exploration. The discovery of Cobalt was in consequence of the construction of that railway, and I believe the fact of there being 16,000,000 acres of clay land in New Ontario, which will be traversed from end to end by the Grand Trunk Pacific Railway, was an assurance to the people of Canada that there would be local traffic on the line and it would, therefore, be a much more certain enterprise than it otherwise would have been.

By Mr. Jackson (Sellkirk):

Q. Whereabouts on the map are those 16,000,000 acres?

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A. The line of the Grand Trunk Pacific, as you see it on the map, runs pretty nearly through the middle of it. I have not got the exact boundary. There have been 1,800,000 acres of land surveyed since that exploration took place as a result of it, and the deputy commissioner in Toronto in writing to me made a very remarkable statement. He said that in some of the townships it had been found that there was not one single acre of land which was not suitable for settlement and he added 'I think that is a record unique in any country.'

Now I am just about through, gentlemen, and I hope I am not wearying you. I would like you to look at the homestead map. I told you at the outset that there were practically 7,000 miles of railway.

By Mr. Duncan Ross:

Q. Of constructed railway?

A. There were 6,400 odd miles of railway constructed up to the 1st June last.

Q. In operation?

A. In operation. Those figures were obtained from the Department of Railways and Canals. The actual number at that time was 6,422, and I think it is safe to say that there are now 7,000 miles. That excludes every section that is not in actual operation. Now the line that is coloured green on that map is the Canadian Northern, the red line is the Canadian Pacific Railway system, and the brown line is the Grand Trunk Pacific. You will find three small lines at the lower part of the map in another colour not far west of Winnipeg, which represent the Hill lines which have just entered into that country. I think there is no question that Mr. J. J. Hill would not undertake to enter that country to such an extent if he did not intend to remain there. Therefore, it is almost certain that the Hill system will spread over that country as well as the three other systems referred to. Now if you consider the railway situation there and bear in mind the facts which I gave a few minutes ago as to the result of exploration in New Ontario, have we not the right to expect if we can demonstrate beyond question by actual exploration that the North country is what I take it to be that those railway systems will extend into it and occupy and possess it in the railway sense of the term? The Canadian Northern is at the Pas on the Saskatchewan, at Prince Albert, at Battleford and at Edmonton. The Canadian Pacific Railway is at Edmonton. Surely the Grand Trunk Pacific and Mr Hill's system would not stop short of it if there was any traffic to be got. I think it is easily capable of demonstration that before long we shall see railway construction in that country which will open it up and lead to further discoveries.

I remember when we used to hear in the West, it was an expression used derisively about us from across the line and was used very frequently, that the Canadian Pacific Railway was 'The Dominion on wheels,' and it was often said that Canada consisted only of a fringe of settlement along the northern boundary of the United States. Well, gentlemen, when we consider that Fort Simpson is 900 miles north of the International boundary and that wheat has been successfully grown there under unfavourable conditions, I think that we are in a position to show that the Dominion has broadened considerably from what it was 20 years ago.

By Mr. Armstrong:

Q. Before you sit down will you give us a little information about the timber lands in the North country? You mentioned the fact that there was a great extent of timber lands. Could you give us a short description of it?

A. If the committee will allow me to take up the timber question in about a week's time I will give them a great deal of information on the subject. There are about 100 authorities in respect to that country, the statements of men who have travelled through it and written about it. I have got one of my staff looking through

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those authorities and getting everything that has been said not only about timber, but about fish. As to the fish the results of the investigations so far have been personally amazing to me. I could quote to you the statement of Mr. J. B. Tyrrell who said that 140,000 white fish were caught at Fort Providence in ten days' fishing. There were 32,000 caught in two nights' catch on the Beaver river north of Battleford. There is a statement made by Professor Macoun as having been found in the journals of Sir John Ross, I think it was, that six tons of salmon were caught at one haul in the bay in the Arctic ocean into which the Back river empties. It is the same story throughout. Every traveller who has ever mentioned the subject speaks of every lake and stream as being full of fish.

By Mr. Duncan Ross:

Q. These are mere fish stories?

A. You can find it in the evidence taken before the Schultz Committee in 1888. There is where the statement was made.

By Mr. Armstrong:

Q. Tell us one timber story?

A. I won't undertake to discuss the timber question to-day because I am not quite prepared.

By Mr. Duncan Ross:

Q. If you are going to discuss the question of timber, the attention of the authorities should be drawn to the fact that a lot of timber is being destroyed by fire each year. That is a question which this committee could very properly discuss in connection with the matter of timber?

A. That is a point that I particularly want to develop in the investigation which I am conducting as to the amount of timber which has been destroyed by fire. There is a tract of country between Lake Winnipeg and Hudson bay, on the Burntwood river, on which there is some extremely fine timber. But it appears that the Indians have burned that country over through some superstitious reason of their own for generations back, and they have practically destroyed all the timber. But at one time it was a well timbered country, and I believe there is a great wealth of timber in that north country. At present, however, I am not prepared to discuss the subject.

MR. THOMPSON.—Last year from the Yukon, in about latitude 63, I got some wheat which I submitted to this committee, and also laid on the table of the House. This year I have some oats grown at the same point which I would be glad if the committee would examine. (Sample produced and laid upon the table.)

MR. YOUNG.—I am not going to say anything about the Yukon. I have some information here that would be interesting to the committee, but it is such a large subject that I have confined myself to the statements already given.

By Mr. Duncan Ross:

Q. There is one question which has not been brought out sufficiently, and that is in connection with the quantity of land under cultivation. You said, if I remember right, that there were only 8,500,000 acres of land already under cultivation?

A. I gave you the round figures and they were about 8,600,000 acres.

Q. That is in the Northwest, taking in Manitoba, Alberta, Saskatchewan and the unorganized territory, and you say there are 86,000,000 acres of lands alienated?

A. Yes, in the surveyed portion. There are practically no lands alienated outside the surveyed area.

Q. What proportion of that 86,000,000 acres of land alienated would you say was equal to 8,500,000 acres brought under cultivation; I mean as to the character of the land?

A. What I said was this: Of the 86,000,000 acres of land I cut off one-quarter and brought it down to 65,000,000, and then I drew attention to the fact—

Q. Then the 65,000,000 acres you consider good agricultural land?

A. I think you can measure agricultural results with safety on 65,000,000 acres. Then I pointed out that 31,000,000 acres of that land had been selected by homesteaders, that it is selected land.

Q. Do you say that there are 8,600,000 acres under wheat?

A. No, under grain.

Q. But 31,000,000 acres of land have been taken up by homesteaders?

A. Yes, in round figures.

Q. Now we are getting near the point.

A. And about the same amount has been granted to railways. That is why I tried to figure out that we were going to have in the future from the land now surveyed a yield of 1½ billion bushels of wheat or its equivalent.

By Mr. Thompson:

Q. What is the total area of tillable land?

A. In the north country north of the settled part of the Northwest? We had the evidence of two witnesses before the Senate Committee last spring. One said there were 100,000,000 acres of land available in the district from the Athabaska river west. Another gentleman said that there was as much land available for settlement in that country as was now settled west of Winnipeg. I don't think that I would like to say there are 100,000,000 acres.

Q. Mr. Bredin said that before the Senate Committee.

A. Yes. I would not like to adopt that as my own statement; I think it is a pretty liberal estimate.

By Mr. Herron:

Q. Do you think the land north of the Saskatchewan river, speaking of the two provinces, is of equal value for all purposes as the land south of it or to anywhere near the same degree?

A. I don't think it would be in the case of Saskatchewan.

Q. Well as to Alberta what would you say?

A. I think perhaps the best part of Alberta is in the north.

Q. I mean including mineral and agricultural possibilities?

A. There are great mineral possibilities in the northern part of Saskatchewan, but the Churchill river would probably be the limit of agricultural land. There is no question that up as far as the Churchill river the land is good. That you can expect just as good results in regard to that land most of the witnesses seem to agree. When you go north of the Churchill the land is not good. It is a rocky country and sandy. The mineral possibilities are greater with respect to anything else but petroleum in the northern part of Saskatchewan, I think than they are perhaps in the northern part of Alberta. But that is not based upon accurate discoveries, that is the information which has been given.

By Mr. Thompson:

Q. What is the distance of Fort Providence, Fort Simpson and Fort Liard from the boundary line?

A. Fort Simpson is 900 miles and 575 miles north of Edmonton.

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By Mr. Duncan Ross:

Q. You have avoided the Peace River country; why did you not say something about it?

A. It was included in the country that I was talking about. I enlarged my remarks so as to cover a much larger area than the Peace River country. I did not want to forget Saskatchewan.

By Mr. Thompson:

Q. You say that Fort Good Hope is fourteen miles below the Arctic circle?

A. Yes.

Q. They raise vegetables there?

A. Yes.

Q. Have they tried to raise wheat?

A. I don't think so, but they raise good vegetables—cabbages and lettuce for instance.

By Mr. Duncan Ross:

Q. Are you aware of the fact that in the Peace River country last year they had no summer frosts and better grain than at any other place in the Dominion and that this winter has been a marvellously mild one? I might say for the information of the committee that I had a letter from a gentleman who was surveying in that country all last summer. He left there some time at the first of the year and when he reached Winnipeg he was amazed at the cold weather. The gentleman in question said it had been bright sunny weather all the winter in the Peace River country?

A. The statement about that country is borne out by dozens of witnesses. That can be established by a reference to the evidence taken by the Schultz Committee in 1888 and our more recent report of last year. Witness after witness has made the same statement. One gentleman said that he had driven for three weeks in that country in January without an overcoat.

THE TIMBER BELT OF THE NORTH.

The following report of the timber of the most northern central belt of Canada embraces a wide area, extending east to west from the Hudson bay to the Rocky mountains, a distance of nearly one thousand miles, and from the Hudson, Nelson, Saskatchewan and Athabaska rivers on the south to the Arctic ocean on the north, a distance of eleven hundred miles.

BARREN LANDS.

By consulting the accompanying map it will be seen that a line drawn from Fort Churchill on the Hudson bay in a northwest direction to the mouth of the Mackenzie river divides, roughly, the so-called 'barren lands' from the timber belt. This, however, does not mean that trees do not grow north of this line. They are found in isolated spots along the banks of streams sometimes far within the barren lands. A fringe of fair-sized trees, for instance, is found along the banks of the Hanbury river although there are no trees to the north or south of it. It will be noticed that the forest extends about 750 miles farther north on the Mackenzie river on the western side of this tract than along the Hudson Bay on the eastern side. The reason of this is because of the remarkable mildness of the western side in comparison with the eastern. The 55° isotherm for summer extends as far south of the Hudson bay as the Lake of the Woods. About half way between the 49° and 50° north latitude. It trends northwest from here, crossing the Mackenzie river where the latter crosses

the 130° west longitude. The total distance from its extreme southern limit to its northern limit is about twelve hundred miles. Of course the isotherms for the winter months do not indicate such a difference in the winter climate.

No effort has been spared to exhaust every available source of information and it is therefore hoped that the seeker after knowledge as to the timber resources of this portion of Canada, will find herein a compilation as complete as it is possible to make it. The information is derived from the most reliable authorities from the time of Samuel Hearne, 1772, to Elihu Stewart, 1906. The old explorers and travellers including Samuel Hearne, Sir Alexander MacKenzie, Sir John Franklin, Sir George Back, Sir John Richardson, and many others were consulted as well as the men of our own times, including Professor John Macoun, Dr. Dawson, Dr. Bell, R. G. McConnell, J.B., and J. W. Tyrrell, all connected with the Geological Survey of Canada, Otto J. Klotz, D.T.S., W. Thibaudeau, C.E., W. Ogilvie, D.L.S., D. C. O'Keefe, D.L.S., T. Fawcett, D.T.S., and others.

The thought which comes to the mind again and again and which remains as the lasting impression from the study of the recorded impressions of all these explorers and travellers is the unanimity of testimony to the enormous loss by fires to the timber wealth of the north land of Canada. Serious, calamitous and almost irreparable as the loss from this source has been and continues to be in all parts of Canada, it is surely far greater in the north. A few reasons for this are:—

(1) The forest growth is slower towards the north till in the extreme north a tree over four hundred years old had only attained a diameter of from 2 to 3 inches, according to one observer.

(2) The northern forests occupy to a considerable extent land not likely to be required for agriculture and therefore the more desirable to be retained as a supply for future needs of the settled portions of the country.

(3) These forests should comprise for all time to come, if kept reasonably free from fires, one of the finest and most extensive game preserves in the world.

(4) Great possibilities of mineral wealth exist in many portions of the north country, but the destruction of the forest wealth of the country might easily be the deciding factor in rendering impossible of economic development vast deposits of minerals which would otherwise contribute to the general prosperity of the country.

Another conclusion one reaches, in studying the timber question in the north land of Canada, is the limited area, comparatively speaking, as to which there is any information. By a reference to the accompanying map on which it has been attempted to show, by colouring, some of the information collected in this report and as far as possible all the routes of travel followed by the different explorers, this will appear more plainly. The explorers travelled, as a rule, along the rivers or lakes in canoes, and in many cases their knowledge was only such as could be gained in that way.

Many explorations have been made, it is true, away from the rivers, but the fact remains that there are thousands of square miles as to which there is absolutely no information.

This report is divided for convenience into districts comprising generally those formed by the river basins, commencing on the east with the Hayes, Nelson and Churchill, across the continent to the Rocky mountains and then north to the Arctic Ocean, forming roughly the letter 'L.'

NORTHWEST TERRITORIES—NORTH OF MANITOBA.

In this portion of the Northwest Territories which is soon to be added to Manitoba, the timber would be all good if it were not for the repeated burnings, which have reduced the average diameter of the trees found there to a foot or less. Most of the timber is young and if protected for some years will average a much larger diameter, as is proved by the size of a few trees that have escaped the fires altogether. Other-

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wise the size and quality of the timber is governed by the climate, the best timber being found as you go south.

SASKATCHEWAN.

The greater part of northern Saskatchewan is poorly timbered, the best timber being found in the south and southwest of the district mentioned, where the timber is good and in comparatively small areas, excellent. Unlike the country north of Manitoba, the size of the timber is governed by the soil and not by latitude. J. B. Tyrrell found better timber on the Cochrane river, away in the north, than in the country south of that to the Churchill river; a country rocky and with poor soil.

ALBERTA.

Alberta is more thickly wooded, but the timber, especially in the muskeggy parts, grows rank and small. Forest fires are to some extent accountable for this as the soil is excellent and the latitude could not affect it as the farther north you go the better the timber gets. Good timber is found on the numerous islands and alluvial flats along the lower Peace river.

Very good timber is found near the delta of the Athabaska and Peace rivers though the area, it covers is not very large, but the best timber in all the northwest is along the Slave river and on the Liard and its tributary, the Nelson.

MACKENZIE RIVER.

Even on the MacKenzie river almost to the Arctic ocean, the country is well timbered and every man who has travelled down this river has remarked on the wonderful growth of the trees one hundred miles within the Arctic circle.

NORTH OF MANITOBA, AND EAST OF SASKATCHEWAN.

The timber of this district (formerly part of Keewatin), although there is little or none that has not been burned over, is far superior to the country just west of it in Saskatchewan.

FOREST FIRES.

The forest fires, however, have perhaps been more destructive in this district than in any other part of Canada. As will be seen in the more detailed account of the country farther on, the loss by fire has been enormous and most of the country has been burned over many times.

As long ago as 1878 Dr. Robt. Bell (Geol. Rep., 1879) says: 'Up to 1878 the great region covered by the report had been annually devastated by forest fires, ranging over large areas and destroying the timber in different localities from time to time, until, perhaps, more than half of it is already swept away. In that year I made a point of calling the attention of the Indian chiefs and head-men to this great waste, and informed them that it was the wish of the government that the timber (which the Indians had not before considered of any value) should not be thus destroyed, and requested them to make their temporary fires on the beach or the bare rocks, and to extinguish their camp fires in all cases before leaving. This they all promised to attend to and the result has been that during 1879 no forest fires, as far as I could learn or observe myself, had occurred. The saving thus effected is worth to the country many times more than the cost of our explorations.' The Indians, however, seem to have soon forgotten Dr. Bell's wishes, as no mention was made in later years as to the prevalence of forest fires being on the decrease.

Mr. Wm. Beech, of Fort Churchill, whose evidence on the timber of this portion of the northwest is referred to further on, says: 'I think that timber notices should be printed in Cree and Chipewyan so that those Indians might know and be careful of the timber. Notices as regards fire are sent in English, why not in Cree and Chipewyan? They have a type of their own and can read their own languages. They have books and I have seen their prayer books and bibles. Cree Indians are very good people.'

Mr. McInnes (Geol. Sur. Rep., 1906), speaking about the country near Burntwood river says that occasional white spruce and tamarack attain diameters as great as 18 inches, and adds that these are trees that have escaped when the surrounding forest was burned and are sufficient evidence that, but for the repeated fires, there would be large areas covered with good timber.

DETAILED ACCOUNT—HAYES RIVER.

In this district the Hayes river valley possesses the best timbers but in the country north the timber gradually deteriorates till along the Churchill there is very little good timber.

In 1884 Dr. Klotz explored the lower part of the Hayes. He noticed that there was more and larger poplar (5 to 7 inches) here than on the Nelson opposite. 'It is very marked that the woods on this route are far better than on the Nelson and there is a greater proportion of tamarack (probably one-third). Many trees (spruce) would measure 12 inches in diameter.'

KNEE LAKE.

On the south side of Knee lake there is some fair sized spruce, balsam, tamarack and birch. The birch increases in size as we proceed westward.

STURGEON CREEK.

The Shamattawa river is a tributary of the Hayes. Sturgeon creek is a tributary of the Shamattawa. Wm. Beech, a pioneer settler at Churchill, who has travelled all through this country, says (1908) the Hudson Bay people get their timber for manufacturing their boats and buildings at Sturgeon creek. He says the timber is from 12 inches to 1½ feet.

GOD'S LAKE.

God's river, a tributary of the Shamattawa, is the outlet for God's and Island lakes. A. S. Cochrane (Geol. Sur. Rep., 1878-79), reported the timber around God's lake as more than half burnt over, while the timber around Island lake was still green. Spruce, the most abundant wood everywhere, attains in many places a very good size and is used in the form of logs and beams for building purposes. The tamarack and banksian pine sometimes have a diameter of about 20 inches. Balsam fir is common and of good size around Island lake, some of the trees measuring nearly four feet in circumference, but it is scarce at God's lake and only rarely seen and of small size as far north as Knee lake.

MOLSON LAKE.

Mr. Beech estimates that at Molson lake, the head waters of the Hayes river, there were twenty million feet of spruce timber.

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NELSON RIVER VALLEY.

Northwest of the Hayes is the valley of the Nelson river. The timber along the lower part of the Nelson does not compare favourably with the timber along the lower part of the Hayes. Throughout its whole length spruce and poplar predominate. Aspen poplar, says J. B. Tyrrell (1896) is the commonest deciduous tree, as it grows on the drier uplands everywhere, occasionally forming beautiful forests, but more often, and especially towards the north, partly covering the surface with scattered groves of small trees.

Wm. Beech reports districts of good firewood from Flamborough Head to Owl river.

NISKI LAKE.

The first river of any size running into the Nelson is the Kisemitiskun or Old-Fish-weir river. J. B. Tyrrell in 1894 was at Niski lake, the headwaters of this river. The north shore he found covered with a rich growth of dark evergreens. The banks, close to the water's edge, are clothed with white and black spruce and some small poplars.

LIMESTONE RAPIDS.

The next river is the Limestone or Mittitto river. At Limestone rapids, says Dr. Klotz, (Interior Rep., 1884), the spruce is small, although some trees measure 7 to 10 inches, and back from the river it is smaller still. The little poplar that is found is scrubby. The Limestone river runs almost parallel with the Nelson to the north. The country from the Niski lake, the headwaters of the Old Fish-weir river, to the headwaters of the Limestone through the long chain of lakes, is described by J. B. Tyrrell (1894) as thickly wooded with small timber and towards Cat Fishing lake much of the timber had been killed by fire. On the upper part of the Limestone he found the best timber. He says, 'These banks are wooded with tall white spruce which looked very beautiful after the monotony of the stunted black spruce forest.'

GULL LAKE.

Below Gull lake the woods, says Dr. Klotz, are somewhat better and almost exclusively spruce, but there is no merchantable timber. From here to Split lake the wood is small, much thereof being brulé.

SPLIT LAKE.

The islands in Split lake, he says, as well as the shores are wooded, chiefly with spruce, some tamarack, poplar and birch; the wood is somewhat better than on the Nelson, averaging probably 7 inches in diameter. Owen O'Sullivan (Geol. Rep., 1904) says that here the trees, chiefly black spruce, are from 4 to 10 inches in diameter.

ASSEAN LAKE.

North of Split lake lies Assean lake, and some way north of this again is Waskaiowaku lake.

The shores of Assean lake, says Mr. O'Sullivan, are well wooded with black spruce, tamarack and white birch. A fire that occurred two years ago ran from its southeastern end for several miles eastward.

Wm. Beech reports that from Split lake to Waskaiowaku lake there is good timber, spruce and some tamarac, one foot to 15 inches in diameter and 30 feet high.

From Split lake west the country is divided into three river valleys, the Burntwood being the most northerly, the Grass river occupying the centre and the Nelson the most southerly part.

BURNTWOOD RIVER.

J. B. Tyrrell (1896) says that on the northern part of the Burntwood river white spruce is rather scarce.

Wm. McInnes (Geol. Sur. Rep., 1906), describes the timber in this river. He says the forest is a mixed second growth, mainly spruce and tamarack varying in age from recent *brulé* to 50 years. Along the lower part of the river but little timber left is of a size larger than 8 inches in diameter, three feet from the ground. All the drier parts denuded of old forest by the repeated fires that have swept over the region, being covered by forest of only ten years' growth or younger.

ODEI RIVER.

To the north of the valley of the Odei or Heart river, which flows into the Burntwood river from the west on the left bank eight miles from the mouth, is a rolling, forested country. Here, he says, the forest is mainly spruce and tamarack of about sixty years' growth, the larger trunks reaching diameters of from 8 to 10 inches, but the general average not more than 6 inches. In the valleys occasional white spruce and tamarack attain diameters as great as 13 inches. These are trees that have escaped when the surrounding forest was burned and are sufficient evidence that, but for the repeated fires, there would be large areas covered with good timber.

From here to Pipestone lake the recurring forest fires have not only denuded this section of its trees, but even the stumps have for the most part been burnt away, so that it is now covered only by an open growth of small white birch, poplar, willow and banksian pine, with an undergrowth of vetches and grasses and small shrubs diversified here and there, by small open tracts. Where the grass covered surface is free from trees, this country often presents quite a park-like aspect.

From here to Waskwatin lake the low flat along the river is covered by a sixty years' growth of timber, mainly of banksian pine and spruce. The higher plateau is wooded principally with spruce from 6 to 8 inches in diameter, with scattered banksian pines, poplars, and white birches succeeding an earlier burned forest that was even younger when destroyed, and this following a still earlier, that by the stumps, is shown to have been somewhat larger. Evidently this country has been subjected to repeated burnings that have followed one another, often at intervals of comparatively few years.

WASKWATIN LAKE.

Waskwatin lake is described by J. B. Tyrrell as 'wooded with white spruce and poplar. A supply of timber for building and fuel could be obtained from the surrounding country.'

A mixed second growth forest, says Mr. McInnes, mainly aspen poplar, covers all the uplands, while on the islands and on low flats bordering bays of the lake are found white spruces and poplars of diameters up to one foot.

Continuing along the Burntwood river, Mr. McInnes describes the country as being of the same general character for thirty miles, 'covered for the most part with a mixed second growth from ten to thirty years old, but with here and there, clumps of white spruce, with tall and straight trunks, a foot or more in diameter.'

FOOTPRINT LAKE.

At Footprint lake the greater part of the flats and practically all the highland have been burned over within twenty years, and are clothed now with an open growth of small mixed timber.

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Southward of the most southerly bend of the Burntwood river the country is wooded with banksian pine, poplar and spruce.

NELSON HOUSE.

At Nelson House, J. B. Tyrrell in 1896, said that timber for house logs had to be collected from scattered groves and brought several miles up or down the brooks or across the lake.

FILE RIVER.

From the Burntwood lake along the File river, which is really another name for the upper part of Burntwood river, J. W. McLaggan of Strathcona, Alta., (Hudson Bay route, J. A. J. McKenna, 1906) says that with the exception of a bunch of spruce of about half a million feet, averaging 12 to 14 inches in diameter, there was seen nothing but small, scrubby, mixed timber of but little value. The country back from the river has been burned over.

GRASS RIVER.

South of this is the valley of the Grass river which covers a much larger area than the Burntwood, and the timber, where not destroyed by fire, is much better, but nearly the whole area has been burned over. As long ago as 1879, Dr. Robert Bell (Geol. Rep.) says that in places along the route the woods are burnt, but most of the timber at that time appeared to be green, and of a hifty growth, the spruce sometimes measuring over 6 feet in girth which is equivalent to a diameter of 2 feet.

PAINT LAKE.

At Paint lake, along the lower part of Grass river, the islands are covered with small mixed timber. On the south side of the lake there is a fairly good bunch of spruce, suitable for railway ties or pulpwood. Back from the lake the country has been burnt over but is growing up again with poplar and other trees.

Between Paint and Setting lakes he says there are small bunches of spruce and poplar, but back from the river the country has been burned over.

SETTING LAKE.

Along the shores of, and on the islands of Setting lake there is, Mr. J. W. McLaggan estimates (Hudson Bay route, 1906, J. A. J. McKenna) about ten million feet of young, sound, clear spruce timber, averaging from 12 to 14 inches in diameter.

Below the rapids of Grass river the country has been burned over leaving only a few bunches of spruce.

J. B. Tyrrell mentions (1896) that the Rowan or mountain-ash grows freely and has an abundant crop of berries especially around Wikusko and Reed lakes.

HERB LAKE.

From the rapids to Herb lake, says Mr. McLaggan, there are small bunches of jackpine and tamarack, and on the north side of the lake there are spruce and poplar fit for railway ties and pulpwood; but back from the lake and the river the country appeared all burned. Mr. McLaggan expresses the opinion that there must have been a good timber area bordering these waters, and that, if fire can be kept out, reforestation will soon be effected.

REED LAKE.

From Reed lake north to Methy lake, he says the timber is mainly jackpine and tamarack of small size, a limited portion of which would be fit for railway ties.

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From Red lake west to Elbow lake he saw about two million feet of good spruce and poplar, averaging from 12 to 14 inches in diameter.

South of Reed lake he passed through low and swampy country covered with scrubby timber. About a million feet of medium-sized spruce was sighted; the country was found to have been burned over and growing poplar was found, which in a few years would make good pulpwood.

From Cranberry to Athapuskow lakes he reports a poor growth of scrubby timber.

UPPER NELSON RIVER.

We will now return to the Nelson river which we have already followed to Split lake.

Above Split lake, says Dr. Klotz (Interior Rep., 1884) the spruce is only about 4 inches in diameter. The lower limbs soon die from the growth of moss thereon, leaving only a green top. Tamarack which elsewhere generally grows in swamps, is found here on the bare rock.

SIPIWISK LAKE.

The whole surface around Sipiwick lake, he says, is wooded principally with spruce, some tamarack, pitch-pine, birch and poplar. Spruce sticks there are of 10 inches, yet the exception rather than the rule.

MUHIGAN LAKE.

The country along the Muhigan river, says J. B. Tyrrell, (1896) has all been burnt over and much of it is now almost treeless, like partly open prairie, with scattered groves of small poplars and alders.

ECHIMAMISH RIVER.

The country along the Echimamish river, says Dr. Robert Bell (Geol. Sur. Rep., 1879), is very swampy and wooded with spruce, tamarack, banksian pine, white birch, aspen, balm of Gilead, and willow, with a little balsam fir.

In the country north of Norway House the woods, according to Dr. Klotz, are good, affording 12 inch spruce sticks. There is considerable balsam also. The country is, he says, all wooded but not a forest country.

ROSS ISLAND.

Dr. Robert Bell reports in 1878 that at that time a small area of the timbers had been preserved on the west side of Ross island, where the West river enters Big-reed lake and here many of the white spruce measured three feet in diameter. Even the most rocky tracts support a growth of trees large enough to be of value for many purposes.

NORWAY HOUSE.

Dr. Klotz says that at Norway House, north of Lake Winnipeg, the woods consist of spruce and poplar and some scattered birch and pitchpine. A good stick of timber would be about 9 inches at the butt.

GUNISAO RIVER.

The Gunisao river is to the northeast of Lake Winnipeg but it flows into the Nelson river above Norway House. According to J. B. Tyrrell (1896) the banks are wooded with beautiful, tall, white spruce, apparently forming a magnificent con-

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ferous forest, but how far back from the river this forest extends was not determined. There is certainly here a large quantity of valuable timber, much more than was seen anywhere in the country immediately east of Lake Winnipeg, for most of the surface farther south has been swept by extensive forest fires within the last decade.

To the northwest of Lake Winnipeg are a number of lakes which belong to the Saskatchewan water system.

From Cranberry to Athapupsukow lake Mr. McLaggan, (Hudson Bay route, 1906, J. A. J. McKenna), describes the timber as poor and scrubby. Some small bunches of spruce were seen along Athapupuskow lake near the portage, and by Goose river, but the country has been all burned over, leaving only small clumps of spruce.

GOOSE LAKE.

The greatest part of the country on the upper end of Goose lake has, he says, been burnt over, leaving only clumps of spruce and poplar.

COWAN RIVER.

After crossing Black Duck lake on the upper parts of the Cowan river he reports scattered bunches of spruce and tamarack of a size suitable for ties or pulpwood.

Along Cowan river he describes the country as low and flat, with small quantities of good spruce timber in spots until within a few miles of Black Duck lake, when bunches of good spruce, estimated at ten million feet, come into view.

CORMORANT LAKE.

On the north side of Cormorant lake, and along the creek which connects it with Lake Yawingstone, and on the south side of the latter lake he saw from three to five million feet of good milling spruce timber.

CHURCHILL RIVER VALLEY.

North of the Nelson River valley lies the valley of the Lower Churchill river.

Owen O'Sullivan in the Geological Survey Report (1906) of his trip in 1904, says wood is scarce at Churchill. The Hudson's Bay Company obtain their fuel supply from a ravine three miles distant in a southwesterly direction where black spruce averaging 5 inches in diameter is found.

W. Thibaudeau, C.E., in the 'Hudson Bay Route,' 1906, by J. A. J. McKenna, also says there is no merchantable timber in the vicinity of Churchill, although there is an ample supply of timber for fuel purposes for many years along both banks of the Churchill and around Button bay.

SEAL RIVER.

Travelling northwest from Churchill, Dr. Robt. Bell in 1879 (Geol. Rep.) says that spruce and tamarack are found growing near the sea-coast in favourable situations as far as Seal river beyond which their northeastern limit curves inland.

EASTERN WOODS.

J. B. Tyrrell in 1893 went from Churchill to York. Almost due east from Churchill he came to the Eastern woods, so called, where Wm. Beech says there is some good wood. Most of the country crossing Salmon creek, Broad river and Owl river is open plain.

BROAD RIVER.

Wm. Beech, however, says that on Broad river there is heavy timber 10 to 15 inches within ten miles of the coast, and, he adds, it is a great pulpwood country.

W. Thibaudeau, C.E., who went over much the same ground as Mr. Tyrrell, does not speak of seeing any timber except four miles from Churchill where he says there is spruce from 6 to 12 inches, and at Broad river where there is a strip of about four miles by one-third of a mile wide; there is stunted black spruce from 8 to 14 inches and he reports the balance of the country is open, level, plain perpetually frozen.

CHURCHILL RIVER.

On the main Churchill river, above its mouth, to Deer river, Beech says there is some good spruce from 7 to 15 inches in diameter. The country back from the Churchill appears to be generally poorly timbered.

DEER RIVER.

J. B. Tyrrell reports the sides of the Deer River valley are at first thinly wooded, but as the river is ascended the timber becomes much thicker and heavier. Inland the country is generally open, but thinly wooded in places. Beech reports that the timber extends fifty yards only all along the Deer river. On the upper stretches the trees range from 12 to 20 inches in diameter. Owen O'Sullivan (1904) states that this whole region has been overrun by fire. Bunches of spruce and tamarack that escaped the fires were frequently met close to the water's edge. About half-way down he came to the open mossy plain, which extends northward to the well wooded banks of the Great Churchill.

OWL RIVER—NISKI LAKE.

J. B. Tyrrell found the almost continuous forest began before reaching the ancient shore line between the Deer river and Owl river. At the head of Owl river he found the remains of a forest fire eighteen years old. Between this and Niski lake, the source of the Kisemitskun river which flows southeast to the Nelson, the country was thickly wooded mostly with black spruce.

W. Thibaudeau, says that from the headwaters of the Deer to the Churchill, the country is covered with scrub spruce and tamarack from 4 to 6 inches in diameter. There is no timber where they reached the Churchill river, and from here along the east side of Little Churchill there is some timber from 6 to 14 inches in diameter.

LITTLE CHURCHILL.

Speaking of the lower part of the Little Churchill Dr. Robt. Bell in 1879 says the timber below the Recluse lakes is burnt all the way to the Great Churchill. In 1904, Owen O'Sullivan says of the same country that from Recluse lakes northward the country, which has been overrun by a fire that occurred some forty years ago, is now partly covered with bunches of second growth black spruce, tamarack and white birch.

Of the upper part of this river Dr. Bell reports the country as 'generally green' or unburnt. The timber, however, does not seem to be very good as Owen O'Sullivan speaks of it as covered with black spruce, white birch and tamarack of small size. Near Waskaiowaku lake there is some black spruce averaging 8 inches in diameter.

WASKAIOWAKU LAKE.

Owen O'Sullivan reports the forest growth around the lake as chiefly black spruce and white birch of from 4 to 14 inches in diameter, while Thibaudeau reports

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it slightly larger. Thibaudeau says also the ridge between here and Split lake was thickly wooded with spruce from 4 to 10 inches.

SASKATCHEWAN.

CONDITIONS AND EXTENT OF THE TIMBER.

The extreme east of Saskatchewan and extreme west of what was till lately part of Keewatin has the poorest timber of all the northern forest country. South of the Saskatchewan, is the prairie. Directly around the Saskatchewan it is flat and swampy. Travelling north you almost immediately come to the rocky sterile country. This country extends to the barren grounds across the Churchill, Reindeer lake, Cochrane river and on to the Kazen river which flows through the barren lands. The good timber in Saskatchewan is confined mainly to the country north and northwest of Prince Albert.

FOREST FIRES.

Fires have been very destructive in Saskatchewan also. R. S. Cook, of Prince Albert, in his evidence before the Senate Committee, 1907, says, 'There is no calculating the amount of the timber that has been destroyed, and the very best spruce at that. The government are now taking steps to try and put a stop to the burning. They have fire fighters out there during the dry season, but it is such a vast country it is a very difficult matter.'

In the rocky country along the Churchill where the soil is poor the forest fires do not turn the country into prairie as they do along the Beaver. Around Cold lake, on the border of Saskatchewan and Alberta, R. S. Cook says the fires have been very destructive but there has been good timber there. Mr. Eberts, who traversed this country exploring the proposed route of the C.P.R. says (Dominion Pacific Railway report, 1880) 'that the whole of this district (south of the Beaver) was originally forest, but at present a strip of from five to twenty miles along the Saskatchewan is chiefly prairie and to the north, large open tracts were interspersed through the forest land. These prairies and open tracts were no doubt the result of the fires.

Fires, says Mr. Cook, have been very destructive at Montreal lake and about two-thirds of the timber immediately around Stanley Mission has been destroyed by fire. Archdeacon McKay says that in some places the timber has been destroyed by fires for the time being, particularly in the rocky country. The fires seem to be more destructive in that class of country than in the other part.

EASTERN SASKATCHEWAN.

From all accounts there is little or no good timber north of the Saskatchewan river in eastern Saskatchewan. From the Dom. Pac. Ry. reports of 1880, we learn that 'Banksian pine is prevalent on the sand-hills and ridges, but seldom attains a foot in diameter.' Birch and willow are numerous but of little value except for fuel. North of latitude 55 extending to Churchill river the whole country is described as being absolutely barren consisting of Laurentian rocks in which, however, there are great possibilities of mineral wealth.

Banksian pine of small size scattered over the rocks and here and there groves of small spruce in marshy spots were met with.

NORTHERN SASKATCHEWAN.

J. B. Tyrrell in 1894 explored the lakes and rivers of northern Saskatchewan, Reindeer lake and river, Cochrane river, Geikie river and the country north to beyond the tree limit. In hardly any part did he find good timber. Reindeer river

appears to be fairly well wooded. 'In some parts the river flows through low bottom-land wooded with small spruce and tamarack behind which rise the rocky ridges.' At Reindeer lake the growth is still poorer 'a few pines and spruce cling to the brown, lichen-covered rocks.' The growth north of this is very poor.

COCHRANE RIVER.

On the portage to the headwaters of the Thlewiaza river, says Mr. Tyrrell, is a grove of fine, tall, white spruce, the best spruce seen on the banks of the Cochrane, and here the Indians seem to resort regularly to obtain wood for their canoes, while birch bark can be procured from trees on the same sandy ridge a short distance farther north.

BLUE LAKE.

North of this again at Blue lake he writes, 'The hillsides are wooded with large white spruce up to 76 inches in circumference (Geol. Sur. Rep. 1896) three feet from the ground. The western side is wooded with white and black spruce, birch, alder, willow and straight aspens 4 inches in diameter,' the first of these latter trees seen for a long time.

ENNADAI LAKE.

At the south end of Ennadai lake the hills are usually wooded but within a few miles the forest disappears or becomes confined to the ravines and the hillsides are bare. On the Kazen river which is north of the tree limit, Tyrrell says 'there are a few groves of larch of fair size.'

CONTRADICTORY EVIDENCE.

Of the country from Lac la Ronge south there has been much contradictory evidence. Surveyors and explorers who have been over the country, J. B. Tyrrell and different men sent out by the government (Dom. Pac. Ry. Report) say that there is no good timber there, while Archdeacon McKay and R. S. Cook, of Prince Albert, say there is much good timber.

J. B. Tyrrell (1892) says 'South of Lac la Ronge there is some improvement in the timber. On Montreal river small Banksian pine cover the country. No large timber, spruce or pine, is seen till near the lake, when on the southern end some groves of large spruce were seen. Montreal mountain appears to be more than half burnt over. The largest timber is seen on the watershed south of Montreal and Deer lakes.' Mr. O'Keefe in his exploration in 1879 (Dominion Pacific Ry. Rep.) says, 'Along English river, in this section, nothing but rock, sand and swamps is recorded.' Mr. Clarke, his assistant, made an excursion south of Lac la Ronge and he said that 'In the northern part there are small sections of fair land south of Lac la Ronge and surrounding Egg lake. Around the latter lake there is a belt of fine timber, consisting of tamarack, poplar and in places balsam.'

Archdeacon McKay and R. S. Cook (Senate Committee Report, 1907) however, speak very highly of the timber here. The latter writes that 'to the west of Lac la Ronge the country is all timbered—in some places heavy timber. There is spruce and poplar. The spruce is good enough for lumber and of course it would do for pulp-wood. As to the country around Lac la Ronge there is timber all through it, wherever it has not been destroyed by fires.'

Archdeacon McKay explained that he put up a sawmill at Lac la Ronge in the year 1906, and it is run by water power. The logs that are sawn there are the kind of timber found in that part of the country. They average seventeen logs to the thousand feet. They will be logs 14 to 15 feet long. The diameter would be about

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two feet across at the butt-good, large logs, clean timber, very much the same timber as at Prince Albert. This good timber is scattered all over the country sometimes for miles.'

Owing to this contradictory evidence it is pretty hard to accept a fair estimate of the timber here. Archdeacon McKay of course may be speaking of a much more limited area than the explorers who probably take a general estimate of the whole country.

There is no doubt that there is good timber between Lac la Ronge and Prince Albert.

TIMBER NORTH OF PRINCE ALBERT.

R. S. Cook says that down through the region immediately north of Prince Albert and on through to Montreal lake, it is pretty much a timber country. Dr. Hugh Bain of Prince Albert (Senate Report, 1888), says, 'Immediately north of us we have a large belt of timber, chiefly spruce, and also a good deal of poplar.' He also says that the true forest just touches the river at Prince Albert. At the present date, twenty years later, Archdeacon McKay says it is all forest practically until you get about thirty miles from Prince Albert. The forest fires have no doubt cleared much of the forest off for thirty miles during that twenty years.

D. C. O'Keefe in the Dominion Government Pacific Railway Report, 1880, says that 'North of Prince Albert and west of Cumberland House to longitude 107° 30' much timber was observed. In the south-western part poplar copse prevails, gradually, emerging into continuous poplar forest which attains its greatest development to the east of Stinking lake. The balsam and poplar in groves is of large size, in many cases two feet in diameter. Extending eastward from Stinking and Pelican lakes, fine groves of spruce are frequently mixed with aspen and balsam-poplar, and, on the borders of the swamps, groves of tamarack of all sizes up to 18 inches in diameter are found.

This well-timbered region also extends first northwest and then west along the Beaver river.

R. S. Cook twenty years later, says that 'passing down the Beaver river and southeast towards Prince Albert, there is a large quantity of very good spruce. Witness said that the fires had been very destructive and burned off a good deal of the top soil. Where that top soil is gone the country is of very little use. It is growing up with black birch and second growth poplar. There are openings but to no great extent.'

PRINCE ALBERT TO GREEN LAKE.

Professor Macoun in the Senate Report, 1888, speaking from actual observation, says 'there are immense groves and timber of excellent quality lying between Prince Albert and Green lake. Very excellent groves of white and black spruce are found in that country. Of course when I speak of timber I mention only black and white spruce and jackpine as we call it, that is scrub pine, only it grows very large up there. These are the trees that are of economic value, besides the balsam poplar, and it only grows on the islands and alluvial bends along the river bottoms. When you come to the route of Green lake there is two days' journey through a magnificent country, beautifully timbered. Crossing the Saskatchewan at Carleton, for two days you travel through a prairie country with bluffs here and there. Then you travel for two days through a forest to Green lake. It is a dense forest.'

GREEN LAKE.

Speaking of Green lake he says: 'Timber of this section is of very fair quality, consisting of spruce, poplar and tamarack.'

STINKING AND PELICAN LAKES.

From Stinking or Witchikan lake to Pelican lake Mr. O'Keefe (Dominion Government Pacific Railway Representative, 1880), says 'continued our course through spruce and tamarack woods of fine timber averaging 20 inches in diameter and from 50 to 60 feet high, which continued for two and half miles, then poplar with birch, spruce and tamarack prevailed.' Mr. Eberts, speaking of the country west and north of Pelican lake says, 'this is the southern limit of the true forest. The timber is large, consisting of spruce, balsam, poplar, banksian pine, and a few trees of yellow pine from 12 to 30 inches in diameter.'

BEAVER RIVER.

Mr. Eberts explored from here in a northwest direction on the watershed between the Beaver and the Saskatchewan in the year 1879 (Dominion Government Pacific Railway Representative). 'The indications suggest that the whole of this district was originally forest, but at present a strip of from five to twenty miles along the Saskatchewan is chiefly prairie. To the north large open tracts are interspersed through the forest land. The standing timber consists of poplar and spruce of good size, with banksian pine on sandy soil.' Since this time, nearly thirty years ago, much of this timber has been burnt as R. S. Cook says that around Cold lake on the border of Saskatchewan and Alberta the fires have been very destructive although there has been good timber there.

WESTERN SASKATCHEWAN.

Travelling north from here the timber gets poorer. Mr. O'Keefe describes the country inland from Doré river, a tributary of the Beaver, as sterile but river banks well wooded with spruce. South and west of Lac la Plonge are sandy plains, muskeg and tamarack swamps, while southeast there is some good tamarack and spruce.

ILE A LA CROSSE LAKE.

Bishop L. F. Lafleche (Senate Report 1888) says 'the vegetation (of Ile à la Crosse) has a poor appearance and can offer no advantage for the working of the forests. Autumn fires have devastated them considerably. The principal species of wood are the cypress which hardly attains a diameter of a foot and a half at the butt, the spruce, white and red, the birch, the poplar, &c.' In 1879 Mr. O'Keefe reports 'From the southeast end of the lake (Ile à la Crosse) we penetrated (east) to Burnt Mountain.' He found a fair growth of banksian pine, poplar and birch and in places tamarack. Then he found a barren plain country similar for twenty miles north and south. Hon. Wm. Christie (Senate Report, 1888) reports that from Ile à la Crosse lake to Portage la Loche the whole country is rock and islands covered with small trees.

Professor Macoun (Dom. Govt. Pac. Ry. Rep. 1877-78) says that much of the land in the vicinity of Methy and Buffalo lakes is covered with banksian pine and may, therefore, be set down as very poor and sandy. In the more elevated country only, he observed balsam, spruce and even there it was of rare occurrence.

The Churchill river was for over 100 years the canoe route for the voyageurs and explorers travelling to the Mackenzie valley, Sir Alexander Mackenzie, Sir John Richardson, Sir George Simpson and others. All speak of the Churchill as a rocky country of small trees or else do not mention the trees at all.

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ALBERTA.

Leaving the province of Saskatchewan by the Clearwater river you enter Alberta and the timber gets somewhat better.

W. Ogilvie, D.L.S. (1892), speaking in a general way of this district says that as a rule the trees are much smaller than people in the eastern provinces are accustomed to see made into lumber.

FOREST FIRES.

He says that owing to its position the resources of the upper part of the Athabaska river stand a chance of being utilized much earlier than those on the lower river. He continues, 'I am sorry to say, however, that long before it will be necessary to resort to this, much of it may be burned, as such is the case along the trail between Edmonton and the landing. In 1884 I passed over this trail twice and then saw many groves of fine spruce, but last summer I saw that much of the best of this timber had been completely burnt off. Then the country in the immediate vicinity of the landing was all heavily timbered, much of it merchantable. Last summer especially in the Ta-wat-an-a-velley and vicinity, the country resembled prairie nearly as much as the country in the vicinity of Edmonton does.

CLEARWATER RIVER.

T. Fawcett, D.T.S., made a survey of the Clearwater river (in 1888) and connecting waters to Cumberland House following the old canoe route. He reports the valley for the greater part of the distance is thickly timbered with balsam poplar, white poplar and birch. A few good trees are found, but those suitable for manufacture only in small numbers. The balsam poplar grows to an average size of from 6 to 24 inches in diameter, straight and free from limbs, but the timber is not of much value. About sixty miles up the stream banksian pin is scattered among the other timber, and the soil becoming sandy, scrubby pine is plentiful. Black spruce and tamarack also occur but are somewhat scarce. Towards the top of the banks the timber is much smaller.

CONDITION OF THE TIMBER ON THE ATHABASKA RIVER.

Leaving the Clearwater you enter the Athabaska river. Many years ago there was evidently some very good timber on the river, but now the fires have destroyed a large proportion of it. The upper or southern parts have the poorest timber. As you go north the trees get larger until in the delta you find excellent timber.

In the report of 1888, Wm. Ogilvie gives a description of the different trees of this region. The spruce and poplar found in about equal quantities, greatly outnumber all the others; spruce generally found in groves by itself, seldom exceeds 12 to 14 inches in diameter, and from 100 to 120 feet in height; poplar generally small but found on many of the flats of a good size. Of the other species of trees he says the white birch, the only hard wood in the country of any use, is small and crooked and seldom more than 6 or 7 inches in diameter; the pitch pine generally small and scrubby and of little or no value; the tamarack scarce and generally small only found in marshes and a great deal of it hollow and unsound at the heart. Still he says that all the way down to the lake, the country is or was, thickly wooded. W. F. Bredin, of Lesser Slave lake, twenty years later says (Senate Report, 1907), the valley of the Athabaska from where the McLeod river empties into it, to the Grand rapids, a distance of about 300 miles, is mostly timbered with small timber, poplar and spruce, not scrub exactly but not much saw timber. Professor Macoun (Senate Report, 1888), says that all the branches of the Athabaska and the Athabaska river itself,

have excellent forests in many places, sometimes continuous for very many miles. Then at other times the forest is poor and in some places nothing but small poplars. The whole region may be taken as a forest country that will produce economic timber. The same may be said of the country up towards the base of the Rocky mountains, at the source of Smoky river. Mr. Bredin says that the timber might have been fairly good at one time, but now it is fairly scattered and a great deal of it is grown up with second growth. From the McLeod river to McMurray the timber is poor while from McMurray to Lake Athabaska there is some improvement.

EDMONTON.

The wooded country of the upper Athabaska is just north of the great prairies that extend as far as Edmonton.

LAKE ST. ANNE.

J. McEvoy (Geological Report, 1897) says the prairie region that exists around Edmonton gradually disappears towards the west and before Lake St. Anne is reached the country is to a great extent covered with a thick growth of poplar and cottonwood. H. A. Macleod (Dom. Govt. Pac. Ry. rep., 1875) says that from Edmonton to the Rocky mountains the poplar becomes larger, but decreases in quantity, and spruce appears more frequently with pitch pine and balsam till the woods are entirely made up of those species. He says that the poplar in the northwest appears to be of better quality and closer in the grain than that found in Ontario, resembling soft maple and makes very good firewood.

LOBSTICK VALLEY.

Again, in the Pacific Railway report, 1880, he says there were a few small prairies in the Lobstick valley, the rest of the country being covered with timber mostly of the original growth, a large proportion being of good size and fine quality, but brulés and windfalls were numerous and very extensive in this section of the country. Marcus Smith (Pacific Railway report, 1877-78) reports the spruce and poplar of good size. Twenty years later (1897) J. McEvoy gives a much less favourable account of the timber. 'Burnt and green woods of spruce and cottonwood alternate along the way. Fallen timber is plentiful throughout. Thick small timber was seen, but the greater part has been killed by fire.'

MCLEOD RIVER TO ATHABASKA RIVER.

Continuing he says that all the country from the McLeod to the Athabaska river had been overrun by fires a few years before and much of the timber destroyed had been of a merchantable size. It was then a wilderness of bare trunks.

ATHABASKA VALLEY.

As the bottom of the Athabaska valley was approached he found smaller and more scattered timber. Beyond this, at Cache Pecotte, four miles above Sandstone creek and below Brulé lake, the Athabaska valley was to a great extent an open grass country, having in parts a light growth of scattered pines and some heavier spruce woods.

MALIGNE AND ROCKY RIVERS.

Before reaching the Rocky mountains Mr. McLeod found on the Maligne and Rocky rivers much rough wooded country, much of the timber fallen.

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JASPER HOUSE.

Professor Macoun (Pacific Railway report, 1877-78) says that not many miles northwest of Jasper House the aspect of the mountains changes, the slopes lose their wood and become clothed with grass instead of spruce forest, and the plain instead of being a continuous forest changes its characteristics to those of park and meadow land.

BAPTISTE'S RIVER.

Professor Macoun, in his 'History of the Great Northwest,' 1882, says there is an abundance of fine timber of various species on Baptiste's river.

LESSER SLAVE LAKE.

The Lesser Slave lake region lies between the Athabaska and the Little Smoky river.

H. A. Conroy reports (Senate Committee, 1907) that some parts of this district are heavily timbered, while other parts are open. There is an Indian reserve along the Little Slave river and a portion of that has good timber. He says that the Indians have the finest piece of timber on the Lesser Slave lake as a reservation. The spruce is large, and there is a species of poplar that they call the black bark poplar which grows very large in that vicinity. Mr. Conroy has seen it from 3 to 4 feet across the stump and 50 and 60 feet high on this low land. The north side of Lesser Slave lake, he says, is covered with quite a heavy second growth of poplar from 9 to 12 inches through and very slim and tall, and with some spruce, but not to any extent. North of this he says there are twenty miles of a rolling prairie country which appears as though it had at one time been burnt and the timber destroyed.

LESSER SLAVE LAKE TO WHITEFISH LAKE.

About half way between Lesser Slave and Whitefish lakes you strike a timber belt running from that to Whitefish lake, and there is a great deal of poplar and some spruce, where Mr. Conroy has seen logs two feet through.

LITTLE SLAVE RIVER TO ATHABASKA LANDING.

From Little Slave river to Athabaska Landing he says the banks of the river are fringed with timber, probably half a mile to two miles wide. The spruce is fairly large; in some districts fit for sawlogs, and mostly all fit for ties and small building timber. Some of it was very large spruce for that country, three feet across the stump.

LITTLE SLAVE RIVER TO McMURRAY.

W. Ogilvie reports (1888) the timber on the Athabasca from Little Slave river down to McMurray as generally small, although alders and willows grow to a size which would surprise people from the eastern part of the country. He has seen alders more than 8 inches in diameter and 30 feet high, while willows are often seen one foot in diameter, and he has seen one 16 inches. Elihu Stewart (1906) reports that the country along the banks from the landing down for some forty miles has suffered very much from fires. Below this point less damage has been done to the timber, which consists of poplar, birch, spruce, &c., the spruce being mostly along the river and its tributary streams. It is generally rather too small for lumber, though some belts contain trees of sufficient size for that purpose. The appearance from the steamer would indicate that generally the timber is of second growth. The spruce seems to be overtaking the poplar and will supplant it in time. This timber is well worth preserving from fire.

LAC LA BICHE.

East of Athabacka Landing is Lac la Biche the north shore of which Mr. Eberts (Pac. Ry. Report 1880) says is thickly timbered with spruce and poplar; the rest of the country covered with the last two trees and with banksian pine and tamarack.

For many miles north Mr. Stewart reports the timber as consisting of poplar, birch and some spruce, but none of the latter of good quality.

Past the numerous rapids from here to McMurray the standing timber is very small but nearly the whole district has been burnt over from time to time. There is very little large enough for lumber.

MCMURRAY TO LAKE ATHABASKA.

W. Ogilvie (1888) says that from McMurray down to the flats adjoining the lake the timber is nearly all spruce and poplar. There are a few ridges of pitch pine which possess no value. Occasionally a few white birch are seen. H. A. Conroy speaking of the present time (Senate Committee Report 1907) says that on the lower levels of the Athabaska through to Athabaska lake, there is heavy timber all the way along. The Indians told him that back from the river it is pretty muskeggy. He had been up the river every year for eight years. Taking the country as a whole there is quite a lot of marketable timber. All the lakes and rivers could produce good timber. There are millions of cords of spruce for pulpwood. W. F. Bredin also speaking of the present day says that it looks like a great alluvial plain from the river along from Fort McMurray to Lake Athabaska, 200 miles. That country is more or less timbered. He says that the country from McMurray to Lake Athabaska does not seem to have been as much swept with fires as the country south of that. J. W. Tyrrell who travelled through here in 1893 says that 132 miles below McMurray, the banks were thickly draped with spruce and poplar woods. Besides spruce and other varieties he saw balsam trees, the last seen on the northward journey.

BIRCH HILLS.

To the west of Athabaska river below McMurray are the Birch hills. Mr. McConnell (Geol. Report 1887-88) reports that on the Moose river to the Birch hills are small aspen, spruce and banksian pine. The timber on the Birch hills was largely destroyed by fires.

DELTA OF THE ATHABASKA.

In the delta of the Athabaska is undoubtedly the finest timber met with in going north from Edmonton to the lake. W. Ogilvie (1888) says that the spruce are generally much larger there than on the upper portion of the river, and much more free from limbs and knots and well suited for use. He says he saw nothing to compare with it in any part of the Territories (adjoining the prairies) through which he had been. For some three or four miles back of the lake, on the south side, there is nothing but willow and small poplar, which gradually merges into the large timber as we get back from the lake. Hon. Wm. Christie (Senate Report 1888) says that very good wood, useful for building purposes, can be got here. In later years travellers such as Elihu Stewart (1906) make small mention of the timber here, so probably it is not nearly so good as it once was.

PEACE RIVER COUNTRY.

PRAIRIE AND FOREST FIRES.

The Peace river though lying generally farther north than the Athabaska valley has a great deal more prairie along its banks than the Athabaska. Dr. Dawson (Geol.

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Report, 1879-80), says that the origin of the prairies of the Peace river is sufficiently obvious. 'There can be no doubt that they have been produced and maintained by fires. The country is naturally a wooded one and where fires have not run for a few years, young trees begin rapidly to spring up. The fires of course are ultimately attributable to human agency, and it is probable that before the country was inhabited by the Indians it was everywhere densely forest-clad. In its primitive state the surface was probably covered by a dense and heavy growth of coniferous trees. These forests having been destroyed by fire, a second growth chiefly aspen, but with much birch in some places, and always everywhere a certain proportion of coniferous trees, chiefly spruce, has taken its place. The aspen, being a short-lived tree, while the spruce reaches a great age and size, the natural course of events, if undisturbed, would lead to the re-establishment of the old spruce forests. The total area of prairie land, west of the Smoky river, may be about 3,000 square miles. The remainder of the surface is generally occupied by second growth forest, occasionally dense, but more often open and composed of aspen, birch and cottonwood with a greater or less proportion of coniferous trees. Some patches of the original forest remain, however, particularly in the river valleys and are composed of much larger trees, mostly coniferous, amongst which the spruce is most abundant. Handsome groves of old and large cottonwoods are also to be found in some of the valleys.' Professor Macoun (Senate Report, 1888) says that the aspen never grows large and seldom runs above a foot in diameter in the Peace river country although he had seen specimens larger than that. He would not speak of the aspen as a tree of economical value for the purposes of export.

ST. JOHN AND DUNVEGAN.

Between St. John, B.C., and Dunvegan, Professor Macoun reports many miles of beautiful farming country, alternating with spruce, aspen and cypress woods.

DUNVEGAN.

Of the country directly west of Dunvegan he writes that it was almost denuded of trees, probably by fires, and had much the appearance of prairie. After this the country assumed a park-like character, almost a dead level and more than half covered with trees. H. A. Conroy (Senate Com. Report, 1907), had been fourteen miles north on the Peace river from Dunvegan and found timber growing pretty large. He says there are groves in that country through which a man could drive a mowing machine, the trees are so far apart.

PEACE TO BATTLE RIVER.

H. J. Cambie (Dominion Government Pacific Railway Report, 1880), says that from Dunvegan they travelled northwest to the height of land between the Peace and Battle rivers; twenty-five per cent of the distance lay through woods of small poplar, spruce and black pine.

DUNVEGAN TO SMOKY RIVER.

Professor Macoun reports that Mr. Horetzky rode over the portage between Smoky river and Dunvegan, a distance of at least forty miles and he told him it was a beautiful prairie all the way. Professor Macoun says that as he proceeded up the river from the Smoky he could see that the left bank was a constant succession of grassy slopes with aspen copse and service berry thickets in the hollows. The right bank on the other hand was always wooded, the timber being aspen, white birch and spruce. The islands and points that formed the secondary bank were generally

covered with balsam poplar of a large size, but spruce, aspen and birch were in considerable quantities. H. J. Cambie (Dominion Government Pacific Report, 1880), says that the timber on the north bank is too small to be of value except for firewood and fencing.

NORTH HEART RIVER.

Southeast of the Peace along the North Heart river the poplar and spruce is of small size only three to twelve inches in diameter.

SMOKY RIVER.

In 1874 E. W. Jarvis made an exploration through a pass of the Rocky mountains and southeast to the Athabaska across the headwaters of the Smoky river and the numerous streams and rivers flowing into it, (Dominion Government Pacific Railway Report, 1874-75). Near the mountains he found the country recently burnt. The balance of the country they found to be composed in places of small black spruce, growing so close together that they could scarcely force a passage through them and in others covered with small pine of second growth. H. A. Conroy says that along the banks of the Little Smoky the spruce grows very large. From Smoky river to Sturgeon lake Mr. Cambie reports the timber of small size consisting of poplar, spruce, birch, willows and black pine in a few cases 9 to 12 inches in diameter. East of the Little Smoky river in the Prairie river country, Mr. Conroy says there are nice bluffs of timber, mixed, some spruce and some poplar, and along the Big Smoky he reports some very good spruce timber.

DUNVEGAN TO BATTLE RIVER.

Wm. Ogilvie (Senate Report, 1888) reports that the timber from Dunvegan to Battle river is thin and poor and in very few places he says could there be found much that would prove of any value. Here, as on the Athabaska, the timber on the upper part is not to be compared with that found on the lower. Mr. McConnell in (Pacific Railway report, 1880) says that here and there along White Mud river are clumps of aspen and willow, the balance being prairie.

BATTLE RIVER TO VERMILION.

North of this the timber improves. Mr. Ogilvie describes the country from Battle river to Vermilion as woods and swamp alternating with patches of prairie and open woods. Near Battle river he says many of the hill sides are bare or scrubby, but on some of the flats or moderate slopes the timber is of fair size. R. G. McConnell (Pacific Railway report, 1880) says that there is scarcely any prairie along Battle river.

From the reports of Professor Macoun (Senate Report, 1888) and Elihu Stewart (Senate Report, 1907) we see that there is some good timber along this part of the river probably north of Battle river. Professor Macoun says that north of Smoky river, on the right bank of the Peace, the country soon loses its prairie character and becomes wholly an aspen forest, which continues down to the delta of the Athabaska and Peace rivers. On the Peace river, especially on its islands, there are many large groves of spruce and poplar which attain extraordinary dimensions.

EXCELLENT POPLAR.

Mr. Stewart, twenty years later, speaks very highly of the poplar he saw in this part of the river, though whether poplar, however fine a quality, would ever be very valuable for commercial purposes, as he seems to think, is a matter of question. He says that below the junction of the Smoky they grow very clean and straight trees,

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not over a foot or fourteen inches, making excellent timber, as well as fencing and fuel. In some parts there are stretches of good spruce well adapted for lumbering purposes. There has so far been but little destruction from fire in this quarter, and there will be an ample supply of timber for local use, if not for export to the adjoining prairie regions. He followed the reading of the preceding extract from his report with the remark: 'I never saw as fine poplar as I saw there. A considerable number of poplars were over a foot, but a foot would be a fair average. I have seen poplar in all parts of the prairie country, but never saw any growing up as straight.' Mr. Stewart, replying to a question, said he thought it possible to use the poplar wood for commercial purposes. It is very good poplar. It will make pulp and where it is large enough it can be sawed. It makes excellent flooring. The white poplar in the north is of a better quality than the poplar in the Ottawa district and in the far west it is different. As to the extent of the forests, Mr. Stewart remarked that wherever there was a stream there would be a belt of timber.

W. F. Bredin explained that in the valley of the Peace river, the bottoms of the river, the islands—and there are large islands in the river—and the points are largely covered with a heavy growth of spruce which grows to a large size. The largest he had ever measured was four feet four inches in diameter. A tree of that kind would carry its trunk well up, clean of branches, forty or fifty feet. Of course that is an unusual size, but timber three feet in diameter is common on the hills and in the lower parts of the bottoms. There is no oak, but there is spruce, birch and poplar. The poplars grow to a large size. The cottonwood often grows to four feet in diameter and the poplar grows to a diameter of two feet.

LOON AND WABISKAW RIVERS.

East of this part of the Peace river lies the valley of the Loon and Wabiskaw rivers. R. G. McConnell travelled all through this country in 1887. He found travelling by canoe very precarious. It is a succession of swamps brulés, and spruce and poplar woods, sometimes dense. In places he found tamarack and banksian pine, but little or no timber of any value.

VERMILION.

At Vermilion, both north and south, Mr. Ogilvie described the country in 1888 as prairie bluff country. Professor Macoun (Pac. Ry. Rep. 1877-78) says that from the highest point reached near Vermilion as far as he could see the country was covered with a continuous aspen forest with here and there a group of spruce. Back from the river much of the country had been burnt over and the timber was either all gone or in various stages of decay.

LITTLE RED RIVER.

Below Vermilion between Little Red river and Rapid Bouille, he described the river as very wide, islands in every stage of development or decay being the chief characteristics of the river bed. All the islands were covered with immense balsam poplar while the aspen constituted the greater part of the general forest on the mainland.

VERMILION TO PEACE POINT.

Mr. Ogilvie says the country from Vermilion to Peace Point on the north side is generally heavily timbered, with occasional parts of open scrubby woods and small patches of prairie. On the south side the open woods and prairie are less frequent.

VERMILION RIVER TO LAKE ATHABASKA.

From Vermilion river to Lake Athabaska he says there is a great deal of first class spruce, much of it being the best he had seen in the country. The sandy and gravelly ridges here, as elsewhere, were covered with pitch-pine. There is also much poplar and cottonwood, generally small, mixed with a little white birch and a very little tamarack.

QUATRE FOURCHES RIVER.

On the Quatre Fourches river in the delta of the Peace, Professor Macoun (1888) says there is some very fine spruce, with groves of poplar and a few pitch-pine mixed through it.

LAKE ATHABASKA.

Of the good quality of the timber found at the delta of the Athabasca river we have already spoken.

SOUTH OF THE LAKE.

J. B. Tyrrell in 1893 described the country south of Lake Athabaska as covered with a light growth of small banksian pine. There were a few spruce and birch in the valleys of small streams and on a narrow strip along the lake. In 1892 Mr. Tyrrell travelled from the Churchill north to the country east of the lake.

EAST OF THE LAKE.

Approaching Wapata lake from the south he found the timber to improve. Wapus island in Wapata lake he found thickly wooded with spruce, birch, white poplar and a little larch, and near Black lake white spruce was seen for the first time since he had left the Churchill. Black river he also found fairly well wooded.

FORT CHIPEWYAN.

Around Fort Chipewyan on the north of the lake Professor Macoun reports the timber as generally small and nearly all spruce and pitch-pine; a small percentage of it only being fit for use as lumber. J. B. Tyrrell in 1893, said that back of the Fort between the rocky hills plenty of small timber for house building and firewood is found.

NORTH OF THE LAKE.

Along the north shore of the lake he says the chief varieties of timber observed as they passed along were spruce, white poplar and birch and with these, though of small size, the country was well covered.

BLACK LAKE AND NORTH.

The country for some way north of Black lake to Chipman lake is heavily timbered. It is a succession of dense spruce swamps, thickets and rocky hills. The timber is composed of small black spruce, banksian pine, larch and a few balsam poplars. The shores of Wolverine or Chipman lake are 'heavily and beautifully wooded with spruce and birch timber.'

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Beyond this the timber is poor. The Chipman river is scantily wooded with small banksian pine, spruce and birch. On Birch lake is a grove of large white spruce. At Selwyn lake the country is more or less generally wooded with small black spruce, but on some of the sandy tracts are orchard-like groves of birch.

SLAVE LAKE.

BELOW LAKE ATHABASKA.

At a distance of some twenty miles from Chipewyan says Mr. Stewart the land becomes higher and is covered with timber and considerable quantities of good spruce are seen up to 15 inches in diameter and of good height. The other varieties are poplar, birch, tamarack, and willow.

R. G. McConnell (Geol. Rep. 1887-88) says that the country in the vicinity of the rapids, 100 miles below Lake Athabaska, is covered with white spruce, banksian pine, and the rough and smooth-barked poplars. The MacKenzie river steamer was built here in the winter of 1887. The timber used in its construction was all obtained from the surrounding forest.

SMITH LANDING TO FORT SMITH.

From Smith Landing to Fort Smith Mr. Stewart says the timber is jackpine, some of which is quite large enough for railway ties. The timber on the heavier soil consists of black and white poplar, spruce, birch and willow of small size and of little value.

SALT RIVER.

Salt river, says Mr. McConnell, winds through flat wooded plains covered with spruce and aspen, but in parts are the salt plains.

SALT RIVER TO GREAT SLAVE LAKE.

Of the excellence of the forests from Salt river down there can be no doubt. As long ago as 1772 Samuel Hearne, the first white man to reach Great Slave lake, on his return journey from the mouth of the Coppermine, entered the mouth of the Slave river and went up it some distance before starting inland on his journey back to the Hudson bay. It is very interesting to note what Hearne at that distant date said: 'The woods around this river, particularly the pines and poplars, are the tallest and stoutest that I have seen in any part of North America. The birch also grows to a considerable size and some species of the willow are likewise tall; but none of them have any trunk like those in England.' On the island of the lake near the mouth of the river, Hearne saw great quantities of driftwood. He says, 'some of this wood is large enough to make masts for the largest ships that are built. The woods through which we were to pass were in many places so thick that it was necessary to cut a path before the women could pass with their sledges; and in other places so much of the woods had formerly been set on fire and burnt that we were frequently obliged to walk farther than we otherwise should have done, before we could find green brush enough to floor our tents.'

One hundred and fifteen years later R. G. McConnell (Geol. Rep., 1887-88) says that on both sides of the river are level plains which extend without any evident elevation, as far as the eye can reach, and support extensive forests of white spruce and banksian pine, mingled with larch and smooth and rough barked poplar. The spruce frequently attains a diameter of 18 inches and affords excellent timber.

Bishop Clut, O.M.I., (Senate Report, 1888) also says that from Fort Smith to Fort Resolution there is a great quantity of beautiful forest, white spruce or ordinary larch. Spruce from two or three feet in diameter is found. The birch of the country is very

hard and would make good furniture. It is from birch that they make traineaux, buggies, chairs and snowshoes.'

GREAT SLAVE LAKE.

HAY RIVER.

Hay river flows into the southwest part of Great Slave lake. Of the country around, Mr. McConnell (Geol. Rep., 1887-88), says, 'Grassy and partly wooded plains extend northwards from Peace river and skirt its southern shores. It is the northern limit of the prairie region. Near its mouth the country on both sides is thickly forested with banksian pine and white spruce to the Alexandra Falls.'

SOUTH OF THE LAKE.

The country from here east to the Slave river is known to be well wooded, but strange as it may seem, the country from Slave river east has never been explored since Samuel Hearne passed through it in 1772, one hundred and thirty-six years ago. Somewhere southeast of the lake Hearne spoke of a long narrow lake 'entirely surrounded with high land which produces a vast quantity of fir trees, but none of them grow to a great height in those parts. Their branches, however, spread wider than those of firs three times their height and thickness do in Europe, so that they resemble an apple tree in shape. They seem rich in tar as the wood of them will burn like a candle and emit as strong a smell and as much black smoke as the staves of an old tar barrel. The under woods were so thick in these parts as to render travelling through them very difficult.' Of the part of Great Slave lake where Hearne crossed it, he says, 'The point where we crossed it, is said to be the narrowest. It is full of islands most of which are clothed with fine, tall poplars, birch and pines, &c.'

NORTH OF THE LAKE.

The country to the north of Great Slave lake has been much more thoroughly examined.

PROVIDENCE TO FORT RAE.

R. G. McConnell (Geol. Rep., 1887-88) wintered at Fort Providence on the Mackenzie and made a winter journey northeast to Fort Rae, on the long arm of the lake that reaches out to the north. From Fort Providence to Birch lake, half the distance across, he crossed the Grand Brulé, the scene of a former destructive fire, wherein he says there were three wide prairies with the intervening timber belts. From here on he crossed first a well wooded country where some excellent spruce was seen, then a more scantily clad country with groves of spruce, poplar, birch and alder and from thence to Fort Rae a thick spruce forest.

MARTIN RIVER.

J. M. Bell (Geol. Rep., 1904) describes the country along the Martin river and chain of lakes emptying into the long northern arm of the lake as thickly wooded with aspen, balsam poplar, canoe-birch, white spruce and banksian pine.

YELLOWKNIFE RIVER.

The Yellowknife river flows into the eastern side of the long arm of the lake coming from a northern direction. Sir John Franklin and members of his party ascended and descended this river, as is related in his journeys of 1819-22. He says that this river flows between high rocky banks on which there is sufficient soil to

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support pines, birch and poplars, but in the upper stretches the country has a very barren aspect. From here to Fort Enterprise the country is much the same. Mr. Back (afterwards Sir George Back), one of his party on his winter journey back from Fort Enterprise, wrote that after passing Reindeer lake 'The scenery consisted of barren rocks and high hills, covered with lofty pine, birch and larch trees. There was a visible increase of wood, consisting of birch and larch, as we inclined to the southward.

FORT ENTERPRISE.

In his journal of August 19, 1820, Sir John Franklin states that they selected the site of their winter quarters known as Fort Enterprise. He says: 'The trees were numerous and of a far greater size than we had supposed them to be yesterday. Some of the pines being thirty or forty feet high and two feet in diameter at the root.' Near by was the winter river, whose banks, he says, were well clothed with pines. On the same day they unfortunately set fire to the woods. 'A fire was made on the south side of the river to inform the chief of our arrival, which, spreading before a strong wind, caught the whole wood and we were completely enveloped in a cloud of smoke for the three following days.' Their winter quarters were made from wood cut in the vicinity, though of the size of the logs no mention is made. From here to the Coppermine river the only trees were scattered dwarf pines.

Of the part of the lake where Samuel Hearne crossed it we have already spoken of his mention of the islands clothed with fine tall poplars.

EAST OF THE LAKE.

The eastern part of the lake approaches within twenty miles of the 'Barren Lands,' as the pines are said by Back to disappear along Artillery lake.

FORT RELIANCE.

The following is on account of the country around old Fort Reliance and northeast to the barren lands, as described by J. W. Tyrrell in 1901:—

'Fairchild Point (near old Fort Reliance), which is about ten miles in length, is well wooded with white spruce from 6 to 12 inches in diameter and is notable as being the source of timber in that locality.

The shores of Charlton harbour are sparingly wooded with small spruce and a few banksian pines. It might be noted here that on Fairchild point a few black poplars were observed, the last seen on our outward journey.

At Fort Reliance, here and there, are to be seen the charred remains of large stumps, indicating the apparent recent destruction of the original forest.

The largest young trees, which showed thirty-four to thirty-five years growth, were from 4 to 6 inches in diameter two feet from the ground, and were not of stunted appearance.

At the north end of Burr lake there is situated a nice grove of white spruce timber, containing trees of 10 to 12 inches diameter. It proved to be the last timber of any consequence met with before entering the barren lands, excepting some on the west shore of Artillery lake near Timber bay.

ARTILLERY LAKE.

On the western side of Artillery lake, about ten miles from the south end, the shore is quite well timbered with small spruce and they continue northerly, although thinly scattered, for a distance of twenty miles, eight miles farther north than the last grove on the east shore. There the woods cease entirely?

MACKENZIE RIVER.

ENTRANCE TO MACKENZIE RIVER.

Elihu Stewart says that the land at the entrance to the Mackenzie river is low and covered with spruce and tamarack of small size. Islands covered with green timber are numerous and the appearance is suggestive of the lower St. Lawrence. The timber along the Mackenzie to Fort Simpson is smaller than that found along the Slave river but nevertheless it is of sufficient size in some cases for lumber.

FORT PROVIDENCE.

Sir John Franklin (Journey, 1819-22) says that around Fort Providence the surface of the hills is generally naked, but in the valleys between them a few spruce, aspen and birch grow.

Sir Alexander MacKenzie (1789) also speaks of the country north of the Mackenzie after leaving Slave lake as follows: 'He (an Indian) at the same time informed us that a river falls in from the north, which takes its rise in the Horn mountain, now in sight, which is the country of the Beaver Indians; and that he and his relations frequently meet on that river. He also added, that there were very extensive plains on both sides of it, which abound in buffaloes and moose deer.'

BEAVER RIVER.

R. G. McConnell (Geol. Survey Rep. 1887-88) says that from Fort Providence southwest along Beaver river to Lake Bis-teho is a desolate looking plain scantily covered with spruce and tamarack. Lake Bis-teho is surrounded by a flat country, wooded with spruce, birch and tamarack of fair size.

FORT SIMPSON.

James Anderson of Winnipeg left Fort Simpson in 1852 when eleven years old (Senate Report 1888). He says 'Round Fort Simpson itself, I remember the timber there was very large. It was fir, poplar and birch.' He calls the fir hemlock but no doubt means the spruce. Poplar and birch he says were the other varieties. He says that the fir was a very large kind. The men used to square the timber to about one foot square, for building their houses and the Fort itself was built of squared timber. He says the way he remembers the birch was, it was used to much in the making of snow-shoes and other things.

Mr. Stewart (1906) says there is a small sized saw-mill at Fort Simpson, not now running, in which lumber 12 inches in width was cut and used in buildings at this post. 'One cannot but be struck,' he says, 'with the vast quantity of spruce along the route traversed, (from Fort Providence to Fort Simpson) which is a little under size for lumber but would make excellent pulpwood.'

Before describing the timber of the Mackenzie Basin from the Great Slave river down, we will describe the valley of the Liard river.

LIARD RIVER.

The Liard river enters the Mackenzie river at Fort Simpson, just south of latitude 62°, coming in from the south-west. It and the Slave river have undoubtedly the best timber in the northwest.

NELSON RIVER.

A branch of the Liard extends away south and is called the Nelson. Wm. Ogilvie explored this whole region across to the Peace, coming out at Fort St. John. Across the height of land the timber is very poor.

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On the Nelson above the forks where the Sicanne chief branch flows in, it is heavily timbered. Mr. Ogilvie passed many extensive flats covered with beautiful spruce trees. The valley is quite wide and clothed with fine timber for a distance above the forks of about thirty miles.

Farther down above Fort Nelson there are many extensive areas of open woods which almost might be classed as prairie, no doubt the result of forest fires.

FORT NELSON.

Of Fort Nelson he says it is surrounded by dense, high forest, and as the clearing around it is only a few acres in extent, much of the sun's warmth is lost during the day. The surface is all heavily wooded and there are many very large trees both spruce and balsam poplar. He selected an average sized balsam poplar at Fort Nelson, cut it down and made the following measurements of it:—diameter at stump, exclusive of bark, 29 inches; at first limb, exclusive of bark, 17½ inches; stump to first limb 90 feet; number of growing rings 145. The bark would add at least 4 inches to the diameter.

WRIGLEY.

The country about Wrigley he says is wooded. He noticed a spruce log near the post that was 20 inches in diameter.

Entering the valley of the Liard from the Mackenzie he says there is a good deal of fine large spruce, which would make better lumber than most of the spruce used in the settled part of the territories, but, as it is the Arctic water system it is practically out of reach. The balsam poplar, or as it is called here, cottonwood, is very plentiful and very large, trees nearly 4 feet in diameter being often seen, though between 2 or 3 feet is the average diameter of the trees. These two trees constitute the great mass of the forest. A few small white birches are occasionally seen and more frequently the aspen or poplar. There are also, sometimes, a few balsam pines on the top of sandy knolls.

A man who had explored the Liard told Mr. Stewart that he had never seen finer saw-log timber anywhere. He also said that good birch was found there which is highly prized by the Indians for bark for their canoes.

R. G. McConnell (Geol. Survey Rep., 1888-89), says that below Fort Liard the river is bordered in many places with wide alluvial flats, covered with tall straight cottonwood, and large spruce and canoe birch.

MACKENZIE BASIN.

MACKENZIE BASIN.

We have now come almost to the Arctic regions. Although, except in small quantities, the forests of the lower Mackenzie are not of great value commercially it is interesting to follow up what the explorers and others testify as to the remarkable height and diameter some of the trees attain, considering the extreme northern latitude in which they are found. On the Mackenzie itself the forest continues to within a comparatively short distance from the Arctic Ocean. The following extracts are from Sir John Richardson's travels in 1848:—

FOREST FIRES IN THE FAR NORTH.

'The agency of man is working a change in the aspect of the forest even in the thinly peopled north. The woods are wasted by extensive fires, kindled accidentally or intentionally, which spread with rapidity over a wide extent of country, and continue to burn until they are extinguished by heavy rains. These conflagrations

consume even the soil of the drier tracts, and the bare and whitened rocks testify for centuries to the havoc that has been made. A new growth of timber, however, sooner or later springs up; and the soil, when not wholly consumed, being saturated with alkali, gives birth to a thicket of aspen instead of the aboriginal spruce.

REMARKABLE SIZE OF THE FOREST.

The frozen sub-soil of the northern portions of the woodland country does not prevent the timber from attaining a good size, for the roots of the white spruce spread over the icy substratum as they would over smooth rock. As may be expected, however, the growth of trees is slow in the high latitudes. On the borders of Great Bear lake, 400 years are required to bring the stem of the white spruce to the thickness of a man's waist. When the tree is exposed to high winds, the fibres of the wood are spirally twisted; but in sheltered places, or in the midst of the forest, the grain is straight and the wood splits freely.

As has been already said, the general aspect of the forest does not alter in the descent of the Mackenzie. The white spruce continues to be the chief tree. In this quarter (speaking generally), it attains a girth of 4 or 5 feet, and a height of about 60 in a growth of from two to three hundred years, as shown by the annual layers of wood. One tree, cut down in a sheltered valley near Clark's Hill, south of Great Bear river, measured the unusual length of one hundred and twenty-two feet, but was comparatively slender. Most of the timber is twisted, particularly where the trees grow in exposed situations. The banksian pine was not traced to the north of Great Bear Lake river; but the black spruce, in a stunted form, is found on the borders of swamps as far as the woods extend.

GENERAL REMARKS.

MACKENZIE BASIN.

Mr. Stewart explained that spruce suitable for commercial purposes grows to the Arctic sea. He was astonished to find that the limit of tree growth extended as far north as it does. He thought it extended probably ten degrees, or nearly seven hundred miles farther north in this district than in Labrador. The different kinds of trees that we have in the Mackenzie basin include white spruce, black spruce, the larch or tamarack which is found as far north as the spruce, the jackpine and the balsam. Mr. Stewart did not see any balsam in the Arctic circle; but aspen, white poplar, balm of Gilead and birch are all found down as far as Fort Macpherson near the delta of the Mackenzie.

Mr. McConnell (Senate Report, 1888), says that you get jackpine in places as far north as Fort Good Hope. Although not growing very large some of the trees would be big enough for railway ties. He explained that the country is not forest continually like it is here (Ontario), but most of the country is open wood. Nearly all the muskegs and around the muskegs are covered with black spruce. Mr. McConnell agrees with other travellers of this region in saying that very little change in the character of the forest was observed in descending the Mackenzie, and with the exception of the banksian pine, which disappears south of Bear river, the same species as previously noticed by Richardson, are found from Great Slave lake to the mouth of Peel river.

HARDNESS OF THE WOOD IN THE NORTH.

Malcolm McLeod (Senate Report, 1888) says: 'As to the wood of that far north I would observe that it is remarkably hard. I have a pair of snow shoes of peculiar

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shape, made right and left of birch for frame, like iron in texture, and though perhaps about a hundred years old perfectly sound.'

FORT GOOD HOPE.

Mr. Stewart says that on an island near Fort Good Hope very good spruce timber is cut into lumber by whip-saws.

BELOW FORT GOOD HOPE.

Below this the timber seems to get poorer, although it improves again farther north. Mr. Stewart says that below Fort Good Hope the timber is smaller although some of it has been made into flooring and lumber is made from the timber there. There is a large supply of spruce suitable for pulp.

NORTHEAST OF FORT GOOD HOPE.

Northeast of Fort Good Hope, through a chain of lakes to the headwaters of the Iroquois river, R. MacFarlane (Canadian Record of Science, vol. IV.) says that the country appeared to be well timbered in every direction with pines, juniper, several species of willow, and a few small groves of poplar and birch.

OLD FORT GOOD HOPE.

Mr. McConnell (Geol. Rep., 1887-88) says that along this part of the Mackenzie below Fort Good Hope the banks are low, the bordering plains are covered with a scattered growth of willow, spruce and tamarack, with here and there patches of aspen on the drier ridges. The spruce along part of this reach presents a remarkably stunted and dwarfish appearance, but this is due more to the marshy character of the ground than to climatic severity, as the same tree, straight and well grown, was found much farther north. At old Fort Good Hope, where the river takes a sharp turn to the west-southwest, he says groves of white spruce were seen along this reach, containing trees measuring over 15 inches in diameter, but the average did not exceed 6 inches.

POINT SEPARATION.

At Point Separation, which lies between the junction of the Mackenzie and Peel rivers, and where Franklin and Richardson were camped, are two spruce trees, says Mr. Stewart, which were marked as lobstersticks at the time of their separation and in commemoration of that event. 'Both are still standing (1906), though one of them is dead. Judging from their appearance at a distance I would say that they are about 16 inches in diameter and 70 feet in height, and this nearly one hundred miles beyond the Arctic Circle. I have been very much interested in the tenacity of life shown in the growth of trees under the adverse conditions prevailing in this north country. Since crossing the Arctic Circle we have seen no vegetation but trees such as the spruce, birch, tamarack and willow are seen all the way.'

PEEL RIVER.

As they rounded Point Separation and ascended Peel river he says spruce lined the banks.

FORT MACPHERSON.

It attains a size of 12 to 16 inches and is used at Fort Macpherson not only for their log buildings, but it is also whip-sawed into lumber for general use, and the birch bark here is used by the Indians for their canoes. For a distance of a few miles

from the Peel the country is partially wooded with spruce, birch, balsam-poplar and willow, but after this the only timber is that found skirting the shores of the small streams on the way.

BELL RIVER.

A fringe of timber, mostly small spruce, lines the banks of the Bell, but apparently does not extend far back.

DELTA OF THE MACKENZIE.

Returning north again to the delta of the Mackenzie, Mr. McConnell (Senate Report, 1888) describes the spruce he saw as over two feet through. Sir John Richardson descended the delta to the ocean in 1848 and the following is his account of the timber:—

SIR JOHN RICHARDSON, 1848.

THE DELTA.

‘Most of the islands constituting the delta of the Mackenzie are alluvial and many of the smaller ones are merely a ring of white spruce trees and willows on a sand or mud bank. Twenty-two miles below Point Separation the banks of the river and the numerous islands are well wooded. The balsam poplars rise to the height of 20 feet and the white spruce to 40 or 50 feet.

At the creek, which bounds Harrison island on the north, the valleys and borders of the river are well wooded, but the summits of the eminence present only scattered spruce firs, with stunted tips and widely spreading depressed lower branches. The canoe-birch is frequent, and the trees we measured were about 5 inches in diameter. The balsam poplar grows to the height of twenty feet. In latitude 68° 55' north the trees disappeared so suddenly that I could not but attribute their cessation to the influence of the sea-air. Beyond this line a few stunted spruces only were seen struggling for existence and some scrubby canoe-birches clinging to the bases of the hills.’

GREAT BEAR LAKE.

To the southeast of the region just described lies the Great Bear lake which empties into the Mackenzie river through the Great Bear river. The latter is described by J. M. Bell—Geological Survey Report 1904:—

GREAT BEAR RIVER.

‘The clear waters of the Great Bear river join the Mackenzie through a deep wooded valley. For the first forty miles the banks are well wooded with white spruce, canoe birch, aspen and balsam poplar.

MOUNT CHARLES.

Mount Charles rises to a height of 1,500 feet on the left side of the river. In climbing the hill I was surprised at the size of the trees around its lower slope. White spruce of about 20 inches diameter were quite common as well as fine specimens of canoe-birch, balsam poplar and aspen.

At the lake the country is quite destitute of trees, as they have all been used for fuel by the Indians.’

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AGE OF TREES

As was formerly stated, Sir John Richardson says that around Great Bear lake 400 years are required to bring the stem of the white spruce to the thickness of a man's waist, and in some places where the tree is exposed to the high winds the fibres of the wood are spirally twisted.

KEITH BAY.

Between Keith bay and Smith bay J. M. Bell found a small lake well wooded with white spruce, willows and alders but none of them of great size. Here he saw the most northern specimen of white birch. The surrounding country was wooded in the valleys.

NORTHERN SHORE.

The whole northern shore of the lake he found to be particularly dreary and barren.

LIMESTONE POINT.

It was, he says, a pleasing change from the cheerless, gravelly, treeless shores, to reach Limestone Point thirty miles west of Fort Confidence, with its pronounced shoreline and white spruce in the bay.

FORT CONFIDENCE.

In a letter of Thomas Simpson to his father (says Malcolm McLeod, Senate Report 1888), he says that the wood at Fort Confidence had been found suitable for house and boat building. Dr. Bell says that the location of Fort Confidence was one of the few well wooded spots in Great Bear lake and the trees are fine specimens worthy of a more southern latitude.

DEASE RIVER.

Sir John Richardson in 1826 says that there were pine trees in clumps in the Dease river and the valley to the north was well wooded.

EAST SHORE.

West of Fort Confidence along the coast of Dease bay for some distance the deep bays are well wooded, but towards Cape McDonnell the land gets barren and continues so till the coast turns east again when the trees improve.

TAKAATCHO RIVER.

'Some forty-five miles east of Cape McDonnell,' says Dr. Bell, 'a good sized river enters, probably the Takaatcho. Near its mouth,' he says, 'we found great quantities of driftwood among which were some good sized trunks. I was rather surprised to see these, but learned afterwards that in the interior the valley of this river is well wooded.'

MACTAVISH BAY.

'All the eastern shore of MacTavish bay is wooded. In the valleys in the interior and around the bays and sheltered channels this timber may be of economic importance. White spruce is the prevailing forest tree, although canoe-birch is found as far north as Eda Travers bay and is sufficiently large in Klarondesk bay to permit of its bark being used for making canoes. Tamarack and both balsam poplar and aspen abound in Klarondesk bay, although not of any great size.'

CAMSELL RIVER

South of this, the eastern part of the lake, Dr. Bell describes the Camsell river and chain of lakes as all well wooded. At Lake Ray, banksian pine was noticed for the first time.

RIVERS OF ARCTIC BASIN.

There remains only to be described the rivers running into the Arctic Ocean. The first river of importance met with east of the Mackenzie is the Anderson river.

ANDERSON RIVER.

Mr. R. MacFarlane, chief factor Hudson's Bay company, was sent in 1857, by James Anderson to explore the Anderson river. The report of his trip was published in the 'Canadian Record of Science,' vol. iv.

CANOE LAKE.

At Canoe lake, the headwaters of the Iroquois river, he says the country is tolerably wooded in its vicinity. The banks of the Iroquois seem to be all wooded as he found the navigation impeded by immense quantities of driftwood and he says the ridges on both sides were well covered with pine and willow.

LOCKHART RIVER.

The country along the Lockhart river below the Iroquois he found better timbered.

On the banks of the Anderson below the Lockhart he found timber of medium size gradually disappearing as he went north.

ANDERSON RIVER.

On his return trip he proceeded up the Anderson from the Lockhart and found the banks well wooded. Further on near a succession of rapids he found the banks tolerably wooded. He says, 'The country along the Anderson was latterly very well wooded, and some goodly pines were seen. The tract of country embraced by a line drawn west from the borders of the woods on the Anderson to the Mackenzie, southward to the Peau de Lievre river (Hare Indian river), at Good Hope, is very well timbered.

ROSS RIVER.

The banks of Ross river he says are partially timbered.

A chain of well wooded hills he says encircle Colville lake or more probably the large lake west of the lake marked Colville. The banks of Simpson lake he says are well timbered.

From here southwest towards the Hare Indian river he found the country well wooded. He says 'the timber consists of pine, juniper, fir, willow, and a few groves of poplar and birch. Some of the pines were of a large size. The belt of timber which at Fort Anderson extends for over thirty miles to the eastward, rapidly narrows and becomes a mere fringe along the Anderson river and disappears to the northward of the 69th parallel of latitude.

APPENDIX No. 2

MACFARLANE RIVER.

Running parallel with the Anderson river is the MacFarlane or Wilmot Horton river. Mr. MacFarlane says that one or two intersecting affluents of the Wilmot Horton or MacFarlane river flow through valleys in which a few stunted spruce, birch and willows appear at intervals. On the banks of one of these, near its mouth, he observed a sheltered grove of spruce and willows of larger growth. They met with no more spruce to the eastward.

COPPERMINE RIVER.

Sir John Franklin (first journey, 1819-22), reached the upper part of the Coppermine river at Point lake. He found the 'valleys on its borders interspersed with clusters of spruce trees. On the borders of such of these lakes as communicate with the Coppermine river, there are a few groves of spruce trees, generally growing on accumulations of sand.'

RED ROCK LAKE.

Red Rock lake is in general narrow, its shelving banks are well clothed with wood, and even the hills, which attain an elevation of four hundred or five hundred feet, are ornamented half way up with stunted pines.

ROCK-NEST LAKE.

Rock-Nest lake (just north of the Red Rock lake). 'The only wood is the pine, which is twenty or thirty feet high, and about one foot in diameter.'

FAIRY LAKE.

At Fairy lake the river flows between banks of sand thinly wooded, and as we advanced the barren hills approached the water's edge.

West of that part of the Coppermine river which is nearest to Great Bear lake Sir John Richardson in 1826 said that they met with wooded valleys and saw much wood in the valleys far to the west. From the height of land between Coppermine river and Great Bear lake they had an extensive view of a lower and well wooded country,

KENDALL RIVER.

In 1848 he writes of the same locality: 'At two we came to another branch of the Kendall, which runs through a ravine of red and spotted sandstone, under whose shelter there grew a remarkably fine grove of white spruces. The best grown tree measured 63 inches in circumference and did not taper perceptibly for twenty feet from its root. Its total height was from 40 to 50 feet. Other trees of equal girth tapered more, and one decayed trunk, which lay on the ground, looked to be considerably thicker.'

BLOODY FALLS.

Of the country above Bloody falls, on the Coppermine, he writes: 'In the existence of many scattered stumps of decayed spruce fir trees, and the total absence of young plants, one might be led to infer that of late years the climate has deteriorated and that the country was no longer capable of supporting trees so near the sea coast as it had formerly done. The largest tree in the clump in which we bivouacked had a circumference of 37 inches at the height of 4 feet from the ground. Its annual layers were very numerous and fine and indicated centuries of growth, but I was unable to reckon them.'

Samuel Hearne, the first white man to reach the Coppermine, says in the year 1771: 'Near the water's edge there is some wood, but not one tree grows on or near the top of the hills between which the river runs. There appears to have been formerly much greater quantity than there is at present; but the trees seem to have been set on fire some years ago and, in consequence, there are at present ten sticks lying on the ground for one green one which is growing beside them. The whole timber appears to have been even in its greatest prosperity of so crooked and dwarfed a growth as to render it of little use for any purpose but firewood.'

In another place he writes: 'The woods grow gradually thinner and smaller as you approach the sea, and the last little tuft of pines that I saw is about thirty miles from the mouth of the river, so that we meet with nothing between that spot and the seaside but barren hills and marshes.'

This ends the report as far as the wooded areas of the north are concerned. Even in the barren lands, however, isolated wooded areas are found, one of the most remarkable instances of which is the Ark-i-link river described in David T. Hanbury's book and which river is now called after Mr. Hanbury. The following is the account:—

HANBURY RIVER.

The peculiarity of the Ark-i-link is that though so far north it is wooded on either bank, and in places one might say heavily timbered, spruce trees, with butts measuring $1\frac{1}{2}$ to 2 feet across, being by no means uncommon. It is a long way north of the limit of trees marked on the maps, and there is a large extent of country to the south of it destitute of trees.

After a short walk on either side of the river one reaches the outer edge of the bush.

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

R. E. YOUNG,
Superintendent of Railway Lands.

PROGRESS WITH AGRICULTURAL EXPERIMENTS.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

WEDNESDAY, April 1, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 a.m., Mr. McKenzie, Chairman, presiding.

The CHAIRMAN.—Dr. William Saunders, C.M.G., Director of Experimental Farms, is present and will address the Committee to-day. He will deal with a good many subjects, and I am sure that his remarks will, as usual, prove very interesting. The Committee is always pleased to listen to an address from Dr. Saunders, and I have now much pleasure in introducing him to you.

Dr. SAUNDERS.—It affords me much pleasure to respond to the invitation to address you and to lay before you some facts which have come under my notice in connection with the growing of crops in different parts of the Dominion.

The season of 1907 was one of unusual character, and the remarkable weather which prevailed all over the Dominion was the subject of much comment.

At the Central Experimental Farm at Ottawa, owing to the unusually wet and late spring, most crops were later sown than usual, all sorts of grain being from a week to ten days beyond the usual period. Further, after seeding had begun it was interrupted by unfavourable weather which delayed the completion of this important work. Sowings of barley were made at Ottawa on April 27 and 28, the sowing of wheat began on April 29, and oats on May 2 and 3.

ONTARIO.

The crops throughout the province of Ontario have, on the whole, been disappointing. The spring season generally was late and cool, and during the latter part of the growing period the weather was unusually dry; and while the wheat crop was nearly an average one, oats—the most important of the grain crops grown in this province—were very poor both as to yield and quality; and while the area in oats in Ontario was 200,000 acres more than in 1906, the crop was nearly 25 million bushels less. The straw also was shorter than usual. Hay and clover showed a decrease of nearly 800,000 tons. With the partial drying up of the pastures the yield of milk fell off and the exports of dairy products were lessened to the extent of about five million dollars.

QUEBEC.

The farmers in Quebec suffered from similar troubles. The yield of hay was very variable and on the whole unsatisfactory. The falling off in butter was very considerable both in Quebec and Ontario. Fortunately for the farmers, the prices of everything they had to sell were unusually high, and this has helped to make up for the short crops.

NOVA SCOTIA.

At Nappan, in Nova Scotia, the cold and wet weather at seeding time was more pronounced, and the earliest sowing of grain was on May 20. In many parts of the maritime provinces grain was not sown until early in June, and in consequence of frequent wet weather later in the season much of the hay crop suffered serious injury.

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Nevertheless, the grain crops generally turned out fairly well, and the Nova Scotia apple crop was remarkably good, being estimated at two million dollars.

MANITOBA.

In Manitoba, spring work was also delayed by much cold and wet weather. At the Brandon Experimental Farm the first spring wheat was not sown until May 9, which was more than two weeks later than usual. Oats were not sown until May 20, and barley May 27.

SASKATCHEWAN.

At Indian Head, Saskatchewan, the first wheat sown was on May 6, the sowing of oats began on May 14, and that of barley a day or two later. On this farm the average date for the sowing of wheat for the past five years has been April 17. Thus in 1907 there was a loss of about three weeks in the early part of the growing period.

ALBERTA.

At Lacombe, in Northern Alberta, seeding began a little earlier. Wheat was sown on May 1, and oats and barley from May 4 to 10. Notwithstanding that the crops in this district had a little earlier start, the summer season was very short, and early frosts occurred before the grain was ripe which injured all the varieties of wheat, also many sorts of oats and barley, so much as to considerably lessen their weight per bushel and lowered their vitality so as to render them unsuitable for seed.

BRITISH COLUMBIA.

At Agassiz, in British Columbia, where grain is usually sown early, the first grain, owing to the prevalence of cold and wet weather, was not put in until April 18.

One of the most striking features connected with the weather in Canada, east of the Rocky mountains, was the unusual prevalence of cold and wet and the slow growth of the crops. Indeed at one time during the latter part of the growing season the temperature averaged so low that growth for a time almost ceased, and for a period of two to three weeks, when the grain is usually filling rapidly, there was scarcely any advancement perceptible towards maturity. It is said that below 42 F. wheat ceases to grow, and there must have been considerable periods during the months of August and September, 1907, when this low temperature was approached.

Nevertheless, the returns in many instances were encouraging. On the experimental plots at Ottawa, spring wheat gave an average of 31 bushels 39 pounds per acre, oats 76 bushels 5 pounds, and barley 38 bushels 20 pounds.

At Nappan, N.S., the plots of spring wheat gave 28 bushels 26 pounds per acre, oats 68 bushels 16 pounds, and barley 35 bushels.

At Brandon the varieties of wheat averaged 38 bushels 8 pounds per acre, barley 63 bushels 32 pounds, while the varieties of oats gave the extraordinary average crop of 114 bushels 24 pounds per acre.

At Indian Head, where in past years the wheat crops have been unusually heavy, the crops have this year been light. In 1906 the average yield of the wheat plots was 42 bushels 4 pounds per acre. In 1907 the average yield was 19 bushels 7 pounds, and all the varieties were more or less injured by frost. Barley and oats gave excellent returns, the barley averaging 57 bushels and the oats 110 bushels 20 pounds per acre.

At Lacombe, Alberta, the frost came earlier than at Indian Head, and injured all varieties more or less, and the later sorts were very deficient in weight and low in vitality. Nevertheless the fourteen varieties of spring wheat under trial gave an average of 21 bushels 51 pounds per acre, oats 86 bushels 31 pounds; the fifteen varieties of six-rowed barley gave 57 bushels 26 pounds per acre.

APPENDIX No. 2

The relative showing made by the earlier ripening spring wheat, as compared with the later sorts, is very remarkable, and emphasizes the value of these earlier maturing varieties, especially in an unfavourable season or in those districts subject to frost. At Lacombe the following results were obtained.

Wheat.	Yield per Acre.		Weight per Bushel.	Percentage of Germination.
	Bush.	Lbs.	Lbs.	
Late Ripening Sorts—				
Red Fife.....	9	..	38½	9
White Fife.....	13	..	37½	9
Earlier Sorts—				
Preston.....	29	..	49	65
Percy.....	34	..	52	67
Stanley.....	31	..	47	50
Huron.....	17	30	47	87

Showing that although these earlier varieties did not ripen early enough to escape injury from frost, they had made a long step towards getting ripe, as was shown in weight per bushel of the sample as harvested and the percentage of germination.

At Indian Head where the injury from frost was not so great these same varieties stood as follows:—

Wheat.	Yield per Acre.		Weight per Bushel.	Percentage of Germination.
	Bush.	Lbs.	Lbs.	
Red Fife.....	12	..	..	..
White Fife.....	17	20	49½	87
Preston.....	23	20	51½	96
Percy.....	21	40	52¾	93
Stanley.....	19	40	51	90
Huron.....	21	..	51½	91

These figures show a great advancement of the earlier varieties over the later ones. These wheats were all sown at Indian Head on May 6, and at Lacombe on May 1 in plots alongside of each other and under the same conditions, so that there is every reason to believe that the differences shown in crop, weight per bushel and percentage of germination in favour of the early sorts are entirely due to their early ripening habits. Similar differences are also shown in the field crops. At Indian Head a field of Red Fife gave grain which weighed 54 pounds per bushel and 67 per cent germinated, while an adjoining field of Preston gave grain which weighed 62 pounds per bushel and 95 per cent of it germinated.

I have some samples here of these wheats as grown at Brandon. There is a sample of Preston (producing sample), and here is a sample of Red Fife (producing sample). There is one thing I would like to call the attention of the committee to and that is the variation which occurred in different parts of Manitoba, Saskatchewan and Alberta in the kind of weather experienced, so that here and there you find a farmer who has had a very good crop, while his neighbour within a few miles of him

had suffered from frost. I have a sample of Preston wheat which was sent to me by Mr. F. B. Johnson. His farm is near Moosejaw, Lytham Farm, he calls it. This wheat weighs 62½ pounds per bushel. While some parts of that district were considerably affected by frost, his grain seems to have escaped frost entirely.

While I am on this subject of the early ripening of wheat, let me state that I have brought with me a few circulars, prepared by our Cerealist, which were issued yesterday, in which the subject of the value of these wheats and their comparison with Red Fife is discussed. I shall be very glad to leave copies of this circular for the use of members of the committee.

You have probably noticed in the agricultural journals very great differences of opinion about these wheats. Some people are rather too extravagant in their praise, others are too extravagant in running them down, and occasionally both sides leave the truth away in the background. What we aim to do in this circular is to present to the farmers of the western country the facts in regard to these wheats, showing their relative advantages, so that they may be able to bring their own judgment to bear on this subject, and decide for themselves as to what sorts they will grow.

As showing that oats and barley are capable of resisting the injurious effects of frost much more successfully than wheat, the following figures are given of the crops at Indian Head:—

Oats.	Yield per Acre.		Weight per Bushel.	Percentage of Germination.
	Bush.	Lbs.	Lbs.	
Banner	122	32	39	88
Danish Island	123	8	40	73
Improved Ligowo.....	122	2	39½	93
Swedish Select.....	127	22	39½	90

I have a sample of Ligowo oats here. It was not produced at Indian Head but at Peace River, and I will refer to it later.

Barley—Six-rowed.	Yield per acre.		Weight per Bushel.	Percentage of Germination.
	Bush.	Lbs.	Lbs.	
Claude	65	30	50	99
Mensury.....	61	2	49½	97

Showing that these two varieties of barley which are among the common sorts grown in the northwest had a germination nearly perfect, while the oats ran from 73 to 90 per cent. The wheat suffered still more, thus indicating that of these three important varieties of grain, the barley is the least affected by frost, the oats rank second, and the wheats are the most easily injured of all.

APPENDIX No. 2

In the case of two-rowed barley the results were as follows:—

Barley—Two-rowed.	Yield per Acre.		Weight per Bushel.	Percentage of Germination.
	Bush.	Lbs.	Lbs.	
Invincible.....	54	28	49½	84
Danish Chevalier.....	58	16	47	65

At Lacombe the results obtained at the experimental farm with the same varieties will confirm this idea. The crops there were lower, the weight per bushel was lower and the percentage of germination considerably lower. This was due to the fact of frost being more severe there and coming somewhat earlier.

RESULTS AT LACOMBE, ALBERTA.

Oats.	Yield per Acre.		Weight per Bushel.	Percentage of Germination.
	Bush.	Lbs.	Lbs.	
Banner	92	22	35	40
Danish Island.....	107	22	30	53
Improved Ligowo.....	83	28	32	64
White Giant.....	95	10	32½	58
Barley—Six-rowed.				
Claude.....	60	..	42	95
Mensury.....	72	24	44	96
Barley—Two-rowed.				
Invincible.....	37	24	42½	72
Danish Chevalier.....	32	24	42	82

These figures further confirm the opinion that frost inflicts its greatest injury on wheat.

With regard to Indian Head the frost did not this year come any earlier than usual, but the seeding was very late and the growing period unusually cool and wet. To show that the frost did not come earlier than usual, the following dates of the occurrence of the first injurious frost for the past six years are given:—

1902.....	September 12
1903.....	“ 5
1904.....	“ 10
1905.....	“ 12
1906.....	“ 11
1907.....	“ 12

These figures show how very regular frost is in its appearance in that part of the country, and, as a rule, frost, when deferred to nearly the middle of September, should give ample time, and would have given last year ample time, for the full ripening of the crop, but for the unfortunate occurrence of so much wet and cold

weather at the beginning of the season and extending more or less all the way through it

MANITOBA.

In the southern part of that province drought lessened the yield of wheat considerably. Nevertheless, the total yield of wheat in the whole province was nearly forty million bushels—it was between thirty-nine and forty million bushels—with an average of 14.22 bushels per acre.

Oats gave a total return of over forty-two million bushels, with an average yield of 34.8 bushels per acre.

Barley gave a total yield of over sixteen and a half million bushels, with an average of 25.7 bushels per acre.

Potatoes gave a good yield, over five million bushels in all from a little over 32,000 acres of land, an average of 157 bushels per acre.

Flax is fast becoming a more important crop. It occupies about 26,000 acres, giving 317,347 bushels, an average of 12.25 bushels per acre.

Saskatchewan will probably soon overtake Manitoba in wheat production. In 1907 the total crop was 27,691,601 bushels, with an average yield of 14.04 bushels per acre.

In oats the crop of Saskatchewan for 1907 was 23,324,903 bushels.

In barley the crop was 1,350,265 bushels.

With the large influx of population and the rapidly increasing acreage under cultivation, the output of grain from that province must shortly be very large.

The figures for Alberta are not yet available. Those for Saskatchewan have only been out two or three days, and the returns for Manitoba about two weeks. The general impression in regard to the crops of Alberta is that this province will no doubt show a considerable increase in winter wheat, also a marked increase in spring crops, but the exact figures cannot be given until the returns of the provincial government are published.

The total production of grains for the three northwest provinces has been estimated as follows:—

	Bushels.
Wheat.	70,000,000
Oats.	75,000,000
Barley.	15,000,000
	<hr/>
Total.	160,000,000

FEEDING OF PIGS ON FROZEN WHEAT.

In the Reports of the Experimental Farms for 1892 and 1893 Professor Jas. W. Robertson, who was then Agriculturist of the Central Experimental Farm, published the results of some tests carried on at the farm in the feeding of frozen wheat to swine to determine its value as a ration. I might say that the quantity of frozen wheat in the Northwest this year will probably be between twenty and thirty million bushels, a very large quantity of material which is exceedingly valuable for feed and the use of this grain for feeding purposes to swine can be made to return to the farmer a very good price, indeed, for the grain. It was found at the time when the experiments referred to were carried on in 1892 and 1893, that when frozen wheat, ground and soaked for 12 hours, was fed to pigs varying in weight from 60 to 100 pounds, that they put on flesh at the rate of about 1 pound for each 4 pounds of the frozen wheat consumed, which is about 15 pounds live weight for each bushel of wheat fed. It was also found that when skimmed milk was added to the ration, the quantity of grain required to produce each pound of gain was reduced; 7.91 pounds of skimmed milk being found equal to 1 pound of the frozen wheat.

APPENDIX No. 2

Since that time there has been no particular reason for repeating these experiments as there have not been since then till now any large quantities of frozen wheat seeking a market.

By Mr. Owen:

Q. In these experiments were the pigs allowed to run at large or were they penned up?

A. They were penned up at that time, also on the occasion of the recent experiments. Occasionally a late sown or a late maturing variety of wheat has been caught by frost and injured more or less, but no large quantity of injured wheat has at any time been thrown upon the market. During the 19 years which have elapsed since the establishment of the Experimental Farm at Indian Head no general injury such as that which occurred in 1907 has ever been experienced, and for the past 12 years the grain crops have been almost uniformly good, the highest yielding plots of wheat having averaged over 46 bushels per acre for the whole period.

Now, with so large a part of the crop of 1907 injured, the demand for information has been great as to the value of frozen wheat as a ration for feeding swine and steers. Early in the winter, as soon as a supply could be obtained, a carload of frozen wheat was brought down from Indian Head, one-half of which was No. 1 feed and the other half No. 2 feed—these are samples, Mr. Chairman, of the two qualities of frozen wheat (producing samples)—when a number of experiments were planned and put in operation with swine, steers and poultry. The experiments with swine which were carried on for about ten weeks are now completed and the results were written up by the Agriculturist several days ago and given to the press. The frozen wheat of both grades has been fed to some pens of swine without any admixture, to others with skimmed milk, and in other cases mixed with various other feeds such as oats, barley, corn and shorts. Where these mixtures have been used they have been made with two parts of frozen wheat and one part of the other variety of grain. The results are interesting and show good returns from the frozen grain used alone, also when mixed. The average return will bring the results up to about the same figures as those given for the experiments which were conducted in 1892. A bushel of the grain was sufficient to produce on the average about 15 lbs. live weight of pork. As pork commands a good price in different parts of the Northwest, one can easily see that this may be made a good outlet for quite a large part of this material. I might also say that it was a decidedly economical sort of grain to feed. No. 1 feed wheat cost $41\frac{1}{2}$ cents per bushel at Indian Head. It was laid down here for \$1.06 per 100 lbs., or \$21.20 per ton. The No. 2 feed wheat cost $36\frac{1}{2}$ cents as against $41\frac{1}{2}$ cents for the No. 1, or \$19.60 per ton delivered in Ottawa. We have not found any other grain or feed which we think is quite as economical as the frozen wheat for the production of pork, when it can be obtained at prices such as those named.

By Mr. Martin (Wellington):

Q. Have you any idea which of the grades you tested in feeding hogs were the best, No. 1 or No. 2?

A. In one of our experiments where the hogs were fed on the unmixed frozen wheat, grade No. 2 gave a little better results than grade No. 1. One could not attribute that to the wheat, however, because it would be unreasonable to suppose that grade No. 2 is of higher quality than grade No. 1. It may perhaps be due to a little difference in the digestion of the pigs. The Chemist of the Experimental Farms, Mr. Frank T. Shutt, made analyses of both these varieties, and the results show that there is very little difference between No. 1 and No. 2 in their food value.

By Mr. Telford:

Q. What is the difference between frozen wheat and unfrozen wheat?

A. The experiments conducted have not included trials with sound wheat. The object in view in these experiments was to find out the actual feeding value of frozen wheat so that a way might be suggested whereby a profitable use might be made of this material. These experiments have covered quite a large series of pens. Mr. Grisdale, our Agriculturist, will, I believe, come before you shortly, and I would prefer that he should give you all the particulars connected with his own experiments. I am merely giving you the substance of them.

By Mr. Smith (Wentworth):

Q. Do you say that one bushel of feed wheat would produce 15 lbs. of pork?

A. Yes, 15 lbs. from a bushel, that is 1 lb. for every 4 lbs. of grain. Mr. Grisdale will give you the number of pigs that were fed in the several experiments. The number varied, I think, from four to ten pigs in a pen, and he had quite a large series of experiments going on. He has also carried on experiments with steers, but they are not quite completed yet. I think this week will about finish that work, so that he will probably be able to give you the particulars when he comes before you. The experiments with steers have not, I believe, been quite so satisfactory as with the swine. It took the steers a longer time to get accustomed to the change of food, and to get their stomachs in order to digest the material so as to build up flesh rapidly.

By Mr. Owen:

Q. Where are the experiments being made, at the Experimental Farm in Ottawa?

A. Yes, at the Central Experimental Farm here, and they have been going on since sometime in December, when we got this frozen wheat delivered.

Whilst speaking on the subject of wheat, it might be well to give you the results of a recent estimate of the Hungarian government in regard to the wheat crop of the world. The estimate for 1907 was 3,200 million bushels, or about 288 million bushels less than in 1906. On account of the shortage which has prevailed in so many parts of the world it is not at all likely that wheat will drop very much in price, not at any rate until after another harvest is got in, and even then it is not likely, because the consumption of wheat is increasing throughout the world and I think there is a good prospect of the present prices being maintained.

By Mr. Owen:

Q. Was not 1906 the greatest wheat year the world has ever seen, were there not more bushels grown in 1906 than in any previous year up to that time?

A. I do not think it was in 1906, but an earlier year. There was one year I know when the quantity was unusual, but I cannot recall at the moment what year that was.

It is astonishing how many countries there are engaged in this business of growing wheat, largely for the British market, as Britain is the principal buyer. In this effort the whole world joins, so that every month in the year the harvest is going on in certain countries. In January, Australia, New Zealand and Chili. In February and March, the East Indies and Upper Egypt. In April, Lower Egypt, Syria, Cyprus, Persia, Asia Minor, India, Mexico and Cuba. In May, Algeria, Central Asia, China, Japan, Morocco, Texas and Florida. In June, Turkey, Greece, Italy and a number of other European countries and some of the Southern States in the American Union. In July, we have Roumania, Bulgaria, Austro-Hungary, South of Russia, Germany, Switzerland, France, South of England and a number of states of the American Union. In August we have our own wheat harvest, beginning in the western part of Ontario. The crops in the Northwest of Canada are largely, mostly entirely, harvested during that month. In that month also are harvested the crops of Great Britain, Denmark and North and South Dakota. In September and October, we have Scotland, Sweden, Norway and the North of Russia. In November, Peru, South Africa and

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Argentina, whose harvest is continued into December when we also have the harvest in Burmah. Showing that every month in the year there are conditions prevailing in the wheat market brought about by the larger or smaller quantities produced in these different countries which, as soon as they are harvested, any surplus is shipped off to those part swhere the supply is needed.

By Mr. Owen:

Q. Is France an exporter of wheat?

A. France is not an exporter of wheat to any extent.

Q. A small extent?

A. To a very small extent. She also imports a certain amount. I cannot from memory give the exact figures, but she does not export wheat largely. Argentina is the greatest competitor we have at present, both for wheat and for flax seed, wheat particularly, and the quantity of wheat produced there has exceeded what has been expected. Last year the harvest was exceptionally good.

Q. The United States has about 150 millions to export, has it not, from 100 to 150 millions?

A. Probably about 100 millions. Their exports are somewhat uncertain now by reason of the increased home consumption, owing to increase in population.

Q. They estimate there that 500 million bushels are needed for home consumption. All over that amount they export?

A. I think that is probably about correct.

Q. They have an average crop of about 650 million bushels. Sometimes the crop goes over 700 million bushels and sometimes it is less than 600 million bushels?

A. Yes, their average varies considerably. For several years past the United States have not been very large exporters. Last year the amount was larger than the year before.

PROGRESS AT THE LETHBRIDGE EXPERIMENTAL FARM.

I desire to report briefly in regard to the progress made on the new experimental farms. The experimental farm at Lethbridge was established last year, and consists of about 400 acres of land, about 100 acres being capable of irrigation, while the other 300 will be especially used for dry farming. We have been working during the year, and the area broken on the farm now amounts to about 155 acres, 47 on the irrigable part and the balance on the dry portion. We have planned to surround the 400 acres with trees and there is a strip of two rods wide broken up for the tree planting around the farm inside the fence, amounting to 14 acres in all. That is included in the 155 acres of land broken. Fifty-seven acres have been sown with winter grain and this is all looking, so the superintendent reports to me, at the present time in a very healthy condition.

To get the purest Turkey wheat which could be had, 60 bushels of hand selected seed was obtained from the Kansas Agricultural College where they have paid special attention to purifying this variety of grain. Part of this was Turkey Red No. 380, and part of it is a variety known as Kharkov. I might say that this Turkey Red and Kharkov have both been tested at the Central Farm. Flour was made from them and baked into bread and they both compare favourably with Red Fife. Eight acres of each of these two varieties of wheat have been sown alongside of the same area of the best Alberta grown Turkey Red which could be found, with the object of finding out how good the grain is that is being grown there, and how it will compare with the specially selected strains which have been obtained from Kansas. Another field of 28 acres has been sown from the imported seed from which it is proposed to draw supplies for distribution among the farmers throughout that section of country who may be anxious to get purer seed than they are now sowing.

Then to obtain data as to the best time for sowing winter wheat, plots of one-eighth of an acre each were sown at the middle and end of each month from August 15 to November 30.

To gain information as to the quantity of seed which will produce the best results, eight plots of one-eighth of an acre each were sown on September 3. The sowings were from one peck per acre up to two bushels per acre. Some of the farmers growing winter wheat in that part of the country claim that a peck of seed is plenty and that it gives you a better crop than two bushels. We are testing that point by having these different quantities grown sown alongside each other under the same conditions.

Then plots of 10 different varieties of winter wheat, such as are likely to be valuable in Alberta, have been sown side by side so that their relative earliness and productiveness could be compared.

Plots have also been sown with winter barley and winter rye to find out how these varieties of grain will succeed.

In some parts of that country the question of breaking for winter wheat as compared with backsetting is also one which is very warmly discussed, and arrangements have been made to test the relative value of these two methods of preparation for crop.

There are 30 acres on the dry portion and 41 on the irrigable land which are ready for spring crops. Clover, roots, vegetables, fruits, &c., will be planted on the field which has been broken and which has been left for the spring sowings, and special attention will be paid to alfalfa as a fodder plant from which good results are expected. Some very good results have been obtained in the Morman settlement near Raymond, also on the farm which was formerly occupied by our present superintendent of the Lethbridge Experimental Farm. He did remarkably well with fields of alfalfa about four miles out of Lethbridge. I also saw some fields near Raymond, when I was there two years ago, which were doing remarkably well. I noticed in a recent newspaper paragraph that the average crop of alfalfa for Colorado is given as something over four tons per acre for the whole state, indicating that it is a very much more prolific fodder plant than anything we at present have the command of in Canada. That, of course, can only be had where the season is favourable, and where three or four crops can be cut.

By Mr. Blain:

Q. How does that compare with the Canadian average?

A. The Canadian average for ordinary hay is 1:18 tons per acre for 1907. In 1906 it was 1:53, and the average for 1882 to 1907 was 1:47 tons per acre. Alfalfa as yet is not much grown.

It is proposed on the irrigated land to make careful determinations as to the amount of water used on each crop, also as to the best time in the season to use water for the different crops. There is a great deal of difference of opinion in regard to that. I think there is no doubt that farmers in that section of the country where they have water often use more of it than is good for the crop, on the principle, probably, that if you are paying for a thing you may as well use enough of it. But it is wise to get along with as little water as they possibly can. To determine that point all the water added to the fields at Lethbridge will be measured, so that the actual quantity used can be accurately determined.

Supplies of the necessary seeds, fruits, ornamental and forest trees have been forwarded to Lethbridge. The buildings erected during the year were a dwelling for the superintendent, a cottage for the men, a barn and stable, and a tool house.

At Lacombe, which is located in Northern Alberta, about 70 miles east of Edmonton, buildings have also been erected during the past year and the crops that are being produced are reported in this bulletin, No. 58 of the Experimental Farm Series (producing bulletin). This is an annual crop bulletin and copies of it are

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available to applicants. Particulars of the crops grown on all the experimental farms are recorded there. At Lacombe about 125 acres are now ready for crop to be sown during the coming season. A few plots were sown with winter wheats during the autumn, but it is not expected that winter wheat will succeed very well in that district. It will, however, have a fair and thorough test. A large quantity of forest trees will be planted, also fruit trees and small fruits. There will also be ornamental planting for windbreaks and hedges. It is expected that much of such work will be done during the coming season.

By Mr. MacLaren:

Q. Are they increasing the planting of trees in Alberta and Saskatchewan?

A. Yes.

Q. Are you going ahead with that kind of work?

A. I have no figures with me to show exactly what we are doing, but I can give you a summary which will be in substance correct. I think it is ten years ago since I published in the annual report of the experimental farms an account of what we had been doing up to that time in the Northwest in the way of stimulating tree growing and trying to arouse among the people a sentiment in favour of tree planting. Up to that time there was no provision made by the Department of the Interior for forestry work, but subsequently a forestry branch was established in that department, and a considerable appropriation provided which has enabled them to carry on a very useful work, giving to every farmer who made application from 500 to 5,000 trees, enough to make a good sized windbreak such as could be seen by any one travelling through the country where these tree clumps were located. The Department of the Interior requires notice from the applicant a year before the time the trees are to be put in, so that they can in the meantime send one of their officers to inspect the ground and see if it is in proper condition for planting, and if so the following spring the trees are forwarded. This useful work has not been allowed to interfere at all with the work which we have been doing. Our work has been done on a much smaller scale, we have sent mail packages of 100 trees to each farmer and that has given him a start in tree planting. Then we have introduced among those young trees sent out the Caragana or Siberian Pea, and some other ornamental shrubs so that by this means the farmer has been able to make his home more attractive by having a few trees and shrubs about his grounds such as he probably had around his home in the east or elsewhere before going to that western country.

By Mr. MacLaren:

Q. They have had fairly good success and the trees are not dying out?

A. Most of the farmers have had very good success. At the time I last reported on it, we had supplied in all about 12,600 farmers with these trees. We had also supplied about 14,000 with packages of tree seeds, the seeds being limited to the green ash and Manitoba maple, both of which are native to the country. From these packages of seeds the farmers have generally had in two years a lot of young trees to plant about their buildings and grounds. The efforts of the Forestry Department have, of course, overshadowed our own, on account of their magnitude. Still that has not lessened our efforts and the distribution has been kept up at about the same rate as in the previous twelve years, and every year there are more applications from farmers than we can possibly supply, showing that the work is appreciated by the people and that there is ample room for both organizations to carry on the work.

By Mr. Ratz:

Q. I see that in some instances they plant a lot of the Russian willow. Does the department supply those?

A. The Russian willow?

Q. Yes?

A. We have supplied in earlier years cuttings of the Russian willow. Is it the yellow-barked willow you are speaking of, the tree with a bright yellow bark?

Q. It has a dark bark. Up there it makes a splendid windbreak and grows very rapidly?

A. There are several varieties known as Russian willows. I do not think we have distributed any dark-barked willow, but we have distributed a golden-barked species which is a very rapid grower. We have not for the last four or five years sent out any of these, our attention having been devoted more particularly to the sending out of young trees. It often happens that the farmer does not take sufficient care of cuttings, and they are not so uniformly successful as the young trees which are sent out well rooted and generally two years old.

THE DISTRIBUTION OF SAMPLES OF SEED GRAIN.

I desire also to draw your attention to the efforts we have been continuing in regard to the improvement of seed grain by the distribution of packages among farmers all over the Dominion sent through the mail for that purpose. This distribution is an annual one. The announcement regarding it is usually made about the end of November. Farmers are notified through the press that applications can be made at any time up to the 15th of February for these sample packages, but it is not practicable to receive applications as a rule after that date, because by that time we have such a large accumulation of requests, generally from fifteen to twenty thousand or more, so that it is as much as we can do to get those off through the mail before seeding time begins.

Last year in carrying that arrangement out we distributed 42,175 samples, one sample to each applicant. Hence we have sent to over 40,000 homes throughout Canada a sample of one of these useful products during the past year. We are now busy trying to catch up to the big accumulation which has come in to us before the 15th of February, 1908. About 22,000 have already been sent out and there are probably 15,000 to 20,000 more to be distributed so that we shall be very busy at this work until seeding time.

The proportion of samples of each sort of grain sent out in 1907 was as follows:—

Oats.	13,679
Barley.	4,074
Wheat.	7,769
Peas.	623
Indian corn.	1,383
Potatoes.	14,647
Total.	42,175

By Mr. Lalor:

Q. What size are the packages of grain?

A. The packages of wheat and barley each weigh five lbs., enough for a 20th acre plot. The packages of oats weigh four lbs., sufficient also for a 20th acre plot. The corn is sent in three lb. packages, and those of peas and potatoes are the same weight. Thus there are three sizes—5 lbs. for the wheat and barley, 4 lbs. for the oats, and three lbs. for the other things sent out.

By Mr. Blain:

Q. Where is this grown?

A. Most of the wheat, barley and oats are from the branch experimental farms in the Northwest. This year our supply came chiefly from Brandon because the grain at Indian Head was touched with frost. We grow some of the grain here, not

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very much because we have not sufficient land. Three carloads were brought this year from Brandon and that was supplemented with such material as we could grow here. Potatoes are usually all grown here.

Q. Is the wheat grown at Brandon quite suitable to send to different parts of the province of Ontario?

A. Yes. In our experience it does very well. We have not found any disadvantage from change of climate or soil. The question of the modification of these different sorts of grain by the influence of climate on the crop has perhaps less weight with the expert grain grower than it has with the farmer; and there is a growing idea among those who have experimented most that a good sound variety of plump seed will succeed in almost any district where the soil is good, and climatic conditions favourable.

Q. It is all right for the farmer in Ontario to make an interchange of wheats with his brother farmer in the province of Manitoba or elsewhere in the Dominion of Canada?

A. We have found that this can be done quite safely in our own experience

Mr. BLAIN.—That is not generally understood, I think.

By Mr. Martin (Wellington):

Q. Would the reverse be as advantageous, that is to say, the farmer taking seed from Ontario to the west?

A. That has been done repeatedly. Scarcely a farmer goes to the northwest from Ontario who does not take some seed grain with him, and I have not heard any bad results from this except when he takes soft wheats, the introduction of which is likely to lessen the value of the wheat crop generally in such locality.

By Mr. MacLaren:

Q. Have they not had great difficulty in the west with wild mustard?

A. They have had a good deal of trouble in some localities.

Q. Are they overcoming the difficulty in any way?

A. The farmers there are beginning to fight the weeds now. They realize that they have got to fight them sooner or later in a very determined way if they are going to keep up their average crops.

Q. Do you succeed in sending out pure samples?

A. We have always cleaned all the grain sent out very thoroughly so that there is no possibility of any weed seeds going out to farmers in that way.

By Mr. Lalor:

Q. Some years ago I was informed that they were using a solution for getting rid of wild mustard. Has that been applied with any success?

A. To some extent it has. Sulphate of iron and sulphate of copper are the chemicals used. These are dissolved in water, put in a spraying apparatus and driven through the fields at a time when the wheat is perhaps six to eight inches high and the mustard has grown perhaps as high as the wheat or a little higher. This solution is then sprayed over those parts of the field where the mustard is most abundant. The solution does not do the wheat any harm, but kills the mustard. It is rather a laborious undertaking and does not commend itself to many farmers. If they are advised to give their fields a sprinkling in order to kill these weeds, a few may do it, but it has not been generally practised, although the results have been well written up in the agricultural journals, reports, bulletins, &c.

By Mr. MacLaren:

Q. What have you found to be the best system for killing the mustard plant, exterminating it altogether?

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A. Pulling it. That is what we have had to do on the experimental farm here. It took us nearly ten years before we got quite rid of it. Farmers visiting us can still occasionally see a mustard plant, and in season we get frequent reminders if any of these plants are to be seen in flower. They frequently tell us that was a thing they had seen before but did not expect to find it on the experimental farm. I think we are pretty well rid of mustard now, but it was a very difficult thing to eradicate.

By Mr. Telford:

Q. What is the best cure for the Ox-eye daisy?

A. That is a biennial plant, which is not very difficult to get rid of. The first year from seed it makes a good start, the next year it blooms and then the plant dies. Knowing the life history it is easy to suggest a remedy. If you plough up the fields when most of the plants are in their first year's growth you get rid of the greater part of them and prevent the seed from forming the next year. Of course, one season will not eradicate such a strong growing plant, but a good rotation of crops will kill the daisy in a very short time.

By Mr. Smith (Oxford):

Q. What about the Sow thistle?

A. That is a very difficult weed to get rid of. It is enormously abundant in different parts of Quebec and a great many parts of Ontario too. It is a perennial plant with a strong and vigorous root system, so you have to thoroughly cultivate the ground to destroy it. Fallowing and growing hoed crops which will admit of the frequent use of the cultivator will generally give satisfactory results. Corn grown in hills so that the cultivator can be used in both directions will soon clean the land. If you are thorough in your cultivation you can, with such treatment, get rid of the greater part of that weed in one year.

By Mr. Telford:

Q. In rough land where you cannot cultivate what is the best method of getting rid of the Ox-eye daisy?

A. The best way would be to cut the hay, or whatever crop you have, before the daisy gets ripe.

Q. On rocky land, fit only for pasture, is where it is worse?

A. Yes. I know it is most difficult to eradicate because the plant is a strong grower. I do not know that you could do anything on land like that where you could not cut the crop, except cut it out with a hoe.

Q. Will salt kill it?

A. No, I do not think you could use anything for the Ox-eye daisy that would not destroy the grass as well. It is one of these weeds which would require, under such conditions, a good deal of labour to exterminate it. It is important that none of the flowers should be allowed to form seed.

EXPERIMENTS IN THE PEACE RIVER COUNTRY.

I desire to say also a few words about some experiments we have been trying during the past year in the Peace River country. Last spring some arrangements were made for carrying on trial plots of different sorts of farm crops in the Peace River district at Fort Vermilion, which is about 400 miles north from Edmonton in a straight line. This is a sample of oats which was grown there in 1907 (producing sample). The man who was conducting these experiments, Mr. Fred. Lawrence, could not get up to the country in time to sow his seed early, and in the autumn the weather was cold and backward, much the same as it was in most other parts of Alberta and Saskatchewan, and the crops were caught by frost before they were fully ripe. It was

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a cold season to begin with, and growth was slow and there was nothing got from the grain experiments this year which was satisfactory, for the reason that the frost affected all the crops. Here is a sample of wheat (producing sample) grown in 1906, which Mr. Lawrence sent down from there. This sample weighs 64 pounds to the bushel, and the variety, I believe, is the Ladoga wheat. In many localities on the Peace river grain is grown in considerable quantities, and usually it is said to ripen well. The Hudson Bay Company have a good sized roller mill at Vermilion, and the wheat they grind is produced in that district. From this mill the company is able to furnish a good deal of flour for their northern posts. It is quite evident, therefore, that wheat is grown there, and as a rule is said to produce good crops, but last season being an exceptional one we could not expect to have any great success. Mr. Lawrence, who was in charge of the experiments, left Edmonton for Vermilion on May 1, and it was about a fortnight or three weeks after that before he could get his seed in. Therefore, it was a late sowing. He sent us a monthly record of the climatic conditions. He was furnished with meteorological instruments and we have particulars of the sunshine, the temperature and the rainfall for last summer, which are very interesting. In July the amount of sunshine was 279 hours, whereas at Ottawa we had 235 hours. In August the sunshine was 278 hours, whereas in Ottawa it was 242 hours. Similarly an increase is shown in September. The records of the sunshine show how the length of day gives the crops there a great advantage. On some of the days in the middle of summer the length of sunshine was 15 hours and over, beginning very early in the morning and extending quite late into the evening. While we do not know exactly how much advantage results from these long hours of sunshine, there is no doubt they have an important influence on the early ripening of grain, and will doubtless be of great advantage to the future of that country.

By Mr. MacLaren:

Q. Will there be a time when we can grow grain largely in that country?

A. I hardly like to venture an opinion, I know so little about it. From the information we have been able to get it is evident that there are quite large stretches in many parts of the country where wheat can be grown, but the general conditions have rather impressed me with the idea that it would perhaps be better for mixed farming than for wheat growing. I think a very large part of the country will be favourable for settlement eventually. We have this encouraging fact that wheat has been grown there weighing 64 pounds to the bushel, and if it can be grown in one locality to such advantage there seems no good reason why it cannot be grown in others. Of course, the soil varies and the conditions vary in different districts, so that one may be more favourable for the growing of wheat than another, but from what we have been able to learn there seem to be large districts all through that part of north-west Canada fairly suitable for the production of wheat. Should these wheat areas prove insufficient to admit of much export trade, still if farmers can grow their own wheat in the smaller areas that are suitable for its cultivation, and raise cattle and produce dairy products in other districts, that will be a great help in settling that territory, because the farmers will be able to grow their own food as well as feed for their cattle without sending away for it.

I have brought photographs (producing photographs) to show you how pumpkins, squash and potatoes grow in that country. These were grown at Peace River crossing, about 300 miles southwest of Vermilion.

Q. If you could guarantee the growing of such crops it would be all right?

A. Yes, as far as they go these products are all right. They were brought down by Mr. Lawrence to Edmonton, where, as they were perishable, he had them photographed.

I think this is all I had arranged to bring before you at the present time, but I shall be glad to answer any questions that any of you gentlemen may desire to put to me.

By Mr. Lalor:

Q. In connection with samples applied for, are you able to supply all the applicants as a rule?

A. All those whose applications are in by February 15. Even if not received on that date, if the post office stamp shows that the application was mailed on the 15th it goes into our list and is supplied to the applicant.

By Mr. MacLaren:

Q. Would the Peace River country make a good dairying country, have they got a good supply of water and all that sort of thing, and are the winters severe?

A. In some places the water is scarce and difficult to get, but I have not been able to learn yet what varieties of cultivated grasses they can grow there. We sent seed of some of the best varieties to be tested last year, but the grasshoppers were said to be troublesome last year, and consumed the young growth.

Q. The experiments have not gone far enough yet?

A. It will require two or three years to get things established. It is to be regretted that we know so little about that country notwithstanding the number of people who have been there. No doubt we shall have fuller information before long.

By Mr. Knowles:

Q. You have not been up there yourself, have you, doctor.

A. No, I have not. I should like to go for some reasons, but it takes nearly all the summer to get there and return, and it would be difficult for me, with so much important work on my hands, to give that much time to one section of the country.

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

WM. SAUNDERS,

Director of Dominion Experimental Farms.

CHEMICAL RESEARCH IN CANADIAN AGRICULTURE.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

WEDNESDAY, March 18, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock, a.m., the Chairman, Mr. McKenzie, presiding.

The CHAIRMAN.—We have with us to-day Mr. Frank T. Shutt, M.A., Chemist of the Experimental Farms, who will address the committee on various agricultural subjects that have engaged his attention.

Mr. SHUTT.—A period of two years has elapsed since I last had the honour of addressing this Committee, during this time the work of the Chemical Division of the Experimental Farms has progressed satisfactorily. Further information of a useful character has been obtained from pursuing certain investigations of a fundamental nature and which for many years past have been studied. I refer, for instance, to the problem of the economic improvement of soils and allied questions. We have also, in addition to the continuance of these researches, taken up many new problems in connection with Canadian agriculture, affecting one or other of its special branches, e.g., fruit-growing, dairying, &c. Some of these are still in progress, while many of them have already been put before the farming public in bulletin form or in our annual report. It will be my pleasure to-day to bring before you the salient points of some of the more important of these investigations, trusting you will find the account of general interest and value.

Before entering upon this account, I should like to say a word or two regarding a branch of our work that furnishes little if any matter for our publications, but yet is one of the greatest importance and value and which is very highly appreciated by our farmers. It is one that brings the Chemical Division into direct and immediate contact with the farming community—a most desirable matter. I refer to the answering of agricultural questions received by mail and the examination of samples of soils, feeding stuffs, waters, &c., sent in by the farmers. Our correspondence constantly increases, and my own time is largely occupied in dealing with it. The demands for chemical assistance in the way of analysis are far beyond what we can keep up with, though every effort is made in this direction. The rapid settlement that has gone on lately in our northwestern provinces and British Columbia, has added largely to our work in this connection. Every day the mails bring us more work of this character. To meet in some measure this increase of analytical work, a further assistant to the chemical staff was appointed last June. This, of course, has allowed us to extend our usefulness, but I doubt if we could keep pace with the growing demands with a staff of twice its present size. My object in mentioning this is merely to show that there is a very keen and growing appreciation on the part of our people for assistance of a chemical nature, and I think this should be highly gratifying to all concerned. It indicates to me that our chemical work for the past twenty years is bearing fruit and that our people are learning the value of chemical information as applied to practical agriculture.

PROBABLE VALUE OF PEAS AS A CROP FOR THE MAINTENANCE OF SOIL FERTILITY IN THE NORTHWEST.

It may possibly surprise many of you to hear me speak of the desirability, the necessity, of carefully studying the effect of continuous grain growing on our north-western soils. Yet, from such investigations as we have been able to carry on, and from the experience gained in other parts of the world, I am led to say that it is a subject demanding our immediate and serious consideration. It is quite true that much of the soil over the wheat growing districts of Manitoba and Saskatchewan is to-day very rich, in many cases excessively rich, inducing a growth of straw at the expense of grain if there be an abundance of moisture in the soil. Nevertheless, we have undoubted evidence of the most reliable character that a soil does deteriorate under a system that calls simply for grain growing and summer-fallow, and there are not wanting farmers in our Northwest to-day who tell us that after 20 or 25 years of such practice that the yield is falling off. But apart from such testimony we have facts as revealed by chemical analysis and which cannot be gainsaid, that soils under such a system of farming are losing considerable amounts of humus and nitrogen in addition to the plant food removed and lost to the soil in selling the crop. All operations that tend to open up the soil—ploughing, harrowing, &c.—must result in the oxidation of humus and the loss of nitrogen. Summer-fallowing causes the loss of a larger amount of nitrogen than is removed in the grain of the following crop. This fact we established by our researches two or three years ago.

But you will say, summer fallowing is necessary, is indispensable. I believe it. It is necessary for conserving moisture for the succeeding crop, for destroying weeds, for making available plant food in the soil. Nevertheless it is a wasteful practice in so far as humus and nitrogen are concerned. Another and important feature in connection with this loss of humus, is that the fibre that binds and holds the soil is largely gone and as a result there is a considerable drifting and loss of surface soil under high winds. This is very pronounced in some districts where fallowing has been in vogue for a number of years.

Naturally clover, as a legume and a nitrogen gatherer would at once suggest itself as a crop to repair this waste, and for the past three or four years some farmers in the Northwest have made intelligent and persistent efforts with it, and in many instances they have been successful. Nevertheless, for several reasons, it has not proved altogether satisfactory, and we have been looking about for another legume to take its place, one that will make its growth in the season of seeding and furnish humus forming material and nitrogen. May not peas fulfil these requirements? It is a fairly quick growing annual, a nitrogen gatherer and one that will give a good yield if climatic conditions are at all favourable. I would suggest—the matter is still in the experimental stage—that in districts where the storing up of soil-moisture is not necessary the peas might be sown in the spring, and the growth would probably be sufficient to keep down the weeds. The crops would be ploughed under when the pods are beginning to set. In some districts it would be advisable to try a modification of this plan, say, to fallow the land for a month, till the middle of June, and then sow the peas. The crop would certainly make a considerable draft on the soil moisture at first, but this loss would be reduced as the peas grew and formed a more or less dense mat of foliage shading the land and protecting it from drying winds. Very probably in eight weeks from the time of sowing, the crop would be ready to turn under. In the following table I present the data from a crop of peas two months old.

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PEAS FROM CENTRAL EXPERIMENTAL FARM ORCHARD.

Sown, May 27, collected July 26.	Foliage per Acre.		Roots per Acre.	
	Tons.	Lbs.	Tons.	Lbs.
Yield per acre.....	12	1,013	1	1,132
Dry matter.....	..	3,376	..	472
Organic and volatile matter.....	..	3,010	..	412
Ash.....	..	366	..	60
Insoluble ash.....	..	119	..	37
Phosphoric acid.....	..	22	..	3
Potash.....	..	149	..	6
Nitrogen.....	..	119	..	10

You will notice that the root system is not extensive, nothing like it is in alfalfa for instance. But in the stems and leaves there are large amounts of humus-forming material and nitrogen. This crop furnished nitrogen at the rate of 130 lbs. per acre, an amount practically identical with many of the clovers. All this nitrogen has not been appropriated by the peas from the atmosphere, but most probably the greater part is from that source, say approximately 100 lbs. per acre. The amounts of phosphoric acid and potash have been drawn from the soil, but in the decay of the peas, subsequent to the turning under of the crop, they are rendered available for the grain of the succeeding season.

It is impossible to say as yet how far this proposition of sowing and turning under pease for keeping up the fertility of our Northwest soils may prove successful, but I think it well worthy of trial.

No soil, however rich, can be continually cropped with grain (without manure) without in time showing exhaustion. The most economic way to prevent this exhaustion is to occasionally have a legume crop, and especially is this true when the farmer does not produce manure. We have shown, indisputably, from field and laboratory experiments that the humus and nitrogen contents may be materially increased by this method of green manuring, and we have ample data to show the largely increased yields of all kinds of farm crops succeeding clover or other legume.

Mr. PERLEY.—Would it be necessary to turn under the peas to obtain this manurial value?

Mr. SHUTT.—Yes. The best time would be when about one-third of the crop has begun to set its pods. It could be rolled and disced and then ploughed under.

Mr. Martin (P.E.I.)—Would wheat ploughed under have the same effect?

Mr. SHUTT.—No, because wheat is not a nitrogen gatherer. Of course the ploughing under of wheat would, like any green crop, add to the soil's humus and improve it to some extent, but I do not think the plan an economical one, and certainly not so effective as using a legume. Buckwheat and rye are frequently employed in this way to add humus when the soil is too poor to grow clover.

Mr. SMITH (Oxford).—Does inoculation with cultures increase the ability of clover to obtain their nitrogen?

Mr. SHUTT.—It may, but inoculation is not generally necessary, as the germs or bacteria are widely present in our soils. Cultures are beneficial when the roots of the legume do not show nodules. Isolated cases have come under our notice where inoculation would be desirable, but there is no general necessity for the practice.

Q. How does the clover obtain this free nitrogen from the air?

Mr. SHUTT.—It is through the agency of certain germs or bacteria present in the soil which attach themselves to the roots of the legume. Nodules then form on the roots. These bacteria can appropriate the nitrogen gas in the soil, and pass it on to the host plant, where it is built up into the tissue of leaf, stem and root.

Q. What are cultures?

Mr. SHUTT.—They are preparations which furnish these nitrogen-appropriating bacteria.

Mr. WILMOT.—At what age would you plough down the clover?

Mr. SHUTT.—Preferably soon after it has begun to flower. I think two months' growth would give in most districts a large amount of material of high fertilizing value.

Mr. MARTIN (P.E.I.)—What value do you assign to such a crop of clover?

Mr. SHUTT.—It should be approximately the equivalent of a dressing of ten tons of ordinary barnyard manure per acre.

Mr. MARTIN, P.E.I.—How would the cost compare with the manure?

Mr. SHUTT.—It should be much cheaper than manure for it can be obtained from 10 to 12 lbs. of clover seed, while manure possibly is worth from \$1 to \$2 per ton at a low estimate.

Mr. SCHELL (Oxford).—Would the roots of the clover crop have as much manurial value as the foliage?

Mr. SHUTT.—No, not quite. Our results show about 90 lbs. of nitrogen in the foliage (per acre) to about 50 lbs. in the roots. Alfalfa contains a larger proportion than this in the roots, as it has a very extensive root system. Peas, as we have seen, has a much smaller proportion in its roots; its root system is not large.

Mr. MARTIN (P.E.I.)—In feeding a ton of clover hay, how much of its nitrogen is lost?

Mr. SHUTT.—Possibly with care 70 per cent of its nitrogen could be returned to the soil in the manure produced. The amount will vary somewhat according to the nature of the animal and the care taken to retain the liquid portion of the manure.

Q. Would it not be better then to feed the clover than to turn it under?

Mr. SHUTT.—Undoubtedly, if you have the cattle to feed it to and have the manure carefully looked after and put back on the land. This does not affect my proposition that clover is a cheap and effective manure, especially on farms where sufficient cattle are not kept to maintain fertility.

Q. On what basis do you make this comparison of manure and clover?

Mr. SHUTT.—Simply on the nitrogen-content of the two materials. We find by analysis that a fair crop of clover on an acre of land contains approximately as many pounds of nitrogen as will be found in ten tons of ordinary fresh barnyard manure.

Mr. PRODER.—There is the labour of putting the manure on the field?

Mr. SHUTT.—Yes, and of course there is the labour of sowing the clover seed and turning under the crop.

You must not think I am advocating this use of clover as a substitute for manure, but as supplementary to it. You must also remember that on many grain farms in the Northwest there is but little manure made.

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Q. I know farmers that sow clover with all their grain and plough under the clover in the fall?

Mr. SHUTT.—An excellent practice. In districts where the clover lives through the winter and when corn or potatoes are to follow, I would advise leaving the clover until the following spring, allowing one or two weeks growth, according to the season, and then ploughing under.

Mr. MARTIN, P.E.I.—I have heard it said that if a ton of clover hay were fed to a steer the manure would be worth \$6 a ton?

Mr. SHUTT.—Possibly so, I have not the figures by me. The calculation is made by assuming the plant food constituents in the manure are worth what we should have to pay for them in commercial fertilizers and assuming that approximately 80 per cent of the plant food in the clover is to be found in the manure. I think that the statement should read that the manure produced from feeding one ton of clover hay would be worth for its plant food about \$6.

Mr. PERLEY.—Is the nitrogen in the vines or in the roots of the legume?

Mr. SHUTT.—In both. In clover the proportion is about two-thirds in the vines and one-third in the roots. In alfalfa there is almost as much in the roots of a fully grown crop as in the foliage. In peas about one-tenth only in the roots.

Q. Where do the nodules on the roots come from, and how are they formed?

Mr. SHUTT.—The nodules are excrescences from the roots containing the nitrogen fixing bacteria. When the bacteria (which are present in the soil) attach themselves to the roots an irritation is set up and the roots form these nodules to inclose the bacteria.

Q. Can the legume absorb nitrogen through its leaves?

Mr. SHUTT.—No, not so far as we know. The absorption is by means of the bacteria in the nodules on the roots.

Q. If there are no nodules there is no appropriation of this nitrogen?

Mr. SHUTT.—Quite so, without the nodules there are no bacteria present (so far as we know) to absorb free nitrogen. Without them the clover can only use the combined nitrogen of the soil (nitrates) like other crops. The clover in such a case is not a nitrogen accumulator.

Q. What is your opinion about inoculation?

Mr. SHUTT.—I do not think it is generally necessary. We have found where there has been failure to obtain a good crop of clover that in the majority of cases the fault was with the soil rather than due to the absence of the nitrogen-fixing bacteria. The soil may require draining, it may be sour and need liming, it may be poor in humus and dry out too readily, it may be too heavy and in clods.

When it is thought that inoculation may prove beneficial one of the best plans is to obtain some surface soil from a field growing clover, broadcast it over the field that it is wished to inoculate at seeding time and harrow in, 300 lbs. per acre will be sufficient.

Mr. MEIGS.—How can you make clover grow on sandy loam?

Mr. SHUTT.—Nothing is better than a dressing of barnyard manure disced or harrowed into the soil. Supplement this with a coating of wood ashes, say 30 to 40 bushels per acre, also harrowed in.

If the soil is altogether too poor for clover, I would advise growing buckwheat or rye and turning them under while green. Then try clover the next year.

Q. If you have not good wood ashes?

Mr. SHUTT.—You can then use 300 lbs. basic slag and 150 lbs. muriate of potash. Broadcast and harrow in when seeding.

Mr. MARTIN (P.E.I.)—Do you say that your experiments have shown that summer fallowing is hard on the soil?

Mr. SHUTT.—Yes. It tends to the destruction of the vegetable matter of the soil and the loss of nitrogen. The amount of nitrogen lost in this way is greater than that removed in a grain crop.

Mr. MARTIN.—And you consider the remedy is in clover growing?

Mr. SHUTT.—When there is no manure, when a proper rotation of crops cannot be followed then deterioration of the soil must result unless there is occasionally a legume, clover or peas for instance, grown and turned under.

Under existing conditions summer-fallowing cannot be dispensed with, but we ought to minimize its evils as far as possible by some such means as I have advocated.

Q. Why do you consider fallowing indispensable?

Mr. SHUTT.—Because with continuous grain growing the fields become very weedy. If there is no hoed crop then there must be fallowing. Further, fallowing is necessary to conserve moisture for succeeding crops, a very important matter in some districts.

Mr. BRODER.—Would it not be better to clean the land with some crop?

Mr. SHUTT.—Yes, certainly. Roots or corn or potatoes are the crops we should recommend for this purpose.

Mr. SCHELL (Oxford).—Is it not true that nitrogen liberated by fallowing is assimilated by the following crop?

Mr. SHUTT.—That is quite true as regards the nitrates so formed, provided they are not leached away in the meantime. Much available nitrogen is prepared in this way and the benefit is to be observed in the crop following the fallow. Nevertheless, the fact remains that this advantage is accompanied by a serious loss of nitrogen to the soil, partly by denitrification, partly by leaching of nitrates.

Mr. SCHAFFNER.—We in Manitoba must fallow once at least every third year or we should have no crop. Are you going to give us a substitute for summer-fallowing?

Mr. SHUTT.—No, not altogether. I think so long as the farmers do not or cannot keep animals, so long as they cannot have a rotation of crops, so long as they grow grain and nothing else, there must be summer-fallowing. But could it not be modified according to some such plan as I have suggested—a combination of fallowing and soil enrichment by growing and turning under pease?

Mr. SCHELL (Oxford).—Why, do you think, they resort to this summer-fallowing in the Northwest?

Mr. SHUTT.—Simply to keep down the weeds and conserve moisture; it is not a question of liberation of plant food. If the season is favourable the larger number of the soils are rich enough at present to give good yields.

Q. What do you advise?

Mr. SHUTT.—I would suggest, in such districts as will not grow clover successfully, to cultivate the land until the middle of June and then sow peas. In two months' time the crop should be sufficiently advanced to plough under.

Hon. Mr. DOUGLAS.—We are not concerned about the deterioration of the soil. We have too much strength in the soil and we get too much straw.

Mr. SHUTT.—That is very true of some soils; they do not need enrichment. But soils cannot last for ever under such treatment, no matter how rich, and there are many soils now that show unmistakeably signs of deterioration.

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Hon. Mr. DOUGLAS.—We got 40 bushels per acre last year from soil that had been cultivated for 26 years.

Mr. SHUTT.—Undoubtedly there are some soils as yet over-rich in plant food, but that does not affect my contention respecting the soils of the Northwest in general.

Mr. BARR.—Would it not be difficult to plough under peas?

Mr. SHUTT.—The crop could be rolled and then disced.

Mr. KNOWLES.—Could not the soil be ploughed a little deeper? In such a way could not the soil be kept fertile where it is of great depth?

Mr. SHUTT.—To a certain extent deeper ploughing in such soils would obscure the deterioration I have spoken of. It would not, however, alter the facts of the case.

Mr. TELFORD.—Will not roots and worms bring up the plant food?

Mr. SHUTT.—Yes, to a limited extent, but there are no worms in the soil, generally speaking, of the Northwest.

Mr. SCHAFFNER.—This matter of fallowing is of the greatest importance to the Northwest; do I understand you are arguing against it?

Mr. SHUTT.—No, I am not arguing against it where it is necessary to conserve moisture. I do not think until there is more mixed farming that we can give up fallowing. But if we cannot abandon the system we can recognize the injury it may be doing and endeavour in some measure to lessen that injury. And this I think can be done in some parts in some such manner as I have suggested.

IMPROVEMENT OF MUCK SOILS.

A considerable amount of experimental work has been done with muck or peaty soils, both on our own farm at Ottawa and on farms in various parts of the Dominion. The reclamation of the soils is a very difficult problem and it is one not yet entirely solved. Some of these soils have yielded more or less readily to treatment; others have obstinately refused to improve though treated in various ways.

As you are aware, such soils are essentially vegetable organic matter. In some this organic matter is well decomposed, in others it is comparatively 'raw,' and in many instances is very acid. In some there may be considerable amounts of clay, and in others the mineral or rock matter may be present in traces only.

The first desideratum is through drainage. It does not seem desirable to lay tiles at the outset, but to take off the surface water by open ditches. This will allow the land to become more firm and compact by settling; it will also aerate the soil and sweeten it. Tile drainage may then be put in.

If the subsoil is not too deep to be reached by the plough, a certain admixture of it with the surface soil will be of benefit. Sometimes we can conveniently and at not too great a cost put on a coating of sand and clay and thus improve them, but unfortunately, circumstances do not often allow this method of improvement.

Wood ashes make an excellent fertilizer for such soils, because they furnish the mineral elements lacking in the muck, and at the same time correct the natural acidity of the muck. Frequently there is a deposit of marl in the neighbourhood, and this has proved an excellent amendment for muck soils. Gas lime can also be used to advantage for them.

In the place of wood ashes I would suggest basic slag and muriate of potash. Basic slag contains from 15 to 20 per cent phosphoric acid and a large percentage of free lime. I should advise say 500 lbs. of basic slag and 200 lbs. muriate of potash, harrowing in the mixture.

Further, at the outset a dressing of barnyard manure will be useful, and this probably for three reasons:

1. It supplies the young plant with immediately available food. In crude muck, though there is plenty of nitrogen, it is not in a condition that is assimilable to crops. There is practically no potash or lime or phosphoric acid in crude muck that can at once be utilized by crops. All these elements are furnished in the most desirable forms by barnyard manure.

2. Until muck has been well drained and aerated and sweetened it will be practically destitute of those microscopic forms of life that prepare the food in the soil for our farm crops. All fertile soils teem with this germ life. Barnyard manure introduces these germs, it inoculates the soil, as it were, with bacteria which will further decompose the muck and convert its nitrogen into nitrates.

3. Manure probably improves the physical condition of muck, making it better suited to the growth of crops.

Mr. BRODER.—You don't think there is any reclamation without drainage?

Mr. SHUTT.—Nothing can be done until you get rid of the free water. Drainage is essential for this purpose.

Q. Do you consider the nitrogen in muck as unavailable?

Mr. SHUTT.—Mucks differ somewhat in this respect; in some the vegetable matter is more decomposed than in others. There are certain mucks that can be taken direct from the bogs and used as a top dressing on soils with good effect, but they are exceptional. In the majority of cases the muck at the outset possesses very little, if any, available nitrogen.

Q. Why is this?

Mr. SHUTT.—The muck is acid or sour. Again it is full of water, to the exclusion of air. Under these conditions the nitrifying bacteria (which prepare the nitrogenous food for crops) cannot exist.

Mr. WILSON (Russell).—You mentioned Thomas phosphate. Is its phosphoric acid soluble?

Mr. SHUTT.—It is not immediately soluble in water, but becomes more or less quickly available for crop use in the soil. It is not so active a phosphatic fertilizer as superphosphate, but for certain soils—those that are sour, deficient in lime and muck soils—it is better, by reason of its alkaline character.

Q. How rich is it in phosphoric acid?

Mr. SHUTT.—It varies in composition. Usually the phosphoric acid lies between 15 per cent and 20 per cent. It should be bought on analysis.

Another point is its degree of fineness. The finer it is the more readily does its phosphoric acid become available. Information as to 'fineness' should be obtained before purchasing.

Q. Would it be better than bone-meal?

Mr. SHUTT.—Yes, for such soils as we are considering.

Mr. TELFORD.—What is the proper treatment of an orchard, as regards its soil?

Mr. SHUTT.—It would be impossible now to discuss such a subject at all fully; it would require probably two hours to present the matter in all its phases. One or two features might, however, be spoken of briefly:

1. To keep up fertility either manure must be applied or a green crop of some legume occasionally ploughed under. In addition it may be desirable to give a dressing of wood ashes, say 40 bushels per acre. Bone meal 300 lbs. and muriate of potash 100 lbs. per acre could be used instead of wood ashes.

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2. In localities where drought may prevail it would not be advisable to sow the clover or other 'cover' crop early in the season, for such a practice would lead to the drying out of the soil and the trees would suffer. Cultivation of the soil to conserve moisture is, under such circumstances, essential, and may be necessary from the opening of the season until July 1 or 15. The cover crop can be sown, and if the season is at all favourable there will be a good growth before the winter sets in.

This whole matter of orchard cultivation was fully dealt with before this committee about three years ago.

Mr. CHRISTIE.—How would it do to sow buckwheat in the orchard and then turn in the hogs and hens to eat it?

Mr. SHUTT.—I would never advise any such practice.

Mr. SCHELL.—You would sow clover?

Mr. SHUTT.—Yes, there is no better crop for cover purposes perhaps, but do not sow too early if the district is one subject to early drought.

ALKALI SOILS.

It is perhaps desirable that I should refer, briefly, to a bulletin we have just issued entitled 'Alkali Soils, their nature and reclamation.' In 1904 and again in 1906 I spent some time in the semi-arid districts of British Columbia and Alberta, studying their agricultural possibilities and, incidentally, the question of alkali—its occurrence and removal. The results of this work and of subsequent analyses of many samples of alkali soil have given us certain information which we felt sure would prove useful to those already settled, or about to settle, in areas where alkali occurs. Hence, this bulletin, which treats of the whole question in its various phases.

Mr. LEWIS.—Does alkali go very deep into the soil?

Mr. SHUTT.—Not necessarily. The depth to which it may be found will vary somewhat with the season of the year and with the rainfall. Usually it is confined to the first few inches, though it may extend to a depth of several feet.

Mr. JACKSON.—In the district between Winnipeg and Stony Mountain, 30 miles northeast of Winnipeg there is plenty of rain and yet alkali is found in spots all over that territory. How do you explain that?

Mr. SHUTT.—What is the precipitation?

Mr. JACKSON.—I don't know, but there is plenty of rain to raise crops.

Mr. SHUTT.—There is no doubt that the occurrence of alkali is due in the first place to insufficiency of rainfall. Secondly it may result from lack of drainage. Possibly this district is underlaid by an impervious hardpan which prevents drainage. The matter would have to be studied on the spot and certain analyses made. Further, some definite information is required regarding the rainfall of the district.

Mr. LEWIS.—To what is alkali attributable?

Mr. SHUTT.—Desintegration and decomposition of the rock matter of our soils is constantly, continually taking place. Soils are being formed just as soils are being worn out, as regards their soluble mineral constituents. These soluble mineral salts arise from the 'weathering' of the rock matter of the soil. This weathering takes place here as well as in semi-arid districts, but in the latter it accumulates, forming 'alkali,' whereas in humid districts, where there is plenty of rain, these salts are washed down and drained away. The formation of alkali is, as you see, therefore, due to certain climatic conditions.

Q. Why is it on the surface?

Mr. SHUTT.—Evaporation starts capillary action in the soil and this brings the solution of these salts to the surface; the escape or evaporation of the water that held them in solution leaves the salts (alkali) on or near the surface of the soil.

Q. Would deep ploughing help matters?

Mr. SHUTT.—Yes, very considerably. We advocate deep ploughing and frequent cultivation.

Mr. CRAWFORD.—What effect would manure have?

Mr. SHUTT.—It is very useful. May I read from the bulletin what I say on that point? I think the matter is dealt with there fairly fully.

Application of manure.—Heavy and repeated applications of manure—more especially horse manure—have been found of great value for alkali spots. This treatment is frequently entirely successful in reclaiming the soil in the course of two or three seasons and may be confidently recommended for trial in cases where the alkali content is not high.

‘Possibly the beneficial action of manure is in three directions: First, as furnishing immediately available food for the young plant. Thus, while the rootlets are in the most tender and susceptible stage they readily find nourishment, and the crop is forced along until it has gained sufficient robustness and vigour to withstand a certain amount of alkali. Secondly, the mixing of the manure with the soil must vastly improve the mechanical condition or texture of the latter, rendering it more mellow and permeable to water and allowing its more ready aeration—in fact, making the soil a more comfortable foraging ground for roots. And, lastly, while destroying capillarity in the surface soil it also acts partly as a surface mulch and thus serves very materially in preventing the accumulation of alkali.’

Mr. JACKSON (Selkirk).—I think you are right about the manure. In our district there is a farmer that had an area of 20 acres out of 160 that was affected by alkali and he has completely reclaimed it by the use of manure.

INFLUENCE OF SOIL MOISTURE ON THE QUALITY OF WHEAT.

We are studying in several of its phases a problem that is engaging the attention to-day of chemists in several parts of the world—the factors that influence the quality of wheat. Very briefly, I may bring before you certain results that we have obtained during the last two years respecting the cause of wheat softening or becoming more starchy when grown on recently cleared scrub land. This soft or piebald wheat is characteristic of newly broken scrub. This is well recognized in the northwest.

Mr. CRAWFORD.—You are not speaking of freshly broken prairie?

Mr. SHUTT.—No, I refer to newly broken scrub land. Soft or piebald wheat contains less protein or gluten than ‘hard’ wheat. This fact is brought out well by the following data, obtained from samples of wheat grown by Mr. Mooney, of Valley River, Manitoba, in 1905, on ‘breaking’ from scrub and on summer-fallow, respectively:—

COMPOSITION OF WHEATS—SEASON 1905.

	Protein. Per cent.
‘A’ wheat used as seed	11.11
‘B,’ product of ‘A’ on breaking	9.93
‘C,’ product of ‘A’ on summer fallow	12.62

(Calculated on the basis of 10 per cent water.)

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If you will examine these samples (exhibits them) you will notice that 'B' is a much softer wheat than either 'A' or 'C.' The summer-fallow wheat contains nearly three per cent more gluten than that from the breaking.

In the following year, 1906, we determined the moisture content of the two soils, summer-fallow and newly broken scrub, every fortnight through the growing season. We also analysed the wheat as grown on both areas.

The data for the moisture-content are tabulated as follows:—

WATER IN BREAKING AND SUMMER-FALLOW SOILS AT VALLEY RIVER, MAN., 1906.

—	May 5.	May 15.	May 29.	June 22.	July 13.	Aug. 2.	Aug. 24.
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
Breaking.....	32.96	36.49	33.45	30.49.	35.23	30.37	32.84
Summer fallow.....	22.45	23.39	23.39	21.70.	21.24	13.24	18.23

You will observe that throughout the whole growing season from the 1st of May till the end of August, the newly-broken scrub land contained more moisture than the fallowed land. This difference in moisture content amounts to 10 per cent or over on every date at which the samples were collected.

The analyses of the wheats grown on the two soils are as follows:—

COMPOSITION OF WHEATS—SERIES OF 1906.

	Protein. Per cent.
Wheat used as seed 'B'.....	9.95
'D,' product of 'B' on breaking.....	10.01
'E,' product of 'B' on summer-fallow.....	13.52

(Calculated on the basis of 10 per cent water.)

Again, the grain grown upon the newly broken scrub is softer (exhibits samples), containing 3½ per cent less gluten than the grain grown on the summer-fallow. ,

I wish to draw your attention to the fact that the softer grain is grown on the moister soil.

Further, we submitted both soils to analysis and found that the newly broken scrub land contained 21.54 per cent vegetable matter and .622 per cent nitrogen, while the fallowed land possessed 13.11 per cent vegetable matter and .38 per cent nitrogen.

My theory or explanation is that the conditions offered by the 'scrub' land, viz., the large amount of water present and the superabundance of available nitrogeneous food, prolonged the vegetative or growing period of the wheat, delaying maturity, with the result of softening the grain; a short, quick ripening period tends to the production of a glutinous grain. At least that is our position at present; it is possible that further work may alter our views on the subject.

Mr. CRAWFORD.—Why was the scrub land the more moist?

Mr. SHUTT.—For two reasons. In the first place it had received a very thorough working during the previous season. The land was broken in June and then cultivated at intervals to the end of the season. This gave it every opportunity to receive and retain moisture. Capillarity was destroyed and surface evaporation checked. On the other hand the 'summer-fallow' soil only received cultivation to keep down the weeds.

Secondly, you will have noticed that the scrub land is much the richer in vegetable matter, which undoubtedly increased the water-holding capacity of the soil.

Q. We find that ripening is earlier on the 'breaking' from prairie than on summer-fallow.

Mr. SHUTT.—Yes, I believe such is usually the case. My impression is that summer-fallowed soil is, as a rule, more moist than the freshly broken prairie soil. If this is the case, then we should expect the grain on the latter to ripen first. In this respect the 'breaking' from the prairies and scrub land may differ markedly.

The softer wheat will, I believe, be always found from the moister soil, but the deterioration (if such it may be called) may not be entirely due to the larger amount of nitrogeneous food set free for its use. Both these factors may take a part in prolonging growth and delaying maturity.

Mr. JACKSON.—How do you account for the fact that wheat ripens earlier and is softer on scrub land than on summer-fallow?

Mr. SHUTT.—I cannot account for it. I am endeavouring to account for the facts as I found them in this investigation.

Mr. SCHELL (Oxford).—Don't you think that it is the excess of humus and the lack of silica that produces soft straw on scrub land?

Mr. SHUTT.—I am not prepared to say that softness in straw is due to lack of silica. We do know that excess of moisture in rich soils, i.e., soils well supplied with nitrogeneous food, produces rank growth and that such growth is apt to lodge.

Q. You get soft wheat with a soft straw? If so, it is due to lack of silica.

Mr. SHUTT.—I have no data on that point.

Mr. LEWIS.—What is the difference between prairie soil and the scrub soil?

Mr. SHUTT.—The scrub soil, I believe, will be found in the majority of instances to be the richer in vegetable matter. It will probably be looser and lighter.

THE POTATO SCAB.

Mr. JACKSON (Selkirk).—How do you account for scab on potatoes?

Mr. SHUTT.—The scab is a fungus disease. The spores grow on the surface or skin of the potato and disfigure the tuber. It is most prevalent in soils that have been heavily dressed with fresh manure; for this reason manure should not be put in the furrows so as to come into contact with the sets. Nor should potatoes be planted on newly limed soil, an alkaline condition favours the development of scab.

Probably the best preventive is to soak the potatoes to be used as seed for two hours in a solution of formaldehyde of the strength of 8 ounces to 15 gallons water.

Mr. LEWIS.—You think an over abundance of manure encourages scab?

Mr. SHUTT.—Yes. That fact is well attested. I would advise manuring the previous crop. Potatoes after a clover crop are usually very clean.

Q. Does scab injure the potatoes as an article of food?

Mr. SHUTT.—Just in so far as it 'eats' into the potato. It is chiefly a surface disfigurement that can be cut out when preparing the potato for cooking. Of course, it means loss in the thicker peeling that must be removed.

Q. It does not affect the interior of the potato?

Mr. SHUTT.—The attack is from the outside and the injury only extends to the depth of the growth of the fungus.

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THE FEEDING VALUE OF FROZEN WHEAT.

Mr. TELFORD.—How does frozen wheat compare with sound wheat as to feeding value?

Mr. SHUTT.—We have analysed a large number of samples of frozen wheat lately, and invariably find that such wheat is characterized by a high nitrogen content, in other words, it contains a large proportion of nitrogeous matter. Our investigations further show that there is a certain small proportion of this nitrogeous matter that is not in the form of true gluten, and hence, of somewhat less feeding value than gluten. Judiciously fed, however, I think we shall find for certain classes of stock that frozen wheat is fully equal to sound wheat. Possibly the best results will be obtained when the finely ground wheat is mixed, say half and half, with bran or ground oats. It needs something to keep it from forming a glutinous ball in the stomach that would resist the action of the digestive fluids. Probably cooking, soaking or scalding may enhance its value.

This frozen wheat is extremely hard and horny. Even when ground to a fine powder, it may by reason of its hardness resist digestion, and a large part of it pass through the animal unattacked. Probably soaking would do away with this objectionable feature. Pigs, it appears, are better able to digest it than cows. It has, I believe, given excellent results in pork production, but for dairy cows it has not proved so satisfactory.

Q. How much protein does it contain? How does it compare with bran and gluten meal?

Mr. SHUTT.—The protein content of such samples of frozen wheat as we have analysed was between 12.0 per cent and 14.0 per cent; usually the so-called 'feed' wheats (which are this year seriously frosted) contain from 13 per cent to 15.5 per cent protein.

Q. The percentage of protein is of some importance?

Mr. SHUTT.—Certainly, protein is the constituent of greatest nutritive value in a feed. Practically, the value of a feed may be estimated from a knowledge of the percentages of protein and of fat.

Q. You think better results should be obtained from feeding the frozen wheat mixed than by itself?

Mr. SHUTT.—Yes; for several reasons, the chief of which is that it needs some loose light fodder or feeding stuff to prevent the gluten forming masses in the stomach which would not be thoroughly digested.

Mr. WILSON (Russell).—We have fed this wheat to steers, together with ensilage, but we did not get very good results. We crushed the wheat. The skin dried up and the hair came off.

Mr. SHUTT.—I am inclined to think that the steers got but little nutriment from the wheat and that their digestion was deranged.

Q. I mixed it with ensilage and thought the ration was well balanced.

Mr. SHUTT.—No, I fear not. Wheat is unlike barley and oats; its protein forms a sticky, glutinous ball in the stomach, which is not the case with the other cereals. It should be mixed with some other and more bulky dry feed.

Further, as I have said, the very hard character of this frozen wheat is against its ready digestion. I would suggest soaking.

Q. Gluten meal is a good feed?

Mr. SHUTT.—One of the very best. The best brands—there is a good deal of difference between the brands on the market—contain over 30 per cent protein. It is readily digested food and used judiciously with other and less concentrated feeding stuffs it is in the very first rank for dairy and beef stock.

Mr. MARTIN (Wellington).—Is there any value to weed seeds taken from the wheat in Manitoba?

FEEDING VALUE OF SCREENINGS.

Mr. SHUTT.—In my report for 1906 there is to be found a number of analyses of weed seeds as screened from wheat and obtained from the elevator at Port Arthur. We concluded that while some of these materials had a decided feeding value, others were comparatively worthless. I may insert some of the analyses here:—

ANALYSES OF SCREENINGS.

Name of Feed.	Particulars.	Moisture.	Protein.	Fat or Oil.	Carbo- hydrates.	Fibre.	Ash.
Wild buckwheat.....	J. G. King & Co., Port Arthur, Ont.....	7.48	10.16	2.89	70.00	7.29	2.18
Small seeds cleaned from flax...	" "	4.41	18.78	24.48	33.27	9.51	9.55
Small seeds cleaned from wheat.	" "	7.62	15.50	9.64	54.86	17.21	5.17
Seeds, broken, wheat, small oats, &c., ready for grinding (No. 23)	" "	8.54	14.12	7.75	56.40	8.36	4.83
Ground seeds obtained by grind- ing No. 23.....	" "	9.14	17.31	9.74	51.76	6.58	5.49
Ground feed mixture, 25% No. 23 and 75% barley.....	" "	9.75	13.19	5.27	60.54	7.60	3.68
Ground feed mixture, 25% No. 23 and 75% barley.....	" "	9.19	13.00	5.38	62.19	6.34	3.90
Ground feed mixture, 50% No. 23 and 50% barley.....	" "	9.90	12.94	5.14	60.63	7.49	3.90
Flax chaff.....	" "	7.68	6.06	4.15	62.55	13.88	5.68
Buckwheat chaff.....	" "	10.00	7.87	2.55	63.72	13.22	2.64
Fine broken stalk.....	" "	10.43	11.68	3.62	55.64	14.28	4.35
Wheat chaff.....	" "	6.25	5.31	2.49	45.80	27.50	12.65

You will notice that they differ widely among themselves in protein and fat. The sample 'small seeds cleaned from flax' is very high in both these valuable nutrients. Again, the sample 'flax chaff' is very low in protein.

Mr. CRAWFORD.—How does the wild buckwheat compare with wheat?

Mr. SHUTT.—Wild buckwheat contains between 2 per cent and 3 per cent less protein than wheat; it is much more fibrous than wheat. Its percentage of fibre is about 7.5, whereas in wheat the fibre is about 2.5 per cent.

The chaff from wild buckwheat is exceedingly poor stuff; it is low in protein and high in fibre.

Mr. JACKSON (Selkirk).—Can you give us any statement as to French weed seed?

Mr. SHUTT.—No, I cannot. We have not analysed it.

Mr. TELFORD.—What grain do you consider the best for cattle?

Mr. SHUTT.—There is no best grain. A mixture is better than any one grain. Variety of food is an important matter, for beasts as well as for man, and we should recognize this fact to a greater extent than is now done. Probably, if one were restricted to a single cereal it would be well to choose barley, stock feeding experiments point in that direction.

Q. Is it, then, the strongest grain?

Mr. SHUTT.—By no means. If the strongest grain were chosen as the only meal the animal's digestion would soon be deranged.

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EXAMINATION OF FEEDING STUFFS.

In accordance with our custom, many of the more prominent feeding stuffs upon the market have been analysed during the past year. We should have liked to present the analyses of all manufactured and milling products sold in Canada, but that has not been possible. Our examination, therefore, is not a complete one. I trust the time is not far distant when through one or other of the branches of the government service we shall have an annual analysis made of all manufactured feeds on the market. On this matter I have given you my views for a number of years past, so I will say very little further than to again emphasize the desirability of the comprehensive, systematic inspection and analysis of feeding stuffs. I consider it quite as necessary as the analysis of fertilizers; in fact, it is of greater importance, as more farmers buy feed than buy fertilizers.

I do not think there is much intentional fraud in this matter, though there is good evidence that very poor stuff is put on the market at times. Thus, we had a bran sent to us that contained about three per cent less protein and one-third more fibre than good bran. It contained oat hulls and other refuse. Then, again, take the by-products of the starch factories, gluten meal, gluten feed, &c. Some are excellent feeding stuffs, while other factories trade on the reputation of the honest men and sell an inferior material.

Our work in this connection is, I believe, very helpful to the farmer and will be continued until such time as the systematic inspection that I advocated is adopted. The analysis of these feeds submitted to us in 1907 will be given in the forthcoming report.

ROOTS AND SUGAR BEETS.

Large differences exist between the several varieties of roots as regards their dry-matter content and the richness of this dry matter in sugar. This matter I have spoken of at former sessions of this Committee, so that it will only be necessary to place on record the results obtained during the past season, together with averages from former years for the purpose of comparison.

Mangels.

Year.	Number of Varieties Analysed.	Dry Matter.	Sugar.
		p.c.	p.c.
1904.. .. .	10	11.69	6.62
1905.. .. .	17	10.04	4.67
1906.. .. .	16	11.63	5.93
1907.. .. .	10	12.64	7.55

From these results it is evident that the season at Ottawa last year was favourable to the growth of a good mangel rich in sugar. However, I must add that we had selected the ten best varieties to sow, the poorer ones, grown in former years, have been discarded from the list.

Carrots.

Year.	Variety Analysed.	Dry Matter.	Sugar.
		p.c.	p.c.
1905.. .. .	11	10.25	2.52
1906.. .. .	10	10.59	3.36
1907.. .. .	6	10.30	3.01

The carrots of 1906 and 1907, it will be noticed, have practically the same composition.

Turnips.

Year.	Varieties Analysed.	Dry Matter.	Sugar.
		p. c.	p. c.
1905.....	20	10.09	1.10
1906.....	20	12.18	1.70
1907.....	14	10.13	1.10

The data for 1905 and 1907 are practically identical and decidedly lower than those for 1906.

Sugar Beets.

The sugar beets grown on the several experimental farms are analysed annually.

The varieties grown are those specially noted for a high sugar content, Vilmorin's Improved, Klein Wanzleben, Très Riche. The results of the past season, together with the averages since 1901, are presented in the following tables:—

Sugar Beets Grown on the Dominion Experimental Farms, 1907.

Variety.	Locality.	Percentage of Sugar in Juice.	Percentage of Solids in Juice.	Co-efficient of Purity.	Average Weight of One Root.	
					Lbs.	Ozs.
Vilmorin's Improved	Brandon, Man.	16.75	19.57	85.6	1	4
"	Indian Head, Sask.	17.09	20.49	83.4	1	3
"	C. E. F., Ottawa	16.49	18.46	89.3	1	2
"	Agassiz, B. C.	18.86	20.87	90.3	1	3
"	Lacombe, Alta.	13.39	17.29	77.4	1	9
Klein Wanzleben	Brandon, Man.	17.86	21.13	84.5	1	4
"	Indian Head, Sask.	15.03	18.60	80.8	1	2
"	C. E. F., Ottawa	14.67	18.11	81.0	1	4
"	Agassiz, B. C.	17.65	20.26	87.1	1	7
"	Lacombe, Alta.	13.93	17.94	77.6	1	5
Très Riche	Brandon, Man.	16.33	19.17	85.4	1	2
"	Indian Head, Sask.	15.65	19.00	82.3	1	3
"	C. E. F., Ottawa	15.16	18.06	83.9	1	11
"	Agassiz, B. C.	16.43	18.86	87.1	1	4
"	Lacombe, Alta.	12.72	16.69	76.2	1	8

Average Percentage of Sugar in Juice in Sugar Beets Grown on the Experimental Farms—1902-7.

Locality.	1902	1903	1904	1905	1906	1907
Nappan, N.S.	15.87	15.33	14.41	16.52	17.08	.....
Ottawa, Ont.	16.77	15.34	16.91	12.45	14.37	15.44
Brandon, Man.	.....	11.36	16.62	11.09	15.50	17.00
Indian Head, Sask.	15.15	16.54	15.24	14.94	14.91	15.92
Lacombe, Alta.	13.35
Agassiz, B. C.	17.44	8.10	17.32	14.23	17.65

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This is, on the whole, a very satisfactory showing. At Brandon, Man., and Agassiz, B.C., particularly rich roots were grown, while those from Indian Head, Sask., and Ottawa, Ont., were eminently suitable for factory purposes. The results from the beets grown on the newly established experimental farm at Lacombe, Alta., do not indicate either a very rich or very pure beet, but judgment as to the suitability of the district for growing sugar beets must be suspended until further data on the subject have been obtained. Unfortunately, early and repeated frosts in the autumn injured the sugar beets grown on the experimental farm, Nappan, N.S., last season, so that no results were obtained from this station.

INSECTICIDES AND FUNGICIDES.

New Forms of Kerosene Emulsions.

Between two and three years ago we discovered that flour could be used in the making of emulsions in the place of soap. Since that time we and many orchardists throughout the Dominion have used large quantities of such an emulsion made simply with flour, cold or hot water, and coal oil (kerosene), and found it eminently satisfactory for all the uses for which the ordinary kerosene emulsion is employed, e.g.: destruction of aphids, &c. The preparation, which is extremely simple, is as follows:—

For 11 per cent emulsion.—The requisite amount of coal oil (kerosene) is poured into the pail or barrel and flour added in the proportion of 8 ounces to 1 quart of coal oil; the mass thoroughly stirred and the water added—2 gallons for every quart of coal oil. The whole is then vigorously churned, say, for five minutes, by means of a pump and coarse nozzle or a wooden paddle or dasher as used in upright churns, and the emulsion is ready for use. The spray is smooth, easily atomized, and does not clog the nozzle.

Flour is everywhere obtainable; indeed, is to be found in every house. No heating of water is necessary, though the quantity of flour can be reduced when the flour is first scalded. As an emulsion for immediate use it is very highly spoken of by all who have used it, and in some orchards many barrels were prepared and sprayed last summer.

Bordeaux-Kerosene Emulsion with Flour.

We have extended this use of flour in the making of emulsions, and found that this material can be employed in the preparation of many fluids for both summer and winter use. Several of these sprays are described in my report for 1906, and, therefore, I need not enter upon any detailed account of them. But I brought to show you to-day one which I made more than ten months ago, for I believe it is a spray destined to become one of great importance in the fight against insect and fungus pests. It is a combination of Bordeaux mixture and kerosene emulsion. It is, therefore, a combined fungicide and insecticide. The sample I show you is ten months old and the stability of the emulsion is evident from the fact that there is not the slightest trace of the oil showing to-day. The formula is as follows:—

Bluestone..	lbs.	4
Lime..	"	4
Flour..	"	4
Kerosene..	gallons	4
Water..	"	36

To the diluted slaked lime the kerosene containing the flour is added and the whole emulsified for five minutes; the solution of bluestone (approximately one-half of the total volume) is then poured in and the whole well stirred.

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The simplicity of preparation, the remarkable stability of the emulsion, the smoothness of the spray producing no clogging of the nozzle all lead to the conclusion that this Bordeaux-kerosene-flour emulsion will find a large field of employment and be of particular value in all cases where fungous disease and aphids require attention at one and the same time.

WELL WATERS FROM FARMS.

In this connection I have merely to say that the work of examination of water samples from farmers' wells has been continued.

The number of waters from Alberta, Saskatchewan and Manitoba increases as the country becomes settled. Quite a proportion of these northwestern waters, I regret to say, are strongly alkaline or saline in character, and from which a suitable supply for drinking purposes can only be obtained by distillation. Small household stills that can be used on the kitchen stoves are manufactured for this purpose. They are fairly cheap, easily managed and require very little attention, and I should strongly recommend their use in districts where the water is saline.

The barnyard well, with its polluted water, still exists, I am sorry to say, but we have reason to believe that it is being abandoned, though slowly, for a purer source. I find it necessary to condemn as quite unfit for use the larger number of waters drawn from barnyard wells. The well waters in many of our country villages are also seriously polluted. It seems, therefore, most desirable that the subject of pure water for our rural population should be constantly and prominently brought before our people.

Having read the foregoing transcript of my evidence, I certify the same to be correct.

FRANK T. SHUTT,
Chemist, Dominion Experimental Farms.

STOCK FEEDING EXPERIMENTS.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34.

FRIDAY, April 10, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock a.m. Mr. McKenzie, Chairman, presiding.

The CHAIRMAN.—I have much pleasure in introducing to the Committee Mr. J. H. Grisdale, Agriculturist, Experimental Farms, who will address us on stock feeding experiments.

Mr. GRIDDALE.—Mr. Chairman and gentleman:—As you will see from the printed list of the subjects with which I propose to deal, I would like to take up this morning some experiments in stock feeding.

GENERAL REMARKS.

Before touching upon any particular experiment I want to devote two or three minutes to a brief summary of our findings during the last twenty years at the experimental farm along this line. We have been feeding cattle there in greater or lesser numbers for that length of time and have reached some conclusions which have also been backed up by experiments elsewhere—conclusions which are more or less commonly accepted by farmers, but which, so far at least as some farmers are concerned, do not seem to be considered by them when carrying on their feeding operations. I may say that we have, during the 20 years time, been able to feed under almost every condition as to price for stockers, price for beef or finished product, and price for feeds. In almost every case our experiments have left a profit, showing that the average farmer could, if he would follow the best lines, make beef feeding a profitable branch of agriculture, and one upon which he might count every year on a good return. There are, however, certain methods which it is absolutely necessary to follow, certain conditions to be observed, in order to make a success of it. Of course, the margin of return will not always be very large. The margin will be affected by what you have to pay for the stockers, by the cost of the feed and by the price you are able to obtain for the product when it is finished. Generally speaking, the price of the finished product is very largely influenced by the quality of the stocker which you get when you start. We have been experimenting for a number of years to determine, if possible, the relation which exists between the class of stocker one gets and the profits that one is likely to make from one's beef feeding operations. We have found that good stockers are the ones that give the best results. There is, however, a limit to the length one may go, and one must be careful not to overstep that limit. The better the quality of stocker bought, the higher the price paid; therefore, the higher must be the selling price in order to leave a margin of profit. There is a point beyond which the wise buyer will not go in paying for good stockers. If he can get one or two animals of extra superior quality out of a carload, on condition of paying a very high price, he may be tempted to pay an extra figure; but it does not follow that because he pays extra figures that he is going to get an extra figure when he sells. There is a limit in the price that you can pay for stockers, that is, you must not go too high in order to get an extra choice animal.

By Mr. Wilson (Lennox):

Q. What about age?

A. I am just going into that.

Q. And as to price?

A. The price is controlled for us or the farmer by the current market rate. We usually pay around about 4 cents for stockers or feeders. From $3\frac{1}{2}$ to $4\frac{1}{2}$ cents are the prices we find it possible to pay in order to come out with a margin of profit at the end of the year.

THE RIGHT AGE.

Now as to age, we have tried feeding yearlings, two-year olds, three-year olds and four-year olds. The four-year olds were given up after one trial. It does not pay to feed four-year olds unless you get them very thin and then it is very difficult to secure a good lot of them. Among three-year olds one can get good shaped animals that fatten well. If, at the time one buys them—that is at three years past—they are not in too high flesh one can feed them for several months and then have no difficulty in getting a high price the following spring, for the reason that they are large and will command the top price as export stock. Therefore, three-year olds are advisable for fattening purposes. If, however, one can get good, big two-year olds, sappy, shapy and beefy that is the kind of animal that makes the quickest gains, the cheapest gains, and commands the highest price in the spring. Yearlings also feed well. We find, however, that they will not fatten quite so easily and do not make such a fat carcass as do the older animals, and a further disadvantage is that one cannot profitably export them. They are so small that the exporters will not buy them and the feeders are, therefore, left at the mercy of the local buyers in this city or whatever city the man may be near who is feeding them. We have fattened year-olds and were then forced to sell to local buyers, although I may say that really good stuff, aged anywhere from thirteen to twenty-five or twenty-six months always commands a very good price locally. The carcass gives very nice cuts and is in good demand by the small household.

By Mr. Jackson (Elgin):

Q. Is any of the stock fed and finished on the farm exported?

A. It has been exported. For two or three years it has been sold and consumed here in Ottawa, but previous to that we exported. We have exported, I think, about one-half the stock that have been fitted since I came here, probably not quite that much.

Q. Of course, the price you get here for the stock is really not a good guide for the farmer to go by. The price you would get for cattle off the experimental farm from local butchers would be in excess of what the ordinary farmer could expect for that same class of stock when shipped to the British market?

A. No., I don't think so. Judging by local market quotations in Toronto and Montreal I do not see that we get a very much different price.

Q. The price you receive for your stock here is sometimes higher than a drover would get for his cattle in Toronto or Montreal intended for exportation?

A. Do you mean this year?

Q. I mean during the last three or four years?

A. I do not think so. I don't think I can agree with you there.

By Mr. Sproule:

Q. About what price per pound do you get?

A. This year the highest was $5\frac{1}{2}$ cents. Last year I think I got about the same price. It usually runs from 5 to $5\frac{1}{4}$. Sometimes it reaches 6, but that is very seldom.

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By Mr. Wilson (Lennox):

Q. What age do you consider the best beef?

A. Fattened off and finished at three years old, that is for the foreign market. If you get very nice, sappy yearlings you can finish at two years old and get extra choice beef, but it is not big enough for exporting.

Q. But the flavour is not so good?

A. I think so, but it is a matter of opinion. In my opinion it is just as good. We had some beef killed here in January. It was only eighteen months old, but it was extra nice in flavour.

By Mr. Henderson:

Q. Beef or veal?

A. Beef.

By Mr. Wilson (Lennox):

Q. How much did it weigh?

A. It weighed 1,200 lbs.

By Mr. Burrows:

Q. Do you mean live weight?

A. Yes.

By Mr. Henderson:

Q. I think the general opinion is that a young animal does not produce the quantity of beef that you can get from a larger animal. What is your opinion on that?

A. That is the general opinion. If you take an older animal you get a stronger, beefier flavour, but I think the taste of the average run of people is changing. They like a mild flavoured beef and you certainly can get that flavour from young stock. Now, the beef I mentioned as having been killed this last winter was sold on the Ottawa market, and the butcher who bought it, Mr. Slattery, assured me that he never had meat that took so well. His customers all wanted more of it.

THE SEASON FOR FEEDING.

By Mr. Burrows:

Q. How many months do you feed?

A. Do you mean the stock we have had in the past?

Q. Yes?

A. Anywhere from four to six months. We usually have fed that long. The season during which the feeding is done seems to be immaterial. We have fed in the winter, in the spring and all the summer, and we find that we can get just as good gains stall feeding one season as another. I don't know that that is of very much importance to the average farmer. The thing we have to demonstrate is that you can make just as good gains on steers tied up, or in small runs, in summer as you can in winter. We have fed them for several years now and have got good results in that way.

I will give you the details of our experiments later on.

HOUSING.

Now, as to housing. We have fed them loose and tied. We have had for them large roomy quarters and cramped quarters. We have found that allowing about 70 square feet per steer in a box stall, loose, is the method of housing that gives the

best results. We find that they will eat more than if tied, and they make better use of what they eat. A very important factor in connection with the housing is to have sufficient light, lots of ventilation, lots of air and comfortable quarters. We have tried experiments with faulty ventilation and good ventilation, and found that the former cost us money every time. This experiment was tried on purpose to see if the ventilation had any effect upon the economy of production of grain.

PREPARATION FOR FEEDING.

Now, as to the preparation for feeding. When the cattle come in off the grass good care is necessary in order to insure their keeping right on making gains. The best way we have found is to start them on rape. Have a bit of rape near the buildings and then turn them loose and let them pasture until it is covered with snow or until pretty well eaten off, gradually turning them over to ensilage, roots, straw and hay. Start them off on a very succulent ration, giving them as little hay and as much of this juicy feed as possible, but no meal, for quite a length of time. We have found it advisable not to give them meal until they have been in the stable three weeks, unless in the case of half-fed animals that it is desired to finish off for the Christmas or January markets.

MEALING THE STEERS.

We have found it advisable to start with a light meal. Bran, perhaps, is as good a meal as I know for starting. We have tried various meals and found that none of them will surpass this as a starter. After they have been on bran for a couple of weeks it is necessary to begin to give something heavier. The kind of meal to feed after bran is a matter of market conditions or of the preference of the man who is feeding. Some men can do better with one kind of feed than with another. It largely rests with the man who is feeding. He knows how the animals do when they are eating certain feeds, and he knows how to feed them. A good deal more depends upon this feature in feeding steers than one would think who is not familiar with that line of work.

By Mr. Sproule:

Q. Do you always feed them on hay for a ration of that kind or do you use straw?

A. We never give a steer more than about two or three pounds of hay a day. We give him straw mixed with the ensilage and roots.

By Mr. Wright (Renfrew):

Q. Do you cut your straw?

A. We feed our hay long, but the straw is cut and mixed with the ensilage and roots.

By Mr. Henderson:

Q. What meal ration do you prefer, corn?

A. Corn and gluten are the two meals that I like best. Corn, gluten and oil give the best satisfaction. Of course, you cannot feed oil meal pure in very large quantities.

By Mr. Burrows:

Q. What do you call gluten?

A. That is the by-product from a starch factory. They take the corn and extract the starch. This residue consists of the seed germ and some other internal parts of

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the corn from which the starch has been washed. The husk is not generally included in what is called gluten.

By Mr. Henderson:

Q. That, of course, can only be obtained in limited quantities?

A. I believe it is to be obtained all over Ontario, and it is also used very extensively in the maritime provinces. In the west I have never seen it.

By Mr. Lewis:

Q. What is the cost of it?

A. It varies according to the market conditions. It cost this year from \$29 to \$30 a ton. It did not cost us that much because we got it early in the season.

By Mr. Wright (Renfrew):

Q. Have you ever fed any refuse rice?

A. No.

By Mr. Gordon:

Q. What percentage of that gluten is digestible?

A. It is nearly all digestible and it is very rich in protein. I think this sample (exhibiting sample) contains about 34 or 35 per cent of protein.

Q. What percentage of corn would be digestible?

A. Corn also is practically all digestible. Corn, however, is not nearly so rich in protein. It probably contains 8 or 9 per cent of protein. Starch is removed from the corn then gluten rich in protein remains.

Q. The claim is set up that no less than 65 per cent of the corn is digestible. I wonder whether that is correct or not?

A. I am not prepared to say positively. In the feeding tables, as prepared by different experimental stations and generally accepted, the percentage of digestibility is given as somewhere around 90.

By Mr. Lewis:

Q. Which do you find the best out of the three meals?

A. I believe if I had to confine myself to one I would prefer oil cake, and then I would take gluten for second place. I mean the gluten as we have it here, not the gluten feed as it is sold in some parts. For instance, there is the 'Jersey Gluten' and two or three other brands; I would not take them. The gluten we are using and which is sold by the Edwardsburg Starch Company, is a most excellent feed.

By Mr. Sproute:

Q. What do you ordinarily pay for your meal?

A. For linseed or oil cake meal we pay from \$30 to \$32 per ton.

By Mr. Jackson (Elgin):

Q. Have you any idea of the total output?

A. No, I have not.

Q. It is scarcely a good thing to recommend, I mean it is impossible for the rank and file of the farmers to use?

A. It is very extensively used.

Q. We have nothing of that kind up in our country, we have none of these meals up there?

A. It is very extensively used in Ontario, Quebec and the maritime provinces. You are referring to Elgin county. Well, at Brantford there is a factory which turns out large quantities which, however, is not just as good as the sample I have here.

By Mr. Henderson:

Q. In the matter of cost, which is the most profitable of the three meals?

A. I believe that oil cake meal, if it can be got for about \$30 a ton, is the best.

By Mr. Burrows:

Q. Linseed oil meal?

A. Yes.

By Mr. Lewis:

Q. Where do you get that?

A. From the Dominion Linseed Oil Company.

Q. What is it made out of?

A. From flax.

The first experiments to which I wish to draw your attention is the feeding of well-bred in comparison with scrub cattle.

By Mr. Henderson:

Q. Short versus long feed steers is what you have been dealing with?

SHORT VERSUS LONG FEED STEERS.

A. Very well, I will take that first. In these experiments of short versus long feed we had two lots of steers of seven each. One lot we fed for 130 days and the other lot for 180 days, not quite two months difference. One lot, of course, had to be considerably fatter than the other when we put them in. The other lot was quite as good, but a good deal thinner. We fed them for the length of time that I have mentioned, and in the case of the long feed we found it cost us \$4.26 to make 100 pounds gain, while in the case of the short keep it cost us \$4.58, a little more expensive you see. Further it took a little bit more meal per day in the case of the short feed. We made a gain in the case of the long feed of 2.36 pounds per day; in the case of the short feed 2.08 pounds per day. The short feed lot being fatter when they started, were harder to induce to put on fat. The changing from grass to inside feeding is always a losing operation. There is usually one or two weeks where the cattle do not make any progress at all. If you take that off the short period it leaves a relatively lower rate of gain per day. The total cost of feeding those steers was \$12.22 per steer in the case of the short keep and \$20.95 per steer in the case of the long keep, which were fed a good deal longer time. The selling price was \$5.75 per 100 pounds for the long keep and \$5.50 per 100 pounds for the short keep. We realized \$12.69 profit on the short keep and \$18.23 net profit on the long keep.

By Mr. Wilson (Lennox):

Q. Was that on each animal?

A. Yes, on each animal.

By Mr. Telford:

Q. Did you count anything for labour?

A. No, that is money spent for feed and all expenses connected with it. No credit was given for manure, no charge was made for labour.

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By Mr. Schell (Oxford):

Q. Was any portion of the feed cut straw?

A. Yes.

By Mr. Barr:

Q. How long did the experiment last in the case of the long feed?

A. About six months.

Q. And in the case of the short feed?

A. About four months.

By Mr. Henderson:

Q. Do you consider the extra quantity of manure secured in the long feed as full compensation for the extra labour in feeding for the additional length of time?

A. The manure would, I think, day by day pretty nearly pay for the care whether it is a long or a short time. The advantage in feeding for a long time is this: That you can feed relatively more rough feed and a smaller amount of meal than you would in case of steers kept only for four months. That is, it would not cost any more for the long-keep steers for meal than it would in the case of the short-keep steers. The former, however, would consume more stuff that is produced on the farm such as ensilage, hay and straw, and so make a market for such material. Therein lies the advantage of the long feed in comparison with the short one.

FINISHING ON GRASS.

By Mr. Lewis:

Q. Did you experiment with finishing up on grass as the farmers of Ontario usually do?

A. No, we have not experimented along that line.

By Mr. Jackson (Elgin):

Q. If you do not experiment along that line the authorities of the farm are not carrying out the experiments as they should. As a matter of fact, fully 50 per cent of our export stock is finished on the grass and notwithstanding that, in all our experiments during the last 12 years there has not been one of that character?

A. Finishing on grass?

Q. Finishing on grass. It is the custom to let them run on the grass for two or three months and fully 50 per cent of our export stock is finished that way. It does seem to me that there should be experiments conducted along that line at the experimental farm?

A. That would be a good line of experiment. The reason it has not been tried with us is because we have not the grass to put the cattle on.

Q. Surely you could take a field and put 10 or 12 cattle on?

A. We have been carrying on extensive experiments in rotation of crops and soil cultivation. If we took a field for the purpose suggested by you we would have to break these experiments.

By Mr. MacLaren (Perth):

Q. It would be easy enough for you to get a field if you ask the minister?

A. I should be delighted to get another field.

By Mr. Jackson (Elgin):

Q. Fully 50 per cent of our export stock is finished on grass and we consider we get a profit out of our cattle by turning them out on our pasture fields during the summer. All through Western Ontario during the latter part of May, June, July and August you will find droves of cattle finishing on grass for the export market, which is practically where the profit comes in in the export trade?

A. We pasture more or less. You understand that we have a large herd of dairy cattle. We have 100 head of dairy cattle and we have to pasture them. We have not thought it advisable to pasture beef cattle for the reason that it is very commonly done by the farmer, and I think very commonly done at a loss. Unless he has rough land the man who is pasturing his cattle is getting a very small return from it.

Q. If you went into the question I think you would find it would be the other way?

A. I have gone into it not with beef cattle, but with dairy cattle.

Mr. MARTIN (Wellington).—There are very few cattle finished on grass in Wellington county; that is, the cattle we feed through the winter.

By Mr. Jackson (Elgin):

Q. The heaviest exportations of cattle from Canada and the United States take place during July, August and September?

A. You cannot export cattle that are finished on pasture in July. We do not get our cattle on to pasture until June and we cannot finish them in a month.

Q. I am speaking of Ontario?

A. Well, this district is in Ontario.

Q. I am speaking of the cattle producing part of Ontario, and of something that I know a little about. Our cattle are turned on to the grass the latter part of May and are taken off the pasture field during the period extending from the first week in July until September?

A. Well, we cannot make the climate here anything different from what it is?

Q. We want experiments that will assist us in all parts of Canada?

A. You would have to move this farm.

Q. No, I do not think that either?

A. If you wanted to get them off in the month of July you certainly cannot finish them on pasture in this district. There are a great number of cattle pastured here, but they are sold off in August or September; you cannot get them off pasture in July. In August and September there are a good number exported, but not in July.

Q. You are losing the plum of your experiments by not finishing cattle on pasture?

A. I don't agree with you there. I feel that many of our farmers are making a mistake in devoting too much of their land to pasturing cattle unless it is rough land. It is a matter of opinion, but that is my opinion.

By Mr. McIntyre (Strathcona):

Q. Have you any control of the experiments that are carried on at the other experimental farms?

A. No.

By Mr. Lewis:

Q. What are you basing your opinion on; you are making an absolute statement on what basis?

A. I base my opinion on the returns which are obtained.

Q. But you have not made any experiments?

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A. There are areas devoted to pasture here and elsewhere. If you take 100 acres of first-class land and put cattle on it you will get small returns compared with what you get from the same area cultivated and farmed; a very much smaller return relatively. Therefore, I think good land should not be pastured.

Q. You have not made any experiments?

A. I have made experiments. Pastured fields and cultivated fields were given similar treatment, and from the latter we got twice as much return as from the pastured fields.

Q. Did you take your labour into consideration.

A. We took the labour into consideration.

By Mr. Jackson (Elgin):

Q. You want to have such a system that you will have a regular flow of cattle going from this country practically all the year around. There are five months of summer during which there is no cheaper way of fattening cattle than by turning them on to the fields?

A. Do you mean that it is a cheaper way?

Q. We think it is a cheaper way of fattening cattle than feeding them in the stable?

A. But you won't get the same return from the land?

Q. That is a question that you have not tested and that I have?

A. I have tested it.

Q. I may say that I have tested.

A. I have tested also.

The CHAIRMAN.—I think we must stop this argument. You are going too far along the line of pasturing cattle and Mr. Gridale has been drawn away from his subject.

Mr. HENDERSON.—What are we here for?

The CHAIRMAN.—Mr. Gridale is dealing with feeding cattle in stables. If you want to discuss a contrary method of feeding we can take it up another time. Mr. Gridale has been drawn away from the programme that he had mapped out.

Mr. LEWIS.—He is stating information here which will be spread broadcast over the country.

The CHAIRMAN.—The difficulty is that Mr. Jackson is making a speech and the professor is not getting on with his subject.

Mr. JACKSON (Elgin).—No, I am not making a speech.

Mr. WILSON (Lennox).—We are discussing the feeding of cattle, and if there is a difference of opinion between those two gentlemen, I think it is well to hear both sides.

Mr. LEWIS.—I think the professor should withdraw his statement and should conduct experiments in fattening cattle on grass in two or three fields. Then he can give us his opinion.

Mr. GRIDALE.—The opinion I expressed was that you could get more money off a given area of land by farming than by pasturing it. I decline to withdraw that statement unless it is the wish of the Committee.

By Mr. Telford:

Q. I think it will depend entirely upon the character of the land?

A. I referred to good land.

Q. If the land is cultivated?

A. That is what I meant.

Q. That is all right. I may say that in the country from which I come the greater number of cattle are fed in stables. A few are fed on grass, but the greater part are fed in stalls?

A. If it is a matter of poor land, that is the only way to utilize it without going to the expense of hiring a lot of men. In such a case it probably would be advantageous to pasture it, but if you take a 100-acre farm and turn it into pasture you will not get the nett returns from pasturing that land that you would if the farm were cultivated.

By Mr. Lewis:

Q. Taking fields in rotation, you re-invigorate them by pasturing them?

A. Yes, I am quite in favour of that. I always advocate pasturing one year in four or five.

OUTSIDE FEEDING.

By Mr. McIntyre (Strathcona):

Q. In the matter of feeding have you experimented at all in regard to temperature? In Alberta a great many people feed their cattle in the winter and leave the greater number of them absolutely in the open air, subject sometimes to the temperature of 25 and 30 degrees below zero. Others feed their cattle in stables which they take every precaution to see are kept perfectly warm. Have you any information as to the relative value of such methods?

A. Yes. Last winter we fed a bunch inside and a number outside, and the latter made just as good gains as the former. I might say further, that at the Brandon experimental farm this year we are feeding one bunch in a warm stable and another bunch outside in a bluff. The outside cattle looked quite as well, if not better, than those inside when I saw them two weeks ago.

By Mr. Wilson (Lennox):

Q. Do you put them under shelter at night?

A. No.

Q. Then you had better do away with stables?

A. That would be all right for beef cattle, but would not do for dairy cattle.

By Mr. MacLaren (Perth):

Q. At what temperature do you keep them?

A. The cattle inside?

Q. Yes?

A. At a temperature of about 40 or 45 degrees for beef cattle.

INFLUENCE OF GOOD BREEDING.

In the case of well bred versus the scrub cattle we find that it pays better to feed the well bred steer, but there is a certain limit, as I have already said, beyond which you must not go in paying to get good shapes. We find, as a rule, that well bred steers do not make much greater gains per day than do the poorly bred, and they will not put the gains on very much more cheaply. But when it comes to selling that is the time when the well-bred steers show up. We can always get anywhere from half a cent to 1½ cents more per pound for the well-bred, well-shaped, well-fed steer than for a scrub steer no matter how fat he is. Hence, so far as our experiments in that line go we are prepared to say that the farmer should pick out the first-class steer up to a certain limit.

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By Mr. Wilson (Lennox):

Q. Is there not a difference in the flavour of the two kinds of meat, the well-bred and the scrub?

A. I am not prepared to say.

Q. That is a question of some importance?

A. I don't think there is so much difference in flavour, but if you take a cut of porterhouse or sirloin steak from a well-bred well-shaped steer you get more lean meat better intermingled with fat than you do from a poorly bred, poorly-fed animal.

By Mr. McColl:

Q. It must be better and more tender meat?

A. I don't think that follows at all. I have never seen it in my own experience and I have never heard of any one making that claim.

Q. Is there any difference between different classes of Durhams or Holsteins in reference to the price and the class of meat?

A. When you buy?

Q. No, when you sell?

A. Yes, from $\frac{1}{2}$ cent up to $1\frac{1}{2}$ cents.

Q. In favour of which?

A. In favour of the well-bred beef animal.

Q. But distinguishing between different classes?

A. Jerseys, Guernseys and so on?

Q. No, just fat cattle?

A. Decidedly in favour of the well-bred beef animal—Shorthorn Herefords, Aberdeen, Angus or Galloways. All these breeds command equally high prices.

By Mr. Barr:

Q. Which would you recommend?

A. I am not here to distinguish between the beef breeds; I think they are all good. It is a matter, I think, which has never been settled. We have tried experiments in feeding the different brands, and I have seen them tried elsewhere, but I never found anything yet to show that one breed was better than another.

By Mr. Lewis:

Q. Do the Aberdeen Angus command a better price than the others?

A. I do not know that they do. They have taken the championship once or twice at Chicago.

Q. I mean in regard to selling?

A. No, I don't think they do. In the old country there is a cross between the White Shorthorn and the Aberdeen Angus called the Blue Greys which commands a premium of probably a shilling or two per cwt. That is the only difference that I have ever heard of made in the different breeds of cattle.

By Mr. Wright (Renfrew):

Q. What is the grade between the Shorthorn and the Aberdeen Angus?

A. A White Shorthorn bull and Aberdeen Angus or Galloway cows give Blue Greys. These Blue Greys might be called iron greys since the colour is due to an intermingling in equal quantities almost of white and black hair.

By Mr. Lewis:

Q. How do the Herefords class?

A. They are a very good class I think. The Herefords show up in one particular respect—they are the best grazing cattle we have. No one can dispute that.

By Mr. Barr:

Q. Are they not more tender than the others in wintering; do they not require more care?

A. I don't think they do so. I saw a herd of about 100 near Portage la Prairie. They were left out in the scrub practically all the time and they seemed to be quite husky when I saw them in March last. I think that is all I had intended to say about the scrub versus the good cattle.

FROZEN WHEAT FOR BEEF PRODUCTION.

The next point I wish to touch upon is the value of frozen wheat for feeding purposes. We got a carload, as Dr. Saunders told you a few days ago, from the west, and I have samples of that wheat here. We fed this wheat to steers for 70 days, and I will give you the particulars in a minute or two. There are samples here of the frozen wheat ground and unground. Here are samples of the ground wheats, No. 1 and No. 2 (holding up sample.)

By Mr. McIntyre (Strathcona):

Q. Do you know where that wheat was imported from?

A. It came from Indian Head.

By Mr. Lewis:

Q. What did it cost you?

A. Ninety-eight cents for No. 2 and \$1.06 for No. 1 landed here. Mr. Shutt gave me the composition, and I could give it to you, but I do not suppose you want that. We did not feed it pure to any class of steers. I have fed it pure to a lot of swine, but not steers; I have never found it satisfactory to feed any one pure grain like that to steers. Now, taking one lot of steers, which we will call lot B, they weighed on December 24, 730 pounds average. On March 3 their average weight was 881 pounds, so that there was a gain of 151 pounds in 70 days, or an average of 2.15 lbs. gain per day. The average daily ration was: corn ensilage, 40 pounds; clover hay, 3 pounds; oat straw, 5 pounds; crushed oats, 2 pounds, and frozen wheat No. 1, 3½ pounds. The cost of a pound of grain was 6.31 cents during that period, and the cost of the meal for that one pound of gain was 3.09 cents. Now, these figures are worth remembering, because upon them the point of the experiment hangs. Now, we will take lot C. Their average weight on December 24 was 834 pounds. On March 3 it had increased to 1,001 pounds, showing a gain of 167 pounds in 70 days. The daily rate of gain was 2.4 pounds. The average daily ration per head was: Ensilage, 45 pounds; oat straw, 6 pounds; clover hay, 3 pounds; bran, 3.3 pounds; frozen wheat, 2.2 pounds. There was less frozen wheat there you see. The cost of one pound of gain was 5.50 cents. The cost of meal per pound gain was 2.52 cents. You will notice that where the frozen wheat was decreased the cost of 1 lb. of gain was a little lower.

By an Honourable Member:

Q. What value do you put upon the ensilage?

A. \$2 a ton.

By Mr. Wilson:

Q. You say you paid \$1.06 for the No. 1 frozen wheat?

A. That is per 100 pounds. Of course, we ground the wheat. Later on I will give you a point on that. Now, as to lot D the weight on December 24 was 945 pounds. On March 3 it had increased to 1,090 pounds showing a gain in 70 days of

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145 pounds, the daily rate of gain being 2.07 pounds. We fed as a daily ration 44 pounds of corn ensilage, 3 pounds of hay, 6 pounds of oat straw, 2.66 pounds of bran, and 2.78 pounds of frozen wheat. Now, you will notice that the oats along with the wheat cost more than bran along with the wheat. The cost per pound of gain was 6.28. The cost of meal for one pound of gain was 2.85 cents. Now, we will take lot E. Their weight on December 24 was 1,068 pounds and finished on March 3 with a weight of 1,258 pounds, having made a gain of 190 pounds in the 70 days or a daily average rate of gain of 2.71 lbs. Their average daily rations was as follows: Corn ensilage, 50 pounds; straw, 6½ pounds; clover hay, 3 pounds; gluten, 2.15 pounds; bran 3.17 pounds. The cost of one pound of gain was 5.33 cents, and the cost of meal for one pound of gain, 2.41 cents. Now, the frozen wheat was up against a pretty hard proposition when it ran against gluten, because, as I have already told you, that is one of the best foods, possibly not as good as oil meal, but better than corn. The farmer should know, in my opinion, whether it will pay him to get frozen wheat rather than corn, gluten, or oil meal to feed his steers in addition to the crop grown on the farm.

By Mr. Lewis:

Q. What do you mean by the 2.41 cents; what does it mean actually?

A. That is the cost of the meal part of the feed required for one pound of gain. Take lot B where we used the largest amount of frozen wheat, viz., 3.5 pounds. The cost for one pound of gain was 6.31 cents.

By Mr. Wilson (Lennox):

Q. Can you give us the profits realized?

A. The profit has not been figured out yet because there are other experiments to be concluded.

Q. It looks rather high, 6.31 cents for a pound of gain?

A. That is cheap feeding.

Q. What would you sell those steers at per pound?

A. They are sold to go at 5½ cents per pound.

Q. Is that profitable?

A. Yes. I think it is quite evident that the honourable gentleman is not a cattle feeder.

By Mr. Telford:

Q. That increase will be on your beef here?

A. That will be on the live weight.

Q. There will be no reduction for offal, that is the selling price of the actual dressed beef?

A. We sold the cattle alive and there was no reduction for offal.

By Mr. Lewis:

Q. Where is the weight taken?

A. On the farm. We sell according to the weight on our own scales there. For the information of those who do not understand this beef feeding business I may say that on steers bought in the fall and sold in the spring you never expect to make a pound of beef for the price you sell it at; to do so would be a most exceptional condition. You sell at 5½ cents a pound live weight. You have put on the steer 300 pounds which probably cost you 6 or 7 cents a pound. To start with you got your steer at 4 cents a pound we will say. There will be about 1,000 pounds at 4 cents, which is \$40. Supposing you sell 1,300 pounds at 5½ cents a pound. That would be \$71.50; so there is a difference of \$31.50 between the price at which you buy and the selling price. You have \$31.50 to the good and your feed has cost you, say, \$7 a hundred

for the beef produced, which amounts to \$21. Deducting that from the \$31.50 it leaves you a margin of \$10.50.

By Mr. Wilson:

Q. You do not allow anything for labour?

A. Nor for the manure either. Labour is such a varying quantity and manure also that it is tacitly understood by experimenters the world over that both items shall be excluded.

By Mr. Lewis:

Q. That is a way of balancing things up?

A. That is the way we have of balancing things up.

By Mr. Wilson (Lennox):

Q. Labour would cost considerably more than formerly with wages at the present rate?

A. Wages would be more and manure would be worth more.

I want to say a word or two now about frozen wheat.

By Mr. Sproule:

Q. How do you find frozen wheat as a feed for pigs?

A. I am going to take that up in a few minutes. We find that for steers it has to be ground very fine otherwise it passes through the animals undigested. It is absolutely necessary for beef cattle, dairy cattle or horses that it shall be ground finely.

By Mr. Henderson:

Q. You are speaking now of frozen wheat?

A. Frozen wheat.

Q. Does that same principle apply to all kinds of grain for feed purposes; should it be ground fine?

A. No, I will not say it applies to all kinds of grain, but it had better be ground if you want to get the best results, but not to the same extent as in the case of frozen wheat. The kernels of frozen wheat, if you examine them, you will find are very hard. If they were soaked for a while it would overcome that hardness, but where fed dry, they go right into the stomach; they don't have time to soften, and are very difficult to digest. Therefore, these kernels if not ground, or if badly ground, pass right through the animal.

By Mr. Lewis:

Q. Do you grind it or roll it?

A. We grind it. You can see the way it is prepared from the samples here.

Q. Have you experimented with grain that is rolled, that is, crushed, but not ground?

A. I cannot say that we have, but I have seen it done.

Q. That is what they use on the ships. They make it as coarse as they can by crushing the grain?

A. Yes.

By Mr. Henderson:

Q. Your opinion is that the finer they get the wheat the better?

A. In the case of this wheat, not in all other cases.

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By Mr. Blain:

Q. Would you say that it would pay to bring frozen wheat to Ontario and feed it to cattle in competition with grain grown in the province?

A. This year I think it would at the prices we pay. The prices are so high for bran and other feeds that wheat costing anywhere around \$1, \$1.10 or \$1.15 is a good feed.

By Mr. Martin (Wellington):

Q. In feeding ensilage, clover hay and oat straw and your meals do you mix them all together?

A. Yes.

Q. Do you cut it up and mix it all together?

A. We don't mix the hay, but we take the ensilage and where we are feeding any roots we pulp them and mix them together with the straw, and on top of that when fed to the cattle we throw the meal.

Q. Do you dampen it?

A. No, there is enough moisture in the roots and ensilage.

By Mr. Lewis:

Q. Did you get the same results from frozen wheat as from unfrozen?

A. We have not made experiments to determine that.

Now, as to summer feeding. I think I have already discussed that pretty well with Mr. Jackson.

Mr. JACKSON (Elgin).—I don't think you discussed it at all.

Mr. GRIDDALE.—If you will get me the field I will be only too delighted to experiment in pasturing cattle.

Mr. JACKSON (Elgin).—If the Chairman or Mr. Griddale will show me where cattle intended for export are finished for six months of the Canadian year I will welcome the information. If they can show that they are finished in the stable I will alter my opinion.

Mr. MARTIN (Wellington).—I can show you a man who has from 250 to 300 head that he finishes in the stable.

SUMMER FEEDING IN STABLE.

Mr. GRIDDALE.—We took a bunch of steers three years ago, in April, put them in the stable and fed them until August 2, and they made quite as good gains during that period as similar steers fed during the winter, showing that in spite of the warm weather they did all right inside. They were fed exactly similar feeds as were fed cattle in winter, and made quite similar gains. For instance, they made a gain of 2.21 pounds per day although it cost a little more in that case, 6.73 cents, to make a pound of gain.

By Mr. Lewis:

Q. In what kind of place were they kept?

A. A very roomy place, our steer barn, a wooden building.

By Mr. Barr:

Q. Were they tied up?

A. No, they were loose. Have you been at our stables, Mr. Jackson?

By Mr. Jackson (Elgin):

Q. Yes. That gain was made in summer do you say?

A. They made 203 pounds from April 21 until July 23. I made a mistake in saying August before. That is for three months they made a little over 60 pounds a month.

By Mr. Wilson (Lennox):

Q. Did you try the same kind of experiment with cattle outside in the summer as you did with cattle in the cold weather?

A. We fed them outside, not on pasture, but in a small yard, and they made good gains.

Q. They made better gains than they did in the cold weather?

A. During the hot weather?

Q. Yes?

A. No, they did not make any better, but just as good.

By Mr. Lewis:

Q. Sixty pounds gain a month is quite an increase?

A. It is fair, about 2 pounds a day.

Q. Do they gain as much as 150 pounds in a month?

A. I have had them gain as much as 150 pounds in a month, but that is exceptional, and they won't do it continually. For instance, three weeks ago I had a steer which made a gain of 90 pounds in two weeks, and the next two weeks the gain was 50 pounds, so that the total gain for the month was 140 pounds. We get them once in a while to do that. One steer made a gain of over 100 pounds in three weeks. That was a remarkable steer in my opinion.

Q. What class of steer was that?

A. It was a shorthorn grade.

By Mr. Sproule:

Q. Do they make as good gains during the fly season?

A. This bunch to which I refer did. I could not see that it affected them very much.

Q. Are the flies troublesome down here?

A. Yes. There was a shed into which these steers could go and they were not exposed to the sun all the time.

Q. Am I correct in understanding you to say that you did not find much difference in the quality of the food between the worst frozen wheat and the best wheat?

A. We did not try the pure wheat because that injures the steers. We just took one variety and mixed it with oats or bran.

Q. What was it, the first or second?

A. No. 1

By Mr. McIntyre (Strathcona):

Q. What do you mean by the first grade of wheat as compared with the western grades?

A. There are the two samples.

Q. Quite so, but you understand we have grades in the west?

A. These were graded. They are No. 1 and No. 2 frozen wheat or feed wheat.

Q. Is that a commercial grade, No. 1 frozen?

A. I do not think it is a commercial grade.

Q. You bought it on grade?

A. Yes.

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BABY BEEF.

The subject we have been experimenting with for quite a number of years is the feeding of steers from birth to block. We have found it pays to get them to the block as quickly as we can. We have put them on the block at the age of 13 months, and also at two years, and the quicker they are placed in the butcher's hands the more profitable they are. We have taken similar steers and allowed them to run through on a light ration, giving them a little bit of meal the first winter, practically no meal the second winter, and finishing them off the third winter; and they have given us, as a rule, a very small margin indeed. For the man who has rough pasture and a lot of rough feed that is not a good way to do, but for the man who wishes to make beef out of the little bit of arable land he has, shoving the beef forward and getting it on the market as quickly as he can is the best way of making money. Practically the same thing applies here that was raised by Mr. Jackson as to the advisability of pasturing or stall feeding; keeping them inside or letting them run on rough land and using their product off the rough land. Our experiments show that where they are properly fed we were able to make a profit of from \$5 to \$25 on steers of from 13 to 18 or 20 months old. That was after paying for the steer and the cost of the feed. We have had quite a number of experiments along this line and it would be quite a long process to conduct you through the mazes thereof. However, that in brief is the result.

SWINE FEEDING.

Now, I come to the question of feeding pigs. In one bunch we had 29 brood sows and I will give you briefly the amount of feed consumed by them from December 1, 1907, until March 14, 1908. It cost us to feed those 29 sows during the 105 days \$135.99. We fed them 37,100 pounds of roots at \$2 per ton, 3,788 pounds of bran at \$22 per ton, 4,151 pounds of shorts at \$25 per ton, and 1,550 pounds of clover hay at \$7 per ton. During the first seven weeks, that is about 50 days, those sows cost us just 2½ cents per diem to feed showing that it is possible to carry brood sows through very cheaply even under such adverse conditions as we have at the farm. The last seven weeks or 50 days it cost us a little more because the sows were getting nearer the time for farrowing and they had to be in better shape for the litters. They have farrowed very largely now, I think about 20 of them, and in every case but one have given us good litters. That one gave only three or four. They are all strong and healthy notwithstanding the conditions at the experimental farm where we have a very poor piggery. However, we got the sows through the winter very cheaply; they are healthy and have given good litters.

By Mr. Sproule:

Q. Did you wet your feed or steam it?

A. No, it was fed dry.

Q. Did you feed the hay dry too?

A. We fed the hay in a rack, just as you would feed sheep.

Q. Clover hay?

A. Clover hay.

Q. You would not feed timothy?

A. We would not feed timothy, but we did feed some alfalfa.

By Mr. McColl:

Q. Have you made any estimate of what it would take to keep a brood sow and have her raise two litters of pigs a year?

A. We have estimated that it will cost, if you feed them as cheaply as you know how, from \$12 to \$15.

Q. I estimated \$15?

A. Under the system of feeding I have outlined, that we followed this last winter, it is going to cost us less than that, because in summer we put them on roots or green feed and they feed very cheaply indeed. In this way we get the best litters every time. Feeding them too heavily is a great mistake.

By Mr. Sproule:

Q. Are you going merely to feed them on roots?

A. On clover pastures to start with, and then roots afterwards. There is some little danger in having them on root pasture, however.

Q. What do you mean by root pasture?

A. Take part of a field of roots and fence it off with a bit of sod alongside of it and included in the pasture.

By Mr. McColl:

Q. Have you ever tried feeding them pumpkins?

A. Quite extensively, and they are certainly an excellent feed. We cook them and mix meal with them, and I don't think there is anything that will surpass them as a cheap fattening ration.

By Mr. Wright (Renfrew):

Q. Seeds and all?

A. Seeds and all, and they like the seeds best.

By Mr. McIntyre (Strathcona):

Q. What about artichokes?

A. They are capital feed for both fattening pigs and brood sows, that is for about a month in the fall and about two weeks in the spring. After that you must let them grow or you will have no crop next year. We made some very cheap gains with artichokes for two or three years running.

FROZEN WHEAT FOR FATTENING PIGS.

Now, as to frozen wheat, we fed it to pigs very extensively. Since swine are supposed to be particularly suited for making use of this sort of feed it was decided to give as thorough a test as possible. The results given below are quite incomplete, but will serve to indicate the high value of different grades of frozen wheat for pork production.

The hogs were divided into groups of 5 each and fed as follows:—

Lot 1—	Frozen wheat No. 1,	200 lbs. with shorts,	100 lbs.
" 2—	"	No. 1, 200 "	" 100 "
" 3—	"	No. 2, 200 "	with corn, 100 "
" 4—	"	No. 2, 200 "	only.
" 5—	"	No. 2, 200 "	"
" 6—	"	No. 2, 200 "	with barley, 100 "
" 7—	"	No. 1, 200 "	with oats, 100 "
" 8—	"	No. 1, 200 "	" 100 "
" 9—	"	No. 2, 200 "	with skim milk, 3 lbs. daily per pig.
" 10—	"	No. 1, 200 "	only.
" 11—	"	No. 1, 200 "	"
" 12—	"	No. 1, 100 "	No. 2, 100 lbs.; corn, 100 lbs.
" 13)	Check lots both fed with the following ration:		
" 14)	500 lbs. shorts, 300 lbs. corn, 100 lbs. Imperial flour (coarse feeding flour), skim milk a pound per day per pig, root equal parts by weight with meal fed.		

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All pigs were fed on these rations for 56 days, exclusive of 7 days allowed for change of ration. The pigs were weighed every Tuesday and careful notes made of results each week. The summary is as follows:—

Lot	gained at rate of	76 lbs. per day	per pig and required	39 lbs. meal for 1 lb. gain.
" 2	"	·77	"	" 3·7 " 1 "
" 3	"	1·03	"	" 3·9 " 1 "
" 4	"	1·23	"	" 3·6 " 1 "
" 5	"	·71	"	" 3·8 " 1 "
" 6	"	·81	"	" 4·1 " 1 "
" 7	"	1·02	"	" 3·9 " 1 "
" 8	"	·66	"	" 3·9 " 1 "
" 9	"	·86	"	" 3·4 " 1 "
" 10	"	·94	"	" 4·1 " 1 "
" 11	"	·79	"	" 3·9 " 1 "
" 12	"	·94	"	" 4·7 " 1 "
" 13	"	·92	"	" 3·2 " 1 "
" 14	"		"	"

The pigs enjoyed uniformly good health. The lots were fairly uniform in size except in cases where two lots were on the same ration, when one was a heavy lot and the other a light lot, as for instance, in lots 10 and 11, where pigs in lot 10 averaged at finish 203·2 lbs., and pigs in lot 11 averaged at finish 140·8 lbs. Weights are given below.

Average Weight per Pig in Lot in each case.

Lot	1—Weight to start.	99.1—To finish.	
" 2—	"	76·0—	" 141·8
" 3—	"	118·2—	" 119·2
" 4—	"	140·0—	" 176·2
" 5—	"	85·0—	" 209·2
" 6—	"	104·1—	" 124·8
" 7—	"	112·1—	" 148·6
" 8—	"	74·2—	" 169·4
" 9—	"	99·0—	" 111·6
" 10—	"	150·4—	" 147·2
" 11—	"	96·3—	" 203·2
" 12—	"	124·8—	" 140·8
" 13—	"	108·6—	" 176·7
" 14—	"	83·8—	" 159·3
			" 137·2

It will be observed that pigs on pure frozen wheat made excellent gains. It must be noted, however, that very careful feeding was necessary in lots where pure wheat was used. On averaging up the weak lot it will be found that gains cost on pure frozen wheat less than 4 cents per pound live weight. This compares very favourably with gains made on other feeds or mixtures. The wheat should be finely ground.

By Mr. Lewis:

Q. I understood you to say that too much frozen wheat would kill the little pigs, is that because the wheat was frozen?

A. It would not kill them but knock them off their feed. They would probably get stiff and would not go up to the trough and eat.

Q. Would that apply to ordinary wheat?

A. I think it would apply to any one grain, if you undertook to feed your pigs on it.

Q. It is not because the wheat is frozen?

A. No, I do not think it is.

By Mr. Sproule:

Q. Is the wheat equally valuable for the pigs up to the time they reach 75 or 76 pounds, as from that time on?

A. Our smallest pigs experimented with weighed 60 pounds each. We put them on that feed and they did as well as the bigger pigs.

By Mr. McColl:

Q. Did you ever find that a litter of 8 or 9 pigs seemed to be about even in size, a fairly even bunch, until they weighed 60 or 70 pounds. Then one or two would go up to 200 pounds and the others will weigh about 150 or 160 pounds?

A. Yes, very often.

Q. Did you notice that difference more particularly in testing the frozen wheat than with other feeds, or what is the reason for it?

A. I think there was a little more inclination that way when frozen wheat was fed. You will notice a little variation in the returns. Some pigs did very well. There was one that gained 120 pounds in the time the experiments lasted, about 100 days. No other pig gained over 100.

Q. When I was at the farm the man informed me there was one pig which weighed about 260 pounds. It had gone from about 111 up to 260?

Q. That is the pig I am talking about, that was a white pig. I don't know how to account for it. These pigs were fairly even in size, but this particular animal rushed ahead and made far better gains on exactly the same feed; and, strange to say, in the same bunch one went off his feed.

By Mr. Sproule:

Q. Have you found No. 1 and No. 2 feeds to be of exactly the same quality?

A. For pigs No. 2 seemed to be a little the better.

Q. My man tells me that No. 2 frozen wheat is scarcely worth feeding at all. The ordinary wheat, he thinks, is so far ahead of it as to pay for the difference in price?

A. We got good results.

By Mr. McColl:

Q. I understood to the contrary, that in frozen wheat, even in No. 2 there was a larger percentage of protein than in pure wheat, and it is better for feeding purposes?

A. It may be better for feeding pure, but for feeding purposes I prefer the other.

Q. The sound wheat?

A. The unfrozen wheat.

By Mr. Lewis:

Q. Some farmers prefer shorts to wheat?

A. Most of them do. I do myself.

Q. It is preferable?

A. Yes, but it is dearer.

Q. Is it?

A. You cannot get shorts here for less than \$27 a ton at present, and the lowest price last fall was \$24 or \$25.

Q. What is the difference in price between the feeds?

A. Wheat is about \$20 a ton. The other runs from \$25 to \$27 a ton.

By Mr. Sproule:

Q. I understood you to say that it takes about 4 pounds of feed to make one pound of pork?

A. Yes.

Q. That would be 1½ cents a pound?

A. No, very little more than \$1 a 100 pounds.

Q. At the rate you pay for your feed, \$25 a ton, it is 1½ cents?

A. Yes.

Q. That makes 5 cents?

A. Yes.

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Q. If you sell your pigs at \$4.45, \$4.60 or \$4.75, where is your profit?

A. Selling at 6 cents we make it pay.

Q. That is the price at which pigs have been running this winter?

A. I sold some pigs for 6 cents and 6½.

Q. That would bring it to \$4.50?

A. I sold them over a month ago for 5¼. I think our markets are a little better than yours in the west.

Q. We were selling for \$4.40?

A. I have no doubt?

By Mr. McColl:

Q. I am buying frozen wheat, No. 1, at 66 cents a bushel. That means \$1.10 per hundred for the wheat. It costs 5 cents a hundred for grinding that wheat, which makes the price—

A. \$1.15.

Q. \$1.15 per 100?

A. Yes.

Q. Which is the cheapest feed you can procure at the present time?

A. Yes, it is the cheapest feed you can procure at the present time.

Mr. SPROULE.—Can you buy No. 1 frozen wheat for \$1.06 at your place?

Mr. MCCOLL.—I bought some feed from the elevator there at 66 cents a bushel, taking it when I liked.

By Mr. Lalor:

Q. You cannot feed clover hay to pigs as well as sheep and cattle, can you?

A. Yes.

Q. Do they eat it up clean?

A. They will eat lots of it. The 29 brood sows that I have been speaking of ate about three-quarters of a ton in a couple or three months.

Q. Do you feed them from the rack, the same as you would sheep?

A. Yes. It is a very cheap and good feed, and they like it.

Q. It is a very unusual thing for the ordinary farmer to do?

A. I don't know. There are men that do this, I have seen a good many do it. It is a cheap and good way of feeding the sows, there is no better feed for them.

Q. You mean that it is a good feed for sows, but not for fattening?

A. Not for fattening. If intended for fattening, you mix it with meal and steam it. In the case of the brood sows we allowed them to pick it out themselves.

ROOTS FOR SWINE.

I have one more item to deal with, and then I have finished. That is as to the value of roots for pigs. As I said, in speaking about the sows, we have fed pigs on roots in the pasture. We just cut off a corner of the root field and turned the pigs in.

By Mr. Sproule:

Q. What kind of roots do you mean?

A. Different kinds, mangels, turnips, sugar beets and carrots. They would eat the mangels first, then the sugar beets, then the carrots and then the turnips; that was the order in which they took them, and that was one thing I wished to find out. There is one difficulty in connection with feeding them in a root field. They are apt to develop a little too much belly and they don't make as rapid gains as where you control the amount of roots fed; so while you save the cost of harvesting you lose in

the rate of gain and in the kind of product which you get. We compared root pasture with alfalfa and with red clover pasturing, and then we compared a lot in the barn which had no pasture at all but which received a certain amount of roots. We found that the pigs which we had on root pasture cost us \$3.82 a hundred. We estimated the roots at so many bushels per acre, and worked it up that way. Of course, the roots cost us less unharvested than when they were harvested. Fed in pens on roots the cost per 100 pounds of gain was \$4.23. When the pigs were fed with roots and meal in the pens the cost was \$3.09, and when fed with roots in the pasture the cost was \$3.82.

By Mr. Sproule:

Q. At what time of the year did you turn them on to the roots?

A. It was in September. When the pigs were fed on alfalfa pasture the cost was \$3.67, and on red clover pasture \$3.52. You will see, therefore, that feeding with roots and meal in the pen was the cheapest way of fattening them. We have found that to get quick and profitable returns from fattening pigs they must be kept in close quarters. If you give the animals a big run they get rid of a certain amount of their feed. Hence they are better in close quarters.

For breeding stock it is probably better, however, to give the pigs a run. We have had a bunch of young sows out all winter. They have done very well, but, of course, cost somewhat more to feed than would have been the case had they been inside.

By Mr. Wilson (Lennox):

Q. You did not house them at night?

A. They have cabins.

Q. The pigs would go in themselves?

A. Yes.

Q. You think they did as well as those that were kept inside?

A. Quite as well, if not better, but it cost a little more to feed them. We did not feed them for 2½ cents a day.

Q. Tell us how much it cost?

A. They were growing sows and they cost us about 6 cents a day each.

Q. What did the others cost?

A. 2½ cents to 5 cents.

Q. That is quite a difference?

A. Yes, quite a difference.

Q. The value of your tests would be greater if they were made with sows of the same age?

A. I have not made such an experiment this year, but two or three years ago we did that.

Q. You ought to tell us what the age was?

A. In the case of pigs of a similar age three years ago, the cost of increasing live weight was 6 cents a pound.

Q. That was pigs fed inside?

A. Yes. Pigs of the same age fed outside cost us 8 cents a pound.

Q. That is more than you said it cost you last winter?

A. But this is another experiment.

Q. I do not see why there should be such a difference?

A. I have seen pigs that it cost 10 cents a pound to put on weight. With others the cost was only 2 or 3 cents. I may say, however, in summing up inside versus outside winter feeding that it usually cost about 1 cent more per pound increase in live weight when fed outside rather than inside.

There is one other experiment to which I desire to refer. We fed pigs on milk, on sugar beets and on mangels. Where we fed them on meal and mangels the cost to

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produce 100 pounds live weight was \$6.20. That was in winter and winter feeding is always more expensive than summer feeding.

By Mr. Henderson:

Q. When you speak of sugar beets do you mean the ordinary beet which is grown in the garden for household consumption, or the beet which is cultivated for the purpose of making sugar?

A. I mean the best which is grown for the manufacture of sugar, the Danish Improved sugar beet.

By Mr. Lalor:

Q. If winter feeding is so expensive it would not be very profitable to the farmers to sell pork at 6 cents a pound or less?

A. In the experiments to which I am now alluding the cost of producing 100 pounds live weight was \$6.20 with mangels and with sugar beets \$5.05, showing that the sugar beet is very much better than the mangel.

By Mr. Sproule:

Q. What about turnips?

A. The pigs eat them with difficulty unless you pulp them.

Q. I mean pulped?

A. We find they are quite equal, if not superior, to the other roots when cooked or pulped.

By Mr. Wilson (Lennox):

Q. What do you estimate the cost of your roots at?

A. \$2 a ton for mangels, \$2.50 for sugar mangels, and \$3 for sugar beets. The sugar beets are really put a little too high in comparison with what they cost us to produce. We get 22 tons of mangels, 18 tons of sugar mangels and about 16 tons of sugar beets to the acre. Sometimes the yield is a little more, but very seldom less than that.

By Mr. Lalor:

Q. That is a very high estimate for the ordinary farmer, especially in sugar beets?

A. I don't know about the ordinary farmer; I am speaking of our crops for the last few years.

By Mr. Schell (Oxford):

Q. How many tons of turnips do you get?

A. Around 20.

By Mr. Wilson (Lennox):

Q. Now, tell us the kind of feed that makes the best pork?

A. The best pork in my experience is produced by equal parts of oats, peas and barley, about three pounds of skim milk and about as much roots. That is about the best pork I ever tried. You want to use about as much roots as you are feeding meal; that is, for every two pounds of meal or grain there should be two pounds of roots fed.

Q. There used to be an idea that pea fed pork was the best?

A. No, pea fed pork is apt to become very hard when it is cooked. I have tried different kinds of pork and I know that pea fed pork is too hard when cooked.

Q. Corn-fed pork is apt to be too soft, is it not?

A. I have seen corn fed pork of a very nice quality.

By Mr. McColl.

Q. I have had this experience with some young pigs, particularly those that came in the winter. They went along very well until they were about three or four weeks old when they took sick, suffered from scouring and died. What is the cause of that?

A. I cannot tell you. I would like very much to know myself. We have been trying to find out; in fact, I have been working for years on it. I think the scouring is due to some germ. I have thoroughly disinfected the pig pens every day, but did not always succeed in making a cure. Sometimes there was a cure, but I could not always tell how it was brought about. I have seen good results follow where we fed the little ones some pasteurized or warm milk with a little shorts mixed therein.

Q. Would the sickness be due to the milk of the sow being out of condition; that the sow suffered from over-feeding or lack of exercise?

A. It might, but at the farm we are very careful in feeding the sows and we know they get very wholesome food.

By Mr. Sproule:

Q. Do you give them dry feed or wet?

A. Wet.

Q. Do you put your milk in with the other feed?

A. Yes.

Q. Do you give them the milk sour?

A. No, sweet.

Q. Do you put it all in the same barrel?

A. No, we just mix it as we feed it. We mix it in a hand pail and it is prepared each time it is fed.

Q. You don't put it in a barrel?

A. No.

Q. Because if you did I would like to know what kind of pigs you would raise?

A. No, we don't let the milk sour?

By Mr. Henderson:

Q. Is it injurious to hogs to feed sour milk to them?

A. No, not to pigs that are advanced a bit or if you feed sour milk always. I imagine that if you started feeding sour milk and the little ones gradually became accustomed to it it would be all right. The trouble occurs when you feed sour milk one day and the next day feed sweet milk. If you are feeding pigs weighing 100 pounds or more it does not matter, the amount you give them is not sufficient to cause any trouble; but if the little pigs are getting a good deal of milk and one day you feed sour milk and the next day sweet milk, then there is going to be trouble sure.

By Mr. McColl:

Q. These steers that you finished at 13 months old, what weight would you get at that age?

A. The bunch we finished, that is the youngest of the bunch, at 13 months old weighed 925 lbs. live weight.

Q. And the twenty-months old?

A. They weighed between 1,100 and 1,200 lbs. In fact, some of them went over 1,200, and one lot at 22 months old weighed 1,300 lbs.

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Q. Then the three-year old steers, what do they weigh when finished?

A. Between about 1,300 and 1,500, sometimes 1,600 lbs. live weight.

By Mr. Sproule:

Q. You sold the cattle at from 5½ to 6 cents a pound?

A. We got somewhere around that last year. Of course, like other people we are subject to the market conditions.

Q. With us we sell at 5 cents a pound?

A. In the spring?

Q. Yes.

A. Then we are luckier than you are. We just get the market price, but I got a little better price than you last spring.

By Mr. Telford:

Q. What percentage would you get from the pigs?

A. Anywhere from 70 to 80 per cent. We don't expect to get less than 70; we very seldom get over 80. I have known it to go as high as 82.

Q. And what percentage from cattle?

A. That, of course, is a very variable quantity indeed. From well fed steers you ought to get about 60 per cent and from very well fed steers about 65 per cent.

By Mr. McIntyre (Strathcona):

Q. What is the value of barley, oats and roots for fattening pork?

A. What do you mean exactly?

Q. Supposing you were feeding the coarser grain with roots, would you indicate the value of fattening?

A. I would say that taking the average of pork prices those feeds are worth about 1 cent a pound for the meal and from \$2 to \$3 a ton for the roots.

Q. But my question is more particularly as to the suitability of using such feeds?

A. Whether to sell the grain or to use it for feeding?

Q. Quite so?

A. By all means use it for feeding for this reason: That you may expect to get anywhere from a cent to 1½ cents a pound for your grain if you put it through your pig. That is what you mean, isn't it?

Q. Yes?

Having read over the preceding transcript of my evidence, I testify the same to be correct.

J. H. GRISDALE,
Agriculturist.

HOUSING, BREEDING AND FEEDING OF POULTRY.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

THURSDAY, April 23, 1908

The Select Standing Committee on Agriculture and Colonization met at 11 o'clock a.m., the Chairman, Mr. McKenzie, presiding.

The CHAIRMAN.—I have pleasure in announcing to the Committee that Mr. A. G. Gilbert, who is in charge of the poultry at the Experimental Farm, will address us this morning on the subject of the breeding of poultry. The agenda paper, which will be distributed to the members of the Committee, contains the several matters which Mr. Gilbert will speak upon. I have much pleasure in introducing Mr. Gilbert to the Committee.

Mr. GILBERT.—Mr. Chairman and gentlemen: I have very much pleasure in appearing before you to-day because you have always taken a lively interest in the operations of the poultry department, and which department when properly managed is calculated to be of great profit to the farmers of this country. I intend this morning to bring to your attention such work as will be interesting to you and likely to result in practical benefit to our agriculturists. In so doing I know I shall receive your heartiest sympathy.

I beg to call your attention to the following subjects, all of which are immediately in connection with the work I am engaged in:—

1. Some noticeable developments in methods of housing, breeding and feeding of poultry.
2. What long experience has shown to be the most suitable varieties of poultry for the farmers of to-day, from the standpoints of eggs and flesh; also the best method of management, and for information in regard to which there is much inquiry.
3. A rapidly increasing interest, on the part of farmers, in the poultry branch of their farm work.
4. If time permits, some interesting features of the work of the past year.

WINTER POULTRY HOUSES.

First, we notice the great change that has taken place in the style of winter house. Not very many years ago the popular idea was that the winter house should have thick walls, with a window of rather small dimensions, facing south. The great object was to have a warm house, a result often secured with little consideration for ventilation, but which is now of first importance. The pendulum has swung the other way, and a house all cotton on the south side with a window in the centre, or a wooden house, but with a cotton frame, the latter 12 inches in depth, by width of the window—above and below the windows—seem to be the most popular types to-day. Some of these houses are built with a shed attachment for the fowls to find exercise in by searching for their whole grain food, which is scattered in the litter always to be found on the floor of a well-kept poultry house. But the shed attachment has

been found unnecessary, for, by making the roosting room a little larger, we have the same principle embraced. I have already stated that we move quickly in these years and the transition from comparatively old to modern methods has been very sudden and very rapid. I have different plans of these modern winter poultry houses, one or two of which, perhaps, the Committee will kindly allow to appear in my evidence.

By Mr. Owen:

Q. Do you use artificial heat?

A. Very little now. We have to use a certain amount for the purpose of comparison, but we are gradually getting out of the practice.

By Mr. Wilson (Lennox):

Q. What do you say those houses are built of?

A. Some of them frame with cotton instead of wood in their southern fronts and a window in the centre.

Q. They are less expensive?

A. Yes.

By Mr. Burrows:

Q. That cotton front is for ventilation purposes?

A. Yes.

Q. How do you keep your poultry from freezing?

A. There is a cotton frame which drops down in front of where the fowls roost at night, and they are so kept warm at that time. They also enjoy good ventilation, which is a most important thing. The whole object in our winter care of animals now is to give them fresh air and plenty of it. We find that we can do so and yet avoid any risk of the birds freezing.

By Mr. Blain:

Q. You say you are doing away with artificial heat. Is that because you are building your houses warmer?

A. I can hardly say we are building them warmer, but we are building them certainly to permit of better circulation of fresh air. At the same time we keep the fowls warm at night by this cotton frame which falls down in front of their roosting place.

VALUABLE EXPERIENCE AT A NORTHERN POINT.

I ask your Committee to bear in mind that although we and others who are in cold winter districts have found these cold winter house habitations fairly successful that they are yet on trial, and are receiving at our hands careful and thorough investigation. Our experience is most valuable, for we are in a northern position where the winters are cold enough to thoroughly test the worth of those different styles of winter houses. I think your Committee will admit the correctness of this statement, for on many occasions during the past winter we experienced 15 below zero of cold, and on several occasions 20, and once 32 below zero.

These experiments, as you can readily imagine, are observed with unusual interest by the poultry keepers of Manitoba, Alberta, Saskatchewan, &c. The people in these provinces say that the style of winter houses that will suit your cold winter conditions will likely suit ours. And it is also to be remembered that lumber is scarce and high in the provinces named. I found that out while attending poultry meetings

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in Manitoba and on visiting different points in Saskatchewan and Alberta a few years ago. I have received since that time scores of letters from settlers in those provinces asking my advice as to the style of house most suitable to their winter conditions. So it is most important to know what is best to advise.

I am of opinion that for the colder portions of Ontario and Quebec the style of house adopted by the directors of the Pembroke Poultry Yards of Canada, which are on an extensive scale at Pembroke, Ont., another northern point, would be most suitable. This company, which has a capital of \$40,000, have what they consider the latest and best in poultry houses, plant, &c. The style of house adopted by their shrewd management might be termed a compromise between the one extreme of entirely open front and the bottled-up method of housing the birds. Instead of two rooms there is only one, and this one room is made slightly larger than the roosting room with shed attachment. This style of house was first adopted by Mr. L. H. Baldwin, of Deer Park, Toronto, some years ago when he erected his large poultry plant in the locality named. Since then it has become much in vogue, presumably because cheap as well as compact. A description of one of the many apartments in the long row of buildings forming part of the plant of the Pembroke Poultry Yards Company will probably best convey an idea of an up to date application of this method. Each colony of fowls occupies one pen, 10 x 16 feet square. Above and below the window there is a frame covered with cotton, one-foot deep by four broad. The air through these cotton openings is diffused through the pen without draft, while light and sunshine find their way through the window.

By Mr. Henderson:

- Q. What kind of cotton do you use; the ordinary factory cotton?
 A. The ordinary factory cotton selling at five or eight cents a yard.
 Q. And just a single ply of it?
 A. Yes, a single ply put in the frame above and below.
 Q. I thought perhaps you might have two with a space of a few inches between them. That is the method employed in the small-pox hospital when they are set up in the fields?
 A. That is a capital idea, especially for Manitoba where they have such extremely cold dips. We have never found it necessary to have such. One thickness has so far been found quite sufficient for us. The ventilation by the means I have described is considered most satisfactory.

By Mr. Wilson (Lennox):

- Q. Did you give the size of the building which has the window in it?
 A. 10 x 16. That is the size of one room and the window is four feet square.

By Mr. Henderson:

- Q. How many chickens would you have in that?
 A. We allow 6 or 7 square feet to each fowl. We generally allow as much room as possible, but not less than six feet.

By Mr. MacLaren (Perth):

- Q. Do they lay eggs in these houses in the cold weather?
 A. Yes.
 Q. That is the principal part?
 A. The Pembroke Company, I may be allowed to state, presumably invested their capital for business reasons and not for experimental purposes.

By Mr. Henderson:

Q. It is not much fun for the chickens to live in a cold climate?

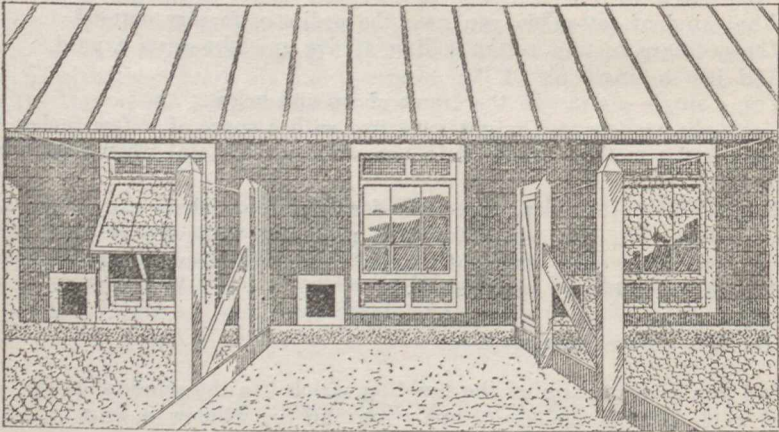
A. The point I wish to make is this: If the hens will lay in a cold winter season at Pembroke, Ont., they should also do so in an equally cold period in Manitoba, Alberta and Saskatchewan. It is the gaining of such experiences which makes experimental work of a similar nature, at our equally cold winter standpoint, important to the new settlers in the provinces named. I resume description of a room in the Pembroke buildings.

The floor of the pen in the hen house at Pembroke is cement and is covered with the usual quantity of litter. The ceiling is slatted, and above the slates, straw, to a depth of 12 inches, is placed for the purpose of absorbing moisture. The claim for this method is that the circulation of air through the cotton compartments and the absorption of moisture by the straw give perfect freedom from dampness, which is a most important object to gain.

By Mr. Clements:

Q. Have you a cotton roof as well as cotton sides?

A. No, just a cotton front. That is as far as we have yet gone in experimental work of this kind.

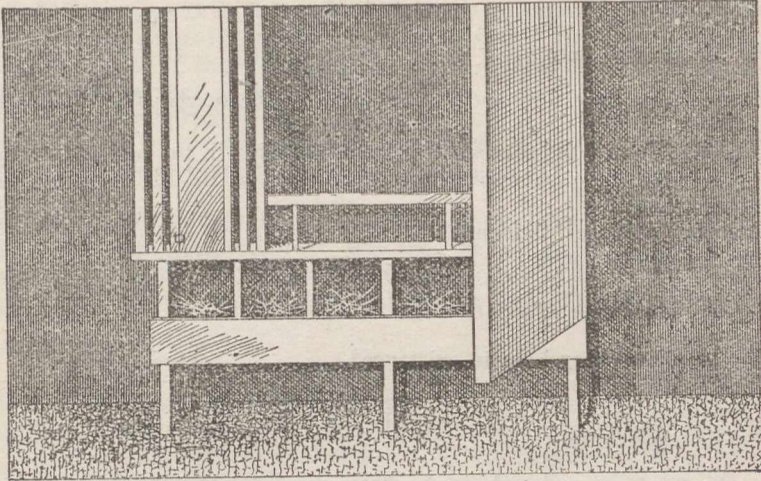


This illustration shows the cotton panels above and below the windows, at the plant of the Poultry Yards of Canada, Pembroke, Ont.

What I am sure will interest your Committee is the fact that during the coldest period of winter, I was assured there had been no moisture in any of the pens of the buildings. This result is attributed to the straw above ceiling and ventilation through the cotton frames. At the north end of the pen are the roosts, platform, and underneath the latter, the nests. In front of the roosting place there is a cotton-covered frame 6 x 8 feet. This frame swings to the wall, and is only used on very cold nights, for the purpose of keeping the fowls comfortable. The following illustration shows the cotton frame in front of roosting pen held partly open. It also shows

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the roosts, dropping board and nests underneath the latter. All are at the north end of the pen.



Showing cotton frame in front of roosting place, held partly open; also showing roosts, dropping board and nests.

A four compartment hopper contains grit, oyster shells and charcoal. Whole grain is thrown on the litter on the floor. Drink water is regularly supplied, and from time to time meat and vegetables. In each pen to the left of the roosting place there is a small crated inclosure to hold two male birds for use during the breeding season. I was assured that the pens so arranged had given entire satisfaction. And what is most important, I was told that sick fowls had been rare. Such results, gained at so northern a position, are most important.

By Mr. Henderson:

Q. You have that character of pen at the farm?

A. Yes. We have been trying similar and other styles of houses with different sorts of fowls for some years past.

Q. Are you giving us your own experience or some other persons?

A. I am giving you a description of one of many up-to-date houses owned by a private company who have invested a large amount of capital. I prefer to, sometimes, take outside examples, because I find I am up against it when I am recommending to the farmers of the country improved methods of housing and management, and in this way: If I tell them what we have and what results we obtain. The farmers say: 'Oh, that is very well for you, you have the government at your back; you have the best facilities; the most improved buildings and everything else you desire. But what can we poor farmers do?' I do not take them in that way. I tell them of farmers who have made money out of their poultry, and I say: 'You are equally intelligent and can surely do likewise if you will only adopt similar means.' Again, all our experimental results are described from year to year in our reports.

By Mr. MacLaren (Perth):

Q. Where is this plant that you are speaking of?

A. Pembroke, Ont.

Q. Where the large capital is invested?

A. Yes.

By Mr. Armstrong:

Q. What success have they had? You spoke of the success they had experienced in the industry?

A. I am speaking of the success they have met with in the use of their new type of house rather than as a mercantile venture; however, in this I believe they have been fairly successful.

Q. Have they paid any dividends?

A. That I cannot answer.

By Mr. MacLaren (Perth):

Q. How long have they been in existence?

A. Three years.

By Mr. Armstrong:

Q. I understand you to be advocating the use of the same kind of pens?

A. Exactly. I am showing that by this style of pens the fowls have come through the winter in good health and without any sickness. The houses have also been free from dampness.

By Mr. Lewis:

Q. Have you a record of the eggs laid by hens kept in these cotton front houses during the different months?

A. Not by the Pembroke Company that I was speaking of. We have a record of the eggs laid by the fowls in our poultry department, also, the cost of each fowl and what it has made per year. We give that information in our reports; that is part of our work.

DIFFERENT METHODS OF FATTENING CHICKENS.

By Mr. Owen:

Q. Is this company engaged in any other business, or do they devote their whole time to the hennery?

A. They fatten a large number of poultry for shipment and sale in Montreal and other city markets, and I believe in so doing they have been fairly successful.

By Mr. MacLaren (Perth):

Q. Are they using the cramming system?

A. No, but they use the crate fattening system.

By Mr. Henderson:

Q. What kind of system?

A. The crate fattening system. That is the birds are put in crates.

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By Mr. Wilson (Lennox):

Q. They are not allowed to run around?

A. They are not allowed to run around, but are kept quiet and have as little exercise as possible.

Q. Is that done in the open air?

A. It is sometimes so done, again in a shed or large covered building.

Q. It would depend upon the time of the year somewhat, I suppose?

A. Operations of that kind generally begin when the chickens are most abundant in the fall of the year.

Q. Do not firms buy chickens now for the spring or early summer market?

A. Yes, but in limited numbers, as broilers. The most profitable practice is to obtain the chickens when they can be bought in the greatest number and at the cheapest price.

Q. The Pembroke firm do not produce their chickens then?

A. They raise chickens, yes; but they have found that by keeping pure-bred fowls of good quality that they can sell the progeny of these fowls for breeding purposes, at higher prices than they could obtain for them if fattened for table use.

By Mr. Lewis:

Q. In other words they buy stockers?

A. Yes, that is exactly what they do for fattening purposes; but they raise their own pure-bred birds of good quality to sell at a high price to those who wish to purchase a superior class of fowls for breeding purposes.

By Mr. Blain:

Q. Is the crate process of fattening the most successful, in your opinion?

A. The fattening by crate method is certainly effective when chickens of proper type and quality are used. Crammer or crate fattening is really the business of the party of the second part, who is the purchaser. But it is certainly the farmer who produces, in other words, who hatches and rears the chickens. He is the party of the first part. It is all important to the farmer, who desires to obtain a sale for his chickens, as quickly as he can, that he should begin with the right type of fowls which will give him the suitable chicks for market. Then he must feed his chicks regularly and house them carefully from time of hatching. If he does this he will find, at the age of three, three and a half or four months of age, they are fit for sale to customers for table use or to the parties who buy for fattening purposes. My work is more directly with the farmers. I have for many years reared chickens as outlined, which weighed at three months of age $3\frac{1}{2}$ and 4 pounds. And many farmers have told me that they have also done so. Chickens from the earliest stages of their life require to be fed regularly, generously and carefully if desired to be of first quality. Chickens which are allowed to pick up their own living never make the better quality of poultry. I wish to most emphatically put my experience of 25 years on record in relation to the above points. I hope I have made myself clear.

By Mr. Henderson:

Q. I understand you to say that fattening chickens in the natural way you get a better chicken?

A. I do not wish to be understood as belittling crate fattening, but my experience goes to show that if the chickens are not neglected and are given a limited run they will have a firmness of flesh which they do not get by either the crate fattening or the cramming systems. The crate fattening and the cramming system is a method of breaking down tissue by the enforced idleness of the bird. No chickens have

firmer, more juicy or more wholesome flesh than those which while well fed are allowed to have a certain amount of run and exercise. And the gain in weight will often be with the latter.

By Mr. Owen:

Q. Do not the crate fattened fowls bring the highest price in the market?

A. I did not intend to intrude my experience to such a length on your Committee, but I am glad that the members are taking an interest in this subject. Permit me to say that I frequently have had chickens which never saw crate or crammer and they discounted the crate fattened chicks every time. And farmers can have the same results if they take the trouble.

By Mr. MacLaren (Perth):

Q. When you talk of the market, do you mean the local market or the market for export? Generally crammed chickens or crate fattened chickens sell better for export?

A. If I had a good article I never found it hard to get a purchaser at a good price. Sometimes we meet a man who wants to get a good article for a second-class price, but he is going out of date with the inferior quality of poultry and other articles of food.

Q. I was anxious to know if the chickens fattened in the ordinary way and exported sell better than those which are fattened in crates and by the cramming system?

A. You cannot send too many chickens of superior quality to the British market. In all cases they will receive the highest value. Our aim should be to produce either for home market or export, eggs and poultry of the highest quality. And they will receive proper appreciation both at home and abroad.

By Mr. Owen:

Q. It is important that good care is taken in transportation. Sometimes they do not arrive in the British market in the very best condition. It is something like our butter and cheese; there is not the care taken in the transportation that there should be?

A. If the fowls are properly killed, their crops empty, and the flesh allowed to cool before being packed, which should be done before they reach the shippers' hands, there will be comparatively little difficulty. Cold storage facilities are now excellent.

By Mr. MacLaren (Perth):

Q. Have you had any complaints about chickens arriving in bad condition in the old country?

A. We have never sent any to the old country, but Professor Robertson has done so, and has been most successful. But there were one or two complaints he told me about, and upon inquiry it was found that the complaints were due to the birds being packed before they were cooled, before the animal heat was out of their bodies. Again, there might have been some food which had decomposed in their crops. However, all these are matters of detail. To put a superior class of poultry on the market in proper condition should not be a matter of any great difficulty at this date.

By Mr. Armstrong:

Q. Are you in charge of the chicken fattening stations?

A. No. Any experimental fattening I was connected with was done at our own farm, and we were successful on such occasions.

Q. Who has charge of the fattening stations?

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A. The stations at which the fattening by cramming and crate were carried on were under Professor Robertson and outside of my department altogether.

By Mr. Blain:

Q. Are they still continued?

A. No, I believe they are not.

Q. What was the result, were the experiments successful or unsuccessful?

A. I can speak feelingly of one result, when I was for two hours and a half under examination one morning three or four years ago by this Committee, as to the work of fattening stations with which I had no connection or control.

Q. What are the varieties of fowls that you would recommend?

A. Bared Plymouth Rocks, White Wyandottes, Buff and White Orpingtons, Dorkings, &c. I will come to that presently. If I have answered all the different questions asked satisfactorily I will proceed with my subject.

DIFFERENT CONDITIONS IN DIFFERENT PROVINCES.

At the Macdonald College, St. Anne de Bellevue, P.Q., the colony house system of keeping the winter house layers has been to a great extent adopted, and was found highly successful during the past two cold winters.

(Any of the foregoing style of houses would answer for Ontario or Quebec provinces, or, indeed, any of the cold winter provinces, should experimental trial prove them to be suitable.)

For Manitoba.

A Manitoba correspondent has an idea that the large quantities of straw in that province, and which in many cases go to waste, might be utilized to make comfortable and cheap poultry houses. Notwithstanding the high price of lumber, there are many poultry houses made of boards throughout the province. At a meeting in Winnipeg two years ago, a lady poultry keeper of Headingly, not far from Winnipeg, assured the audience that she had erected a new poultry house during the year previous of boards and had paid for it, out of the proceeds of her poultry, in one year.

Saskatchewan.

A correspondent at Sunny Plains, Sask., wrote me in reply to the question what style of house he considered most suitable for that province, as follows, dated February 20, 1907:—

‘I regret that I have not the means to try an experimental frame and sod house, combined. From what I have seen here of frame and sod houses for human habitation, I think a sod house can be made as warm as a frame one, in fact, warmer. A neighbouring settler here has a sod house which is the easiest one kept warm in the district, and which is also perfectly dry. I have been thinking that a sod poultry house might answer well if properly constructed to keep poultry in.’

In a later letter the same correspondent wrote, in relation to the sod made house: ‘Last winter showed us that when other buildings sweated, dripped and froze, the sod house was dry and fresh.’ A very important experience indeed in connection with this kind of house.

By Mr. Blain:

Q. Before you leave that question, did you ever experiment at the farm on the construction of houses with straw?

A. No, but I think that is a very important point. I have often thought that we ought to experiment with houses of that kind.

By Mr. Owen:

Q. Before you recommend them?

A. Yes

By Mr. Lewis:

Q. What kind of straw do they use in thatching?

A. I presume they use wheat straw or oat straw, but I have not had any experience in that connection.

Q. Have they had any experience at Pembroke of the straw roof in heavy rains?

A. I really cannot say, but I do not think so.

By Mr. MacLaren (Perth):

Q. It is not a straw roof you were talking about, but a straw ceiling. There is a roof over that straw ceiling?

A. Yes, a roof of metal of some light description.

By Mr. Lewis:

Q. If there were boards or shingling over a house made of straw, how would you secure the ventilation?

A. It would be secured by means of a cotton frame in front, as I have described. Late methods do away with tubes and pipes and holes, in this and that corner, by the simple and effective plan of having a cotton frame in front, which frame gives a thorough diffusion of air without draught.

Q. Not by a tube up through the top?

A. No. That style of ventilation has been found non-effective and has gone out of date.

Q. Do the sod houses decay and disintegrate and tumble down eventually?

A. As to that I have had no experience. I prefer to give you facts which are within my own knowledge. This correspondent says, in reference to the sod made house, that it kept dry. He says that when other places were wet and dripping the sod house was comparatively dry and comfortable, and that is an important point.

By Mr. Owen:

Q. When I was a young man I was quite a hen fancier and I built many hen houses. I got the best results from one that I built in a corner of the hay mow and covered it over with hay?

A. That was on the very same principle that poultry houses are being built now.

Q. There were several tons of hay on top of that hen house, and we had plenty of fresh eggs all the winter?

A. People to-day are imitating that very same principle. It has been proven that a proper circulation of air does not mean coolness, but a great many people mistake draught for circulation and a good system of ventilation. It is not.

British Columbia.

A skilled poultry keeper of many years experience in this province says that the poultry house question, as far as British Columbia is concerned, is simply one of sheds to protect the fowls from the rains of winter, and secure a dry roosting place at night. This is to a great extent correct. In the colder districts of this province the cotton front house would doubtless prove suitable. But genial winter conditions prevail in this province. I may, however, remark that egg and poultry values are as high, at times higher, than in our eastern part of the Dominion. So much for the changes which have taken place in the manner of housing our fowls.

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IMPORTANT CHANGE IN THE SYSTEM OF BREEDING OUR BIRDS.

An important change in the manner of breeding our birds is made by the introduction of trap nests. In January, 1904, the work of building up prolific egg laying strains of fowls was commenced. There are two methods by which this purpose may be accomplished. One is by 'observation' of the birds, and the other by 'trap nests.' The latter method was adopted as likely to prove most correct. I have here a trap nest (exhibiting model). The manner of operating the trap nets, affixed to one of its legs. On entering a nest to lay the hen involuntarily releases a hinged door which falls and closes the exit and also prevents another fowl from making her way into the nest. After the hen in the nest has laid she is released by the attendant, who notes her number and marks it on a card conveniently situated in each pen. A complete history of each individual hen is so secured. By this means the good layers are distinguished from the poor ones. The best layers are selected to breed from, the others are discarded. By breeding only from the best layers, in the course of a few years, prolific egg laying strains of fowls are built up. Not only that, but the best market types are secured as well. This combined result is of the greatest importance, for we obtain by such selection from Barred Plymouth Rocks, White Wyandottes, Buff or White Orpingtons, Derkings, &c., really dual purpose fowls; birds that are good for both eggs and flesh, money makers from both standpoints. And further, by selecting the chickens from these selected layers—while young—in one of the new pattern winter houses I have been describing, we build up hardy winter laying strains of fowls as well as prolific egg laying ones. Surely, this is most satisfactory progress; this obtaining by systematic and careful selection—as compared with former haphazard methods—strains of fowls which are better layers, better market types and hardier in every way. Now, Professor Gowell, of the Orono Experimental Station, Maine, 10 years ago found that some fowls laid only seven, nine, twelve or fifteen eggs a year. They were simply living on the others. He discarded them and went on breeding from his best layers and now he has fowls which lay 180 and 200 eggs per year. You will find these facts stated in a bulletin which he has published.

By Mr. Lewis:

Q. What fowls were those?

A. Barred Plymouth Rocks. The same is being now done with White Wyandottes.

TRAP NESTS AND FARMERS.

By Mr. Owen:

Q. The trap nest you speak of would be rather an inconvenient one for the average farmer. He would have to have some one there all the time to take note of the fowls?

A. That is exactly the point that was raised in this Committee when I brought the matter up some three years ago. The farmer should not, as a rule, have more hens than he can properly—and that means profitably—attend to. He should not, under any circumstances, have more than 100 at the outside, and a few choice fowls to select from. I believe you will see at no distant date the provincial government establish poultry stations for the direct benefit of the farmer. These stations will do the work of trap nest selection, and the eggs, or the stock, from these selected hens will be sold directly to the farmers. Probably county or township councils may take the matter up if the greater body does not.

By Mr. Lewis:

Q. On the principle of fish breeding establishments?

A. Yes, exactly. I believe it would be a good work to have this done at our branch experimental farms. But I am not an executive officer, and do not presume

to predict. Such action, however, would be in the direct interests of the farmer. I appreciate the point that the farmer cannot properly attend to trap nests himself, for he has very little time in which to do so. If there was a will, however, a way might be found.

By Mr. Clements:

Q. In regard to this system of houses of which you have been speaking. In the district from which I come a great many farmers have comparatively little to do in the winter season, and they go in for raising chickens. It is an occupation they could not undertake in the spring or the summer, because they would not have time to make it very profitable. From my own observations I doubt very much whether they could get the same results from these new pattern houses as they do from their well warmed and ventilated buildings?

A. I appreciate the point. It is that they cannot afford to carry on the experimental work in trying different patterns of houses, that we are paid to do.

Q. Exactly?

A. Of course, we are doing experimental work, and it is my duty to bring before you the results of my experiments from year to year as they progress. Little alteration is required in any old style house. So far as I can speak, and I do not think the results secured will be contradicted, we have found that the cotton front house is a great improvement on former methods of housing; the hens are kept in these houses much healthier and they lay as well.

Q. I think you will agree with me that the winter season is the profitable time for the production of eggs and not the summer?

A. Certainly. Professor Robertson has found, and he so stated at a public meeting, that fowls in the colony houses at the Macdonald College laid during winter more eggs than by any other system. The eggs from those hens were sold in the Montreal market at 50 and 55 cents a dozen, I was informed by Mr. Elford, the poultry manager and instructor.

By Mr. Owen:

Q. You have talked a great deal about cotton. Is there more virtue in the cotton fabric than in any other?

A. No.

Q. There is no virtue in the cotton to produce eggs?

A. Not at all. It is only a means of diffusing air. Of course, the best market types of fowls should be selected. The combination of good layer and market type is of the greatest importance. We obtain from selecting, say for instance, Barred Plymouth Rocks or Orpingtons, birds that will put on flesh of good quality and at the same time be prolific egg layers. By careful and systematic selection it will thus be seen that the farmer will obtain better results than he can by any other way.

By Mr. Lewis:

Q. Are the progeny of those fowls which lay a large number of eggs great egg producers?

A. Yes, we have good and bad strains of milch cow and good and bad strains of fowls. We select the best specimens from all standpoints and by breeding from them only build up, in poultry, prolific layers and the best market types.

QUALITY OF EGGS.

By Mr. MacLaren (Perth):

Q. At different seasons of the year you have different qualities of eggs. In what months of the year do you think fowls produce the best eggs?

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A. I think the months of November, December, January, February and March give us the best eggs.

Q. The quality of the egg is better then than in the summer?

A. Yes. The ordinary fowls are better handled then, because carefully fed. When they get outside they pick up decayed vegetable and animal matter and the quality of the egg deteriorates.

By Mr. Armstrong:

Q. Which is the best month of the year in which to buy eggs to store?

A. If you can be sure that the eggs put into storage or into preservative liquid, are fresh, I think the summer months are the best time. I was going to say, however, you can get them cheapest, but unless you are sure it is strictly fresh, a cheap egg may be a very dear one.

Q. The months of July and August are not very safe to begin storing?

A. No, for the reason that eggs of a reliable character are then so hard to get. In this connection a change has taken place in the summer price of eggs. At one time eggs in summer could be bought at from 10 to 12 cents a dozen. Now you cannot get reliable eggs under 25 and 30 cents a dozen at a leading establishment.

By Mr. Henderson:

Q. What is the reason for that?

A. That is what I desire to show. In order to secure reliable eggs during the summer season there should be a guarantee not only that the eggs are strictly fresh, but that the hens which laid them were cleanly fed. It takes effort and care to place such guaranteed eggs on sale.

Q. Yes, but 300 miles west of Ottawa, during the summer you can get strictly new laid eggs at 15 cents a dozen?

A. And in this city not many years ago eggs were sold at 8 and 10 cents a dozen.

Q. You say that in Ottawa the price used to be 10 cents a dozen and now it has risen to 25 cents. There must be some unnatural reason why the price should be 25 cents here and 15 cents 300 miles west of Ottawa?

A. I will endeavour to show you the reason.

Q. Do you not think it is owing to the manner in which the eggs are purchased, in one case it is for cash and in the other case three months' credit is given?

A. That may certainly be an influence. But this is an age where people demand pure food. The pure food quest is a reality. There is a call for strictly new laid eggs of good flavour and quality by people who must have them even at increased cost. Let me cite an instance. One early summer day about two years ago I was met by the junior partner of the well known grocery firm of Bate & Co., of this city. He said: 'Can you give me a regular supply of strictly new laid eggs of good flavour. We have a class of customers who will have no other kind of article and we are bound to get such for them if at all possible.' I replied: 'I can give you a limited number, but you will not pay me what they are worth.' 'What are they worth?' he asked. 'Twenty cents per dozen,' I answered. He at once said 'I will give you twenty-five cents for all the guaranteed eggs of the freshness and quality I mentioned that you can give me.' Here the producer was approached by the purchaser and a higher price offered than asked. I explained to Mr. Bate that we might not be able to give him many eggs from the farm, as we usually induced our hens to moult early, but that I might be able to procure the quality of goods he desired from people I could trust. He said, 'As long as you can guarantee the eggs, I am satisfied.' I certainly got the quality of eggs he desired and in some cases had them put up in card boxes holding one dozen, with this printed guarantee on the box cover: 'Eggdale Poultry Farm, Strictly New Laid Eggs. These eggs are guaranteed to be non-fertilized and to have

been laid by cleanly fed and well kept hens. Selected for and sold only by Messrs. Bate & Co.' You can see boxes of a similar kind in Messrs. Bryson, Graham & Co.'s grocery, also of this city, and at other large establishments.

Q. How old should an egg be before you would cease to call it strictly new laid?

A. Six days.

Q. You can get any amount of eggs in the country that are only three days old?

A. And of good quality?

Q. Yes?

A. Not of as good quality as the guaranteed eggs?

Q. Yes, every bit as good quality as the Ottawa egg?

A. I am not speaking of Ottawa alone, but of the very districts to which you are referring. I have had eggs sent from Putnam, Ont. They were selected eggs and 25 cents a dozen were paid for them all last summer.

Q. Well, to my mind when an egg that has been fertilized is six days old it is partly decayed?

A. But such eggs as I mean are not fertilized eggs. The summer market eggs should be non-fertilized. These eggs to which I have been referring are guaranteed non-fertilized as well. There is not the slightest doubt about the correctness of the point raised by the honourable gentleman; if the egg is fertilized and put away in a warm place during a warm month in summer, the germ is likely to make such progress that when its development is arrested a certain amount of decomposition is liable to occur. Let me further explain as to the importance of knowing how the hens are fed which lay the eggs you eat.

In conversation with a gentleman as to the quality of eggs, he said: 'It is a most important question. In the district from which I come the people have the habit of taking the backs off the privies every spring time.'

Q. Is that the practice in Ottawa?

A. I hope not, but I am afraid it is, in many districts. This gentleman said: 'The fowls eat heartily of that stimulating but nauseating feed. The eggs laid by the fowls drift into the cities and towns and are sold for whatever price they will bring.' And I have been informed of similar practices elsewhere. Therefore, I say that the guaranteed egg is the most desirable to obtain in summer. It requires extra care in feeding, handling and getting the eggs to the market quickly, and this extra effort which means more money is one reason why the price of the selected summer egg is so high.

By Mr. MacLaren (Perth):

Q. The quality of the feed is doubtless a factor in obtaining flavour?

A. Undoubtedly.

Q. The great difficulty is then to buy eggs of desirable quality. Our only safeguard is really to find the man who feeds his hens properly and takes precautions to secure the flavour of the eggs. He should certainly be encouraged by getting a high price. The bad fellow is encouraged as well as the good fellow under ordinary conditions?

A. You would be astonished, if I told you the number of farmers that are getting on to this 'selected' egg trade. The selling of selected eggs is now a profitable part of poultry keeping. I am safe in making this statement. You have only to ask some of these leading grocers to find out the truth of what I say.

Q. I believe it is so, but the great object is to educate the producers so as to sell none but eggs of the best quality?

A. Exactly. In order to get the selected egg, extra effort, care and handling are necessary, and they all mean just so much more cost. I now beg to call your attention to improved methods of feeding.

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By Mr. Armstrong:

Q. Before you leave that subject. The farmers have to keep their eggs for a few days before they can get them to market. What is the best means of preserving these eggs in proper condition. I mean on the ordinary farm, where they have not cold storage or other facilities, so as to get them on the market in the best possible shape?

A. If the eggs are non-fertilized—that is the point which Mr. Henderson raised, and it is a most important one—if they be so and are placed in a cool, sweet smelling cellar they will keep well for a certain number of days.

Q. For six days?

A. Yes, for five or six days if the necessary precautions are taken.

I speak now of changes in the methods of feeding.

CHANGES IN THE METHODS OF FEEDING.

Certain radical changes have been introduced in the method of feeding our birds. These changes followed the introduction of the 'hopper system,' and I have brought a hopper for your inspection. By the old way the food was given to the fowls. By the new way the birds help themselves to the food, be it whole or ground grains, grit or oyster shells, all of which are contained in one or more hoppers. The hoppers are really feeding troughs divided into compartments. From the hoppers—which are usually hung on the wall—the hens help themselves to their food whenever they feel inclined to do so. It is much the same method as the old one of keeping the food before the birds all the time. In my report of last year I have summarized some of the statements for and against the hopper system, made by those who have used them, as follows:—

For.—Because labour saving; preventing waste or fouling of food; allowing each bird opportunity to obtain what food it desires; convenient and economical in use.

Against.—For the reason that birds of the heavy breeds are apt to eat too much, and, as a result, are disinclined to exercise; not economical; fowls are not likely to go to roost with their crops as full as desirable; fowls scratch or pick out the grain from the hoppers; when fed outdoors prevents foraging, &c.

For chickens the open trough form of hopper, holding both ground and whole grain, has been found convenient and beneficial. I think it is safe to say that the hopper system of feeding has come to stay.

The foregoing, gentlemen, are some of the changes that have taken place in recent years in the manner outlined. All denote steps forward in the march of progress. Whether all, or only a certain number of these changes will be found permanent, remains for experience to decide.

By Mr. Lewis:

Q. Is this hopper for fattening purposes?

A. Not for fattening purposes, but for the ordinary keeping of poultry.

Q. How much does a hopper cost, say one holding a gallon?

A. I suppose you could get a hopper like the one I have brought with me for 75 cents, that is the price which is marked on it, but the farmer can make his hoppers very cheaply. This is only one style, and there are many different styles.

By Mr. Henderson:

Q. I thought you preferred keeping the hen active. If so, why gather the feed and place it in a dish where it can get its full supply at once without moving about?

A. I answered that question fully in last year's report. It is an important point, and I explained the apparent inconsistency by saying that the exercising of the fowls

now a days is not considered of equal importance to variety in rations or the fresh air and the absence of dampness which existed to a greater or less extent in the old-fashioned poultry houses.

CARE OF BREEDING STOCK.

Q. Just one more question which is connected with this branch of the subject. Do the hens lay more freely when the male bird is allowed to associate with them or not? By which method do you get the best results?

A. It does not seem to make any difference. My own practice was, as I have explained frequently in my reports, to keep the male birds away from the hens which we feed and gently stimulate to lay in winter. I was at a largely attended meeting in Sussex, N.B., a few years ago when one of the audience asked what I thought had caused the sudden death of a fine male bird. I asked if he had kept the bird with his laying stock. He replied 'yes.' I then explained that he had probably been feeding his fowls generously in order to make them lay and he had probably overfed the cockerel, which had most likely died of apoplexy, the usual consequence of over-feeding. For that reason I kept away the male birds from our breeding hens. Another difficulty is that the male birds become over fat and in the spring time are no good as breeders. Another point. The germs are apt to be weakly in the spring time, and a small percentage of chickens the result.

Q. I am speaking of a very poor laying strain?

A. It really does not matter.

THE FEEDING OF MEAT.

By Mr. Clements:

Q. Regarding the matter of exercise, I have in mind a very successful poultry man in my district who makes a good many hundreds of dollars each year out of his poultry. He is very successful, at least he considers that he is from his standpoint, and I want to know if you approve of his methods. He hangs in his building a number of pig's livers and lights and other offal, at a certain distance from the ground in order to give the poultry exercise in getting at it. Do you approve of feeding such a form of meat to fowls?

A. Yes, when fed in that way fowls are not so likely to take too much as if they were deprived of meat for some time and then given it in liberal quantity, when they are apt to over gorge themselves.

Q. This man claims that livers and lights are one of the best foods that he can possibly feed to his chickens. If deprived of that, what do you offer as a substitute?

A. I would substitute some of the preparations of meat which are made by the large manufacturing concerns and sold at from 4 to 5 cents a pound, such as beef scrap.

By Mr. Lewis:

Q. Is it better to feed meat cooked or raw?

A. It depends upon the manner of feeding. If the livers, &c., have been fed raw, do not change; if fed cooked, do not give it raw, or diarrhoea may result.

By Mr. MacLaren (Perth):

Q. Should it be cooked in all cases?

A. I prefer its use when cooked, but it really does not matter. The principal point is to give the fowls meat in some shape.

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I now call your attention to my second subdivision, and it is a most important one, viz.:—

WHAT EXPERIENCE HAS SHOWN TO BE THE BEST VARIETIES OF FOWLS FOR FARMERS, FROM THE STANDPOINTS OF EGGS AND FLESH.

I make no apology for bringing this phase of poultry keeping to the notice of your Committee, because I have continuous and numerous inquiries for such information from all parts of the Dominion—especially from the newer western provinces, which are being so rapidly settled. That such information is appreciated, in the shape of evidence given before this Committee, and does good is shown by the following letter which I beg to submit to your attention.

‘BRIDGEWATER, March 11, 1908.

‘Mr. A. G. GILBERT.

‘DEAR SIR,—I have at present one of your books of evidence given before the Select Standing Committee, on farm and poultry breeding, and as I keep about 30 hens, I want to ask you to send me the latest evidence on poultry—the one I have is 1904—or any information you can give me. I have taken great pleasure in reading the evidence. I have learned a lot from it. I have kept hens but did not know how to have eggs in the winter, but since having your evidence I have had plenty of eggs, this winter, since the last of November. The pullets commenced to lay the last of November. I am keeping account of the eggs they lay in each month.’

There is direct proof of practical results from the evidence which I have given before your Committee. Nothing could be more satisfactory, I am sure, than to find such practical results.

KNOWLEDGE OF POULTRY KEEPING NECESSARY TO SUCCESS.

It is well to understand at the outset that poultry keeping cannot be made profitable without a knowledge of how to make it so. The letter I have read shows this. No matter whether poultry keeping is carried on by joint stock companies, amateurs, or farmers, a certain knowledge of breed, feed and management is absolutely necessary. The farmer, beyond doubt, is the most favourably situated as to making his poultry pay. As I have said in one of my reports. ‘It is essentially his business. He has already a certain knowledge of live stock, in the majority of cases of poultry keeping. His stock may not be pure, or his poultry house of the latest or best pattern. But these are obstacles which can quickly and cheaply be removed. He has the grain, the green food and other essentials in abundance, in many cases almost in the shape of waste.’

HOW MANY FOWLS SHOULD A FARMER KEEP?

But despite this it should ever be remembered that to the farmer his poultry is only one of many branches of his farm work. It would certainly be misleading him to advise him to keep more fowls or hatch out more chickens than he can properly—which means profitably—handle. From 100 to 150 hens is all that I would advise the ordinary farmer to keep. And he should be able to hatch and rear from 100 to 150 chickens. If he has help from his family a greater number may be hatched and raised. I wish to emphasize what I have said before, that the great bulk of our supply of poultry and eggs must inevitably come from you farmers. And that supply will not come from the few farmers with a large number of hens each, but rather from the many farmers with a few hens each. Should a farmer, however, desire to make a specialty of poultry in combination with fruit growing or dairying, there is no reason why he should not profitably do so.

By Mr. Schell (Oxford):

Q. In feeding grains is it advisable to throw it amongst cut straw or litter so as to compel the hens to scratch in order to find the food?

A. That seems to be less material nowadays than it was heretofore, because by this hopper system of feeding the hens help themselves. I am reminded of another experience which I have noted in last year's report, viz., that fowls are disinclined to exercise in cold weather.

By Mr. Henderson:

Q. I am afraid you have gone back on your theories of some four or five years ago?

A. I am afraid I have if changes in methods necessitate my changing with them.

Q. I have been instructing the women in my county in your methods and your ideas about not allowing the cockerels to run with laying hens, giving the hens lots of exercise, and all that sort of thing, and now I shall have to go back and tell them differently?

A. No, I would not like you to do so, because old methods are not entirely abandoned, but improved upon. A moderate amount of exercise is beneficial, but it is quite possible to have too much of even a good thing.

KEEPING TURKEYS.

By Mr. Blain:

Q. Do you raise any turkeys at the experimental farm?

A. No.

Q. Why not?

A. We have not room, to begin with. We have only two acres, but I should like to have 20. But I presume it is not convenient to give us the latter space.

Q. But the turkey industry is a very profitable one?

A. Yes, I am aware of that.

By Mr. Telford:

Q. What quantity of land should 50 hens have in the summer time?

A. I would allow them one-eighth of an acre, if I could. For a free run, do you mean?

Q. Yes?

A. And when confined inside they should be allowed no less than six or seven square feet of floor space each.

Q. Is this mentioned in the evidence which you are going to give us?

A. I think it is. I think all these points are included in the evidence which I have prepared for this morning.

By Mr. Clements:

Q. You have never raised any turkeys on the farm at all?

A. No. We cannot successfully raise turkeys on limited ground. These birds are foragers.

By Mr. Henderson:

Q. They are wanderers?

A. Yes.

Q. You need several acres for them?

A. They are really foragers.

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BEST FOWLS FOR THE FARMER.

To continue my address, let me say that the best sort of fowls for the farmer, indeed for any poultry keeper who desires to make money from both eggs and flesh, are Barred Plymouth Rocks, White Wyandottes, Buff or White Orpingtons, Dorkings, for the reason that all these varieties are good for both eggs and flesh. They are as nearly the dual purpose fowls as we have in poultry, affording the farmer opportunity to make money by the eggs laid by them and then by their chickens, which are of the most approved market type.

HENS SHOULD LAY IN WINTER.

By Mr. Lewis:

Q. You stated that you would give us the average number of eggs produced by this Pembroke Company during the different months of the year?

A. You must have misunderstood me, I did not get such details from them.

Q. I wanted the information for the different months?

A. The results in egg laying are a matter of management. Well managed fowls lay best in winter.

Q. Do you mean to say that fowls produce more eggs in winter than in summer?

A. Yes.

Q. By their proper management?

A. Yes. By proper methods hens will lay better in the winter season, when the price for eggs is higher than in summer.

By Mr. Clements:

Q. That is the general conclusion?

A. That is the general conclusion. In my evidence and reports for, I am almost afraid to say how long, I have made that point pretty plain, as many of the older members of the Committee may remember.

Should eggs only be desired, any variety of the Leghorn or Minorca groups, or Andalusian breed, will be found excellent egg layers.

VARIETIES KEPT AT THE FARM.

On our poultry division of the experimental farm we have at present the following branches, viz., Barred and White Plymouth Rocks, Buff and White Orpingtons, White Wyandottes, Silver Grey Dorkings, Black Minorcas, White Leghorns and Faverolles. When we have spare eggs to sell from these varieties we do so at \$1 per setting, the purchaser paying express charges. The eggs are packed in a conveniently designed box which insures their safe carriage.

STRAINS IMPORTANT.

Care should be taken in buying eggs for hatching of either the above named varieties, to ascertain that they are from good egg laying strains, for there are good and bad egg laying strains of fowls, as are there good and bad strains of milch cows. I have already shown the importance to the farmer of a trap nest selected strain of fowls from both market type and egg-producing standpoints. An important matter in connection with the possibilities of large margins of profits to be made from the trap nest proved prolific layers and improved market type of fowls, is worth consideration at this point. If, as many farmer correspondents to the agricultural press have stated, they can make satisfactory margins of profit from the hens of the present day which lay from 60 to 90 eggs per year (this number is a fair average of the number of eggs

laid by the present day fowls), how much more satisfactory will that margin of profit be when their fowls lay double the number of eggs per year and are still better market types?

WHY NOT NAME OTHER VARIETIES.

It may be said that there are varieties—other than those named—which are also excellent layers and market types. Why not name them? I reply, because they are not in such great numbers throughout the country as the varieties I have named, and in consequence, are neither so well known, or easy to procure. The Barred Plymouth variety beyond doubt is held in the greatest number by the farmers of the country to-day, and deservedly so. I have always given them first place on account of their merits as egg and flesh producers. Farmers can readily purchase at a cheap price from one another Barred Plymouth Rock eggs or stock, while other varieties are comparatively scarce and held at higher prices. The starting of the farmer, or, other poultry keeper right is a matter of very great importance. This, I am sure, you will readily admit.

THE PROPER FEEDING OF POULTRY.

Experience of many years in the feeding of poultry by the writer, and that of many correspondents warrant him in coming to the conclusion that the greatest drawback to successful winter egg production throughout the country is lack of variety in the composition and manner of feeding the rations. Experience has made it very plain to me that variety in the composition of rations is as important as the rations themselves. The following rules in relation to the proper feeding of poultry will be found beneficial:—

Variety in composition of rations is necessary to successful winter egg laying and health of birds. Feed regularly. Where there is variety in rations and a constant supply of grit, broken oyster shells or other form of lime, roots or green food, and pure drink, there is not likely to be egg eating or feather picking.

That pullets will do well on rations, which, if fed in same quantity to old hens of the Asiatic or American breeds, will end fatally.

That the long continued feeding of one kind of grain, or, of other food is likely to lead to ailment of some kind.

A Suitable Winter Ration.

The following has been found an effective winter egg-producing ration in our poultry department for several years:—

Morning.—Wheat, sometimes buckwheat, in proportion of 8 to 10 pounds to 100 fowls. Scatter in the litter on the floor or house or scratching shed attachment.

Eleven a.m.—Steamed lawn clippings, or clover hay, three or four times per week.

Noon.—If found necessary, oats in proportion of 5 pounds to 100 hens. Scatter in the litter on the floor to keep the fowls busy.

Afternoon.—Mash, composed of such ground grains as are in most abundance. Feed in quantity of 3 or 4 ounces to each fowl. When mixing the mash add a small teaspoonful of salt, and another of black pepper, or ground ginger. Occasionally mix boiled potatoes or turnips in the mash.

Cut green bone or other form of meat should be given in the proportion of one pound to 15 fowls, three or four times per week in lieu of the steamed lawn clippings, clover hay or noon ration.

(Should the hopper system of feeding be adopted the same ground or whole grain can be put in the hopper.)

I again emphasize that it is requisite in any system of feeding that for the good health of the fowls and to prevent egg eating and feather picking the rations should be varied and regularly fed.

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Grit, mangels, turnips or other form of vegetable food should be in regular supply.

TO WHOM TO SELL THE EGGS.

If the above or a similar ration is fed, the laying stock housed in one of the cotton front houses described, and they are supplied with the requisite grit, broken oyster shells or old plaster to supply lime, green food and pure drink water, there will probably be an egg supply to dispose of. And to whom? That is a question I am frequently asked by correspondents. The following letters are from well known firms who are egg buyers in Montreal. I may say I had written to these dealers in order to be able to give authentic and indisputable figures, over their own signatures:—

MONTREAL, Thursday January 9, 1908.

Mr. A. G. GILBERT, Poultry Manager,
Dominion of Canada Central Experimental Farm,
Ottawa, Ont.

DEAR SIR,—We are pleased to give you the information respecting the prices which we have paid during this season for strictly new laid eggs, as requested within yours of the 6th instant, as follows:—

- 1907, September, 25 cents per dozen, f.o.b. Montreal.
- 1907, October 1 to 14, 30 cents per dozen, f.o.b. Montreal.
- 1907, October 14 to 18, 33 cents per dozen, f.o.b. Montreal.
- 1907, October 18 to 30, 40 cents per dozen, f.o.b. Montreal.
- 1907, November to December 20, 50 cents per dozen, f.o.b. Montreal.
- 1907, December 20 to 24, 45 cents per dozen, f.o.b. Montreal.
- 1907, December 24 to January, 1908, to date, 40 cents per dozen, f.o.b. Montreal.

Trusting that the foregoing will meet your requirements, we thank you for your good wishes and extend you ours for a happy and prosperous New Year.

Yours very truly,

GEORGE GRAHAM.

MONTREAL, January 11, 1908.

A. G. GILBERT, Esq.,
Central Experimental Farm,
Ottawa.

DEAR SIR,—Your favour of the 7th inst., came duly to hand and I have pleasure in giving you what information I can, *re* eggs.

During nearly all November and throughout December, I paid 50 cents for the best new laid eggs. Since the first of the year I am only paying 40 cents, owing to the increased quantity coming in and the comparatively low price of cold storage stock. Whether the price, 40 cents, will hold all through this month will depend greatly on the weather and the quantity of eggs that are sent in.

If it is not too late, I desire to wish you a prosperous and happy New Year.

Respectfully yours,

WALTER PAUL.

MONTREAL, January 11, 1908.

Mr. A. G. GILBERT,
Poultry Manager, Experimental Farm,
Ottawa, Ont.

DEAR SIR,—In answer to yours of the 7th. During the month of December we paid from 40 cents to 45 cents per dozen for new laid eggs, and this week we have been paying 40 cents per dozen delivered Montreal. We always pay according to the

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demand in the market, and will keep prices up as long as possible until the supplies get more plentiful. We do not guarantee prices for more than one week at a time at this season of the year. We are open for a few shipments weekly from any of your farmers that have strictly new laid eggs to dispose of, and, as I said before, will pay the highest market prices going in the city.

Yours truly,

HENRY GATEHOUSE.

I have no letter from Messrs. Westgate and Lewis, of McGill College Avenue, Montreal, but I met Mr. Westgate not many weeks ago at the Macdonald College, where he was addressing the students attending the poultry course, and he told them that the prices paid by their firm were much the same as those I have just quoted. He also made the statement that for the superior quality of poultry from 10 to 15 cents and sometimes 20 cents per pound, according to season, were paid. The earlier birds getting the best prices. He said, what I know to be unfortunately too true, that far too much poultry of inferior quality and type were sent to them. Much of the poultry received by their firm from the country were improperly killed, carelessly plucked and badly packed. Poultry came to them with their crops filled, or, partially filled with food which decomposed and ruined the carcass of the bird. Poultry, before being killed, should be fasted for 24 or 36 hours, and should not be drawn. The better quality of poultry and strictly fresh eggs would always command good prices when it reached the proper markets.

PROPER FOOD AND TREATMENT FOR YOUNG CHICKENS.

So much for eggs and poultry. We now consider the best way of treating the chickens. Whether hatched by hens or incubators, experience of many years has proved that the farmer who uses either means will get best results by having his chickens out in the first two weeks of May. In one of my reports it has been shown where the wives of farmers have used incubators and brooders with great success. In the case of the hen-hatched chickens the latter were permitted to remain in their nest for twenty-four or thirty-six hours, when with the mother hen they were placed in a slatted coop on the grass outside. The coop was so arranged that it could be securely closed at night, while ventilation was secured. Through the slats the chicks could run on the grass outside, while the hen remained inside. On the floor of coop was dry earth to the depth of two inches. On taking the mother hen from her nest she was given food and water. She had been probably thirty-six hours on the nest, bringing out her chickens and deserved the attention. Apart from this she would be more likely to brood the chickens contentedly, after being fed, than if hungry or thirsty. How important it is to have early chicks carefully brooded is well known to all experienced breeders.

First day.—Little or no food is required. Towards end of the day a few stale bread crumbs may be fed.

Second day.—Stale bread soaked in milk and squeezed dry may be given in small quantity. 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; finely crushed wheat may be given at this time.

Continue the stale bread soaked in milk and granulated oatmeal for ten days, when finely crushed corn may be added to the foregoing with advantage. After 14 days give whole wheat in small quantity at first.

As the chicks grow older they should be given a mash composed of stale bread, shorts, cornmeal, ground meat, &c. Finely cut bone or meat will be found a great incentive to growth at this stage.

On the chickens becoming eight weeks of age their rations may be dropped to three per day. Care should be taken that they are generously fed at last ration. For

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drink give skimmed milk and water. When fully feathered the mothers of the hatched chickens should be removed from them. The chickens will be found to return to their coops as usual, and they are allowed to remain in them until removed to more commodious quarters in colony houses. On the incubator-hatched chickens becoming too large for the brooders they should be removed to colony houses.

A FATTENING RATION.

Should the farmer desire to specially fatten his chickens before sale, or shipment, his simplest and speediest plan is to put his birds at $3\frac{1}{2}$, 4 or $4\frac{1}{2}$ months of age, in slatted coops or crates divided into compartments to hold one, or a number of birds up to four. These coops should have V-shaped feeding troughs in front. The following fattening ration has been found most effective in our poultry department, viz. :—

Two parts finely ground oats.

One part finely ground barley.

One part ordinarily ground cornmeal.

After 15th day add beef suet in proportion of one ounce to every four birds. Mix with skim-milk. If the milk is made near the boiling point the tallow, which should be chopped fine, will be melted by it when poured on the ground grains. Or, the tallow may be melted in the hot milk. The birds should be fed all they will eat twice a day. Carefully collect all uneaten food. Leave none to turn sour, and feed none in that condition.

Care should be taken to free the birds from vermin before cooping. This may be done by rubbing sulphur well into the feathers, or by one of the lice-extermimating powders.

Pens and premises should be kept scrupulously clean.

Grit and water should be supplied regularly. Three weeks should be sufficient to fatten the birds satisfactorily.

THE MOULTING PERIOD.

Many inquiries are received from time to time as to the proper treatment of fowls during the moulting period, at which time of every year—preferably during the summer months—the fowls should shed their old coat of feathers, which in the course of time are replaced by a new one. It is best to have the moulting period in the summer months. The summer moult usually lasts from eight to ten weeks. Mr. James Shackleton, a well known authority, contends that by feeding specially prepared rations this period may be shortened. The following treatment has been successful in our department for several years. During the early part of July—after the breeding season is over—the fowls were placed on half the usual quantity of rations for 15 or 20 days. The effect of this treatment was the stoppage of egg production and the loosening of the old feathers. At the end of 15 or 20 days the full rations were resumed. A little linseed meal may be added to the mash with benefit on the resumption of full rations. Before the beginning of operations to bring on the moult the cock birds were removed from the breeding pens and placed in compartments by themselves. The hens were then allowed to run in small fields where they could find insect life, clover, grass, &c. For description of 'full rations' see formula of winter egg producing ration on a following page. In the breeding of fowls during moult care should be observed that they do not become too fat. The fowls are more apt to become over-fat, from too generous feeding during the moult than after they have got over it and recommenced laying. It may be interesting to note that in relation to the annual moult that experience of many years has shown :—

1. That yearling hens usually moult earlier and easier than older ones.
2. That moulting is more gradual in some cases than others.

3. That the progeny from parent stock which have moulted during summer, in the majority of cases, have usually moulted at the same period.

4. That moulting hens are much benefited by a run in a field where clover, grass and insect life may be found.

5. That where moulting fowls are confined to limited quarters that meat in some form and green food should be regularly supplied.

The foregoing information, if followed, will be found of great service to the farmers of the country and this, I am sure, is what your Committee desires. It has direct bearing on the production of eggs and market poultry.

INCREASED INTEREST IN POULTRY KEEPING.

I now proceed to briefly bring to your attention my third point, viz.: 'The great and rapidly developing interest that is being taken, principally, I am warranted in saying, by farmers in their poultry branch of farm work.' I have a publication issued by the Provincial Department of Agriculture for 1907 entitled 'Crops and Live Stock of Ontario.' It is issued annually. It has for years quoted the opinions of farmer correspondents at different points of the province on the value of poultry as a branch of farm work. In the report of last year there are the opinions of 53 correspondents given. Of this number 50 reports speak favourably—some very strongly—of poultry as a paying department of the farms, two are unfavourable and one non-committal. As instances of the favourable comments you will, I am sure, allow me to quote the farmer correspondent at Harwick, Kent, who says 'Poultry are the best paying thing on the farm, but they take careful looking after.' Again, the report from Sydenham, Grey, says: 'Poultry are selling high. In fact, the economically kept poultry farm is the best money maker just now, the cost of equipment being taken into consideration.' The report from Minto, Wellington county, says: 'Good, well-bred poultry, if properly attended to, will give their owner a clear profit of \$1 per hen. We get \$4 a piece for Bronze turkey cockerels and \$3 for pullets, and so on.' The point I wish to make is this, that eight or nine years ago there would be only four or five favourable reports as against perhaps 45 or 50 unfavourable ones. I claim this change in opinion shows increased interest in and appreciation of the poultry branch of farm work as a money maker. Another instance of increasing interest in poultry keeping is, I think, fairly shown by the great increase in the number of letters received in our Poultry Division, particularly in recent years. For instance, in 1900 the letters received by the Poultry Department numbered 1,590, while the report for 1906 gives the number as 5,098, and report for 1907 now being prepared will, I am sure, show larger figures.

SOME DETAILS OF EXPERIMENTAL WORK.

As to my last sub-head, I briefly refer to some interesting features of the experimental work of the past year. I may state that the good results of breeding from the best layers have been satisfactorily shown in several instances. I give only one or two, as fuller details of results will be given in our annual report.

One is the case of a pen of White Wyandotte pullets which showed an average each of 62½ eggs per year in their first year. In their second year as hens they showed an average of 81 eggs each per year.

The progeny from the above White Wyandotte fowls showed in their first year, as pullets, an average of 65 eggs each per year, a slight increase only. But in their second year, when hens, they showed an average of 104 eggs each, a marked improvement.

Correspondents who have purchased eggs from trap-nested selected stock express their satisfaction at the improved laying qualities of the birds hatched from these eggs.

As to the cotton front, results, in fertility of eggs, as shown by testing on the sixth or seventh day, after being put in incubators, is in favour of this cotton front

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style of house as compared with results from a partially warmed house. One instance: In 33 eggs laid by Buff Orpington pullets in a cotton front house, on being tested, only 8 were found unfertile. In the case of 38 eggs laid by Barred Plymouth Rock pullets, in a partially warmed house, when tested no less than 28 eggs were found unfertile.

INFORMATION AS TO TURKEYS, GEESE AND DUCKS.

HOW THEY SHOULD BE MANAGED, FED AND BRED.

TURKEYS—HOW TO REAR, KILL, PLUCK, DRESS AND PACK THEM.

It is of first importance that our farmers breed the largest, best and hardiest birds. Climatic conditions, in the greater part of Canada, are favourable to the breeding of a large number of turkeys, indeed of all kinds of poultry. There are six varieties of turkeys, viz.:—Bronze, Narragansett, White, Black, Buff and Slate. Of these the Bronze are the largest and heaviest. The standard weights of this variety are:—

Cock	36 pounds.	Hen	20 pounds.
Cockerel	25 “	Pullet	16 “

The first requisite in successful breeding is strong, vigorous parent stock. Inbreeding should be avoided. It is admissible to use a good male two years, but not so to use a young male and pullets of the same family. Young hens weighing 15 to 18 pounds, and older ones of 18 to 20 pounds weight, are the best layers, and make the best mothers. One male with 10 or 12 hens is a good mating.

Some turkey hens lay more eggs than others. Eighteen to twenty-four eggs from each hen should be satisfactory. The turkey hen makes the best mother, although some breeders give the first seven eggs to a common hen. The objection to the latter is that she is apt to drag the young pullets too much about.

Twenty-five young birds are all that the turkey mother can keep dry and warm.

It is of first importance to keep the young birds in dry quarters. Great care is necessary in rearing them until they ‘shoot the red,’ (get wattles, &c.). It must be borne in mind that young turkeys before ‘shooting the red,’ are the most tender of all feathered fowl, and afterwards the hardiest.

Too early setting is not advisable in this latitude. Where the winters are milder and spring earlier it is different.

After hatching, the youngsters and their mother should be put in comfortable, dry quarters. Give a grass run if possible. The coop should be roomy, and so conveniently situated that mother and brood can easily be driven into it, in case of rain. Care should be taken that mother and brood do not get into the grass while wet with the morning dew. It is important to remember this. It is also well to remember that experienced breeders have traced the death of many young birds, in their early handling of them, to damp quarters, lice and indigestion, the latter probably from eating uncooked food. Unclean, carelessly mixed and uncooked food has been the cause of death in the case of many young and tender birds. The mortality among young turkeys, from one end of the country to the other, is far too great and is principally caused by neglect of the points outlined above.

PROPER RATIONS.

For the first few days feed on stale bread soaked in milk and squeezed dry. Mix with hard-boiled eggs and onions, both chopped finely. Curd or a sort of cheese made from sour milk may also be given.

Later on feed on granulated oatmeal, rolled oats, or a mash made of stale bread, onion tops, oatmeal, cornmeal or middlings, the whole mixed with skim-milk. The

milk should be boiled and a little black pepper dusted into it, before putting it into the mash.

For the first five or six weeks feed four times daily. Afterwards three times.

At the time of 'putting on the red,' uncooked food should not be fed. At this period the young birds are likely to eat ravenously, but on no account should they be allowed to gorge themselves. After becoming fully feathered they require nothing but hard grain.

Turkeys are fond of roaming, and often wander away from headquarters. In this way many are killed by weasels, skunks and other enemies.

A good plan is to feed the hens and their broods grain every evening, and so accustom them to coming home. This, of course, when the young birds have reached the proper age.

TO FATTEN.

Birds may be fattened as in the case of chickens while running outside, or by being penned up and specially fed. Success has attended the fattening of turkeys in many instances, by the forcing method. But with the right breed in the first instance, care and proper food, there should be no difficulty in obtaining the desired flesh development.

KILLING.

The birds intended for shipment to Great Britain are killed in the same manner as chickens, by dislocation of the neck. Care is necessary in having this properly done, as the following note of warning from a London poultry purchasing firm to an Australian agent, shows:—

'Having purchased the several consignments of frozen poultry which you have had on show in the exhibition, I have written you our opinion of same. A, the quality very good; B, trussing very good; C, packing well done; D, killing may be capable of being very much improved on, as the necks of the birds are invariably very much discoloured, and appear almost unsaleable through this. I would suggest bleeding at the mouth, and not so much force used in dislocating the neck. I consider there is a good market here for your poultry, if you can send it, say, to arrive in England continuously from January to June.'

It is not likely that bleeding at the mouth will be adopted by those firms who ship in large numbers. But if this manner of killing is adopted, it should be done as advised in the case of chickens killed in that way, viz., by the cutting of the roof of the mouth, at base of the brain, with a narrow sharp knife, lengthwise and across. If the roof of the mouth is pierced at the base of the brain, death is said to be instantaneous and painless.

PLUCKING AND DRESSING.

This should be done as outlined in a previous page in the case of chickens. In plucking, which should begin immediately after dislocation of the neck and be very carefully done, feathers should be left on the neck for three inches.

PACKING.

Instructions as to packing issued by the Commissioner of Agriculture and Dairying, are as follows:—

Every bird should be wrapped neatly in paper, the head with a quantity of thick paper to absorb any blood. The birds should be packed with their backs down and heads to one side.

Twelve to twenty-four birds should be packed in a case. The case should be packed quite full, so as to prevent birds knocking about inside, during transit or in cold storage.

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The case recommended is six feet long by twenty inches wide, and from seven to eleven inches deep. Top, bottom and sides are made of half-inch lumber, with a strengthening piece in centre, one-half inch thick.

The cocks and hens should be packed in separate cases.

The weights of the birds and their sex should be marked on the left-hand corner of both ends of the case.

A quantity of clean straw or wood pulp should be put on the bottom of the case and on top of contents, with wrapping paper between the birds and packing material, to prevent any possibility of injury.

SHIPPING BIRDS IN FEATHER.

In shipping birds in feather the following directions should be followed:—

Kill birds by cutting in roof of mouth as described in previous page.

Before being packed the birds should be thoroughly cooled. Pack in air-tight barrels.

In packing, the heads of the birds should be on the middle of their backs. The barrels should be marked so as to describe contents.

DUCKS.

	Lbs.		Lbs.
Pekin Drake.....	8	Pekin Duck.....	7
Young Drake.....	7	Young Duck.....	6
Aylesbury Drake.....	9	Aylesbury Duck.....	8
Young Drake.....	9	Young Duck.....	7
Rouen Drake.....	9	Rouen Duck.....	8
Young Drake.....	8	Young Duck.....	7

Early in the season three to five ducks are allowed to a drake. Later in the season when running outside, eight or twelve. The drake should not be over two years of age.

Ducks lay from 100 to 140 eggs in a season. The eggs take twenty-eight days to hatch. Duck eggs are hatched by hens or ducks. They hatch well by incubator.

RATIONS.

For first three or four days, mash of cornmeal, a little hard-boiled egg chopped fine, ground wheat or oats, or granulated oatmeal, the whole being mixed with boiling milk. The young birds are very fond of cabbage, lettuce or clover, which should be chopped fine and may be mixed in mash. Make mash crumbly. Skim-milk for drink.

Later on a mash may be made of cornmeal, bran and oatmeal, with chopped green stuff, and mixed with skim-milk boiled.

Feed the young ducks five times per day. Keep them in dry quarters, out of the hot sun and supply water in limited quantity in shallow dishes, so as to prevent them ducking into it.

After three or four weeks reduce the rations to four per diem. As the ducklings grow the rations may be added to by house-waste, ground bone, beef scraps or cooked meat. Small pieces of charcoal are aids to digestion.

FATTENING.

To fatten, feed on ground grain, meal, beef scraps, &c., made into a mash. Barley meal is excellent in the soft food. Nothing should be fed that will give the flesh a bad flavour.

In nine weeks the ducklings should weigh four and a half pounds each and are ready for market. They should be marketed before the pin feathers begin to grow, which is likely to occur after ninth week.

KILLING AND PICKING.

Ducks are best killed by cutting into base of brain at roof of the mouth. Before killing the feet of the birds should be caught in a loop with head hanging downwards. Immediately after being killed the picking (dry) should be done. Care should be taken to prevent injury of any kind to the carcass.

GEESE.

The best known breeds of geese, and their weights, are as follows:—

	Lbs.		Lbs.
Toulouse Gander.....	25	Young Gander.....	20
Toulouse Goose.....	23	Young Goose.....	18
Emden Gander.....	25	Young Gander.....	20
Emden Goose.....	25	Young Goose.....	18

Mating.—One gander to three females. Mate with large vigorous birds.

Management.—In spring make large comfortable nests. In most cases two-clutches of eggs are laid, sometimes three. Collect the eggs soon after being laid, as they are easily chilled.

Hatching.—Some breeders who hatch geese on a large scale use incubators. Mrs. Wolcott, Napoleon, Ohio, in *Ducks and Geese*, published by the *Reliable Poultry Journal*, Quincy, Ill., says: 'I incubate their first laying with chicken hens, and frequently let "old mother goose" care for her second hatch. Be sure to have the hens, chosen for sitters, free from lice. Sprinkle the eggs with warm water twice during the last week. Oftener in dry hot weather will do no harm. Remove each gosling from the nest as it hatches, for they are easily mashed. Keep them in a flannel cloth in a basket in a good warm place until all are hatched.'

Sometimes the goslings have to be helped out of the shells.

RATIONS.

For first three days.—Cornmeal mixed with hard-boiled eggs, chopped fine, a pinch of black pepper and a handful of sand. After three days discontinue the eggs, and give bread soaked in skim or sweet milk, oatmeal, or broken rice boiled until soft, outer leaves of cabbage, onion tops, and all the grass they can eat. Keep the young birds from water, but give it to them in liberal quantities to drink. The same authority recommends as a fattening ration a liberal supply of barley meal and cornmeal, soaked in buttermilk. A grass run is indispensable. This according to Mr. C. L. Darlington, Lloyd, N.Y.

KILLING, PLUCKING AND DRESSING.

For local market, the goslings should be ready in twelve to fourteen weeks, and should be of large size at the end of 16 weeks.

They should be killed by bleeding in the roof of the mouth, and all feathers taken off except on wing tips. For shipment and local market the geese are not drawn.

No birds less than nine pounds each should be shipped to the English market. They should be packed ten in a case.

NOTES.

Goose eggs hatch in thirty to thirty-four days.

Some breeders assert that the worth of the feathers from a bird should nearly pay half the cost of its feed for one year.

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I submit with pleasure to your committee the foregoing subjects which directly affect up-to-date poultry keeping.

Mr. LEWIS moved a vote of thanks to Mr. Gilbert.

Mr. HENDERSON.—That is seconded all round. I have always taken a great deal of interest in Mr. Gilbert's addresses. They contain a great deal of useful information.

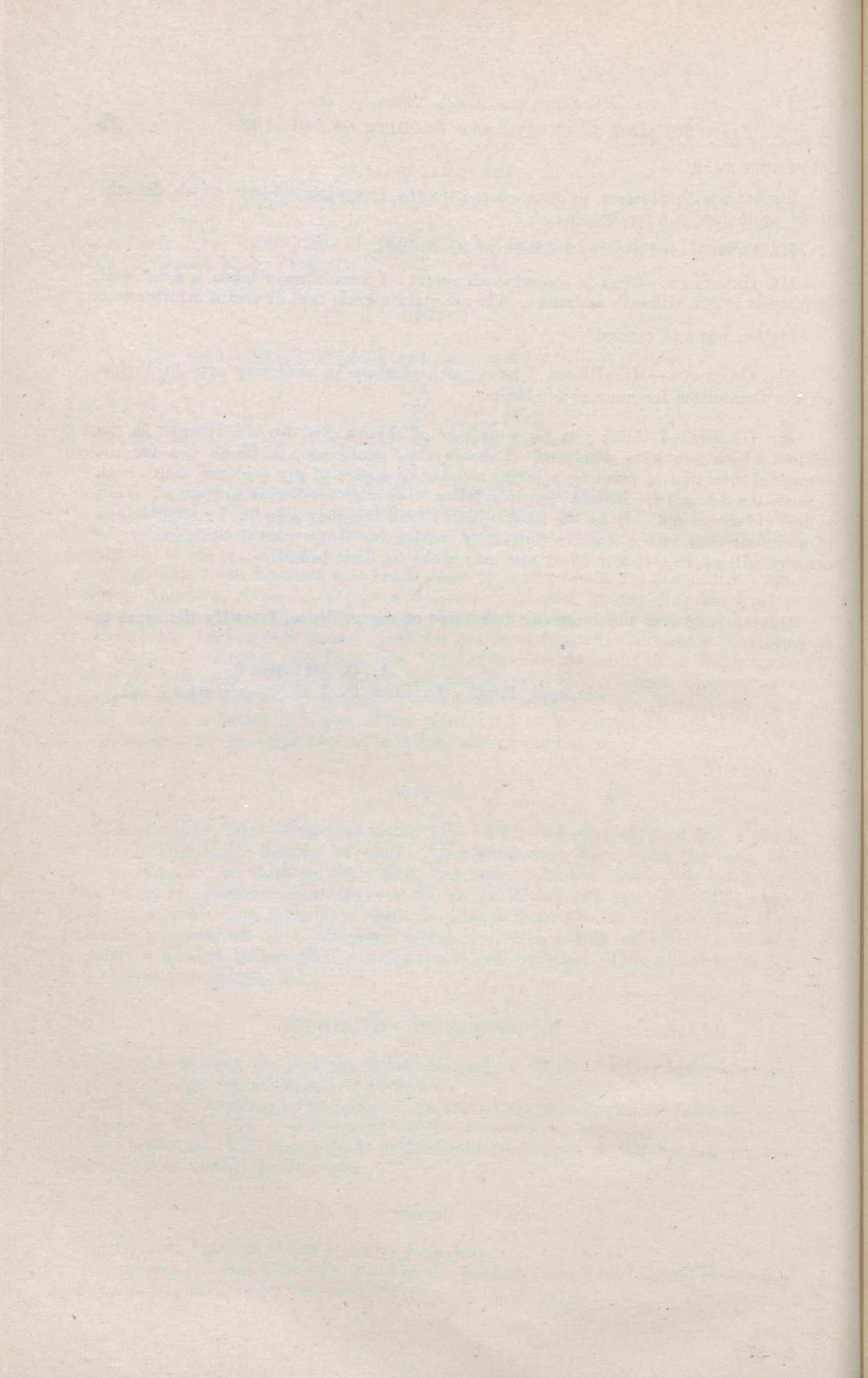
Motion put and carried.

The CHAIRMAN.—Mr. Gilbert, I have much pleasure in tendering you the thanks of this Committee for your able address.

Mr. GILBERT.—I thank you for your vote of thanks, and for the interest in the subject which you have displayed. I desire also, gentlemen, to thank you for the expressed intention of printing a larger number of copies of my evidence than usual, because the demand for information in relation to poultry keeping is very great. That interest is shown not only by the letter which I read this morning, but by other letters of a similar character which are constantly coming in. I am sure the farmers of the country will appreciate any effort you may make on their behalf.

Having read over the foregoing transcript of my evidence, I testify the same to be correct.

A. G. GILBERT,
Manager, Poultry Division, Central Experimental Farm.



GROWING OF FOREST TREES IN PLANTATIONS—FRUIT CULTURE.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

THURSDAY, May 7, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock, a.m., Mr. McKenzie, Chairman, presiding.

The CHAIRMAN.—We have arranged this morning for an address by Mr. W. T. Macoun, Horticulturist at the Central Experimental Farm, on 'The Growing of Forest Trees in Plantations, at the Central Experimental Farm, Ottawa; and Fruit Culture.' I have very much pleasure in introducing Mr. Macoun to the Committee.

Mr. MACOUN.—Mr. Chairman and gentlemen. I have not had very long notice of the meeting of this Committee, as I believe it was through a change in your plans that I was called here to-day, but I hope that I have sufficient material available to engross your attention during the sitting. We are very much interested in our work, and having been connected with the farm now for more than twenty years, it gives us quite a fund of information to draw upon. Therefore, I think we should have no trouble this morning in spending the time profitably.

It is now two years since I appeared before this Committee, and it might, perhaps, be well to tell you a little about my department at the farm. My title at the farm is Horticulturist and Curator of the Arboretum and Botanic garden, and my branch of horticulture naturally divides itself into three departments: The first relating to fruits and vegetables; the second to our forestry experiments, and the third to the Arboretum and Botanic garden on the farm.

I hope to speak most of the time this morning on our experiments with forest trees for farms, but I would like to run briefly over the third branch of our work referred to. That is the Arboretum and Botanic garden, which occupies about 65 acres of land. In this garden we have over 3,000 species and varieties of trees and shrubs, and over 2,000 species and varieties of herbaceous perennials. The object of this botanic garden is to collect there all the plants we can, and find out which will succeed best in this country and which are the most ornamental, also other information regarding rate of growth, flowering period, and so on, so that we may be able to give the farmers of this country definite information as to the best kinds of trees for them to plant around their homes to improve their properties. I may say we have published a great deal of information in regard to this, and I think it has been very useful to the farmers.

By Mr. Pickup:

Q. Where is this botanic garden situated?

A. It is on the southeast side of the Central Experimental Farm, and consists of 65 acres.

EXPERIMENTS WITH FOREST TREES AT THE CENTRAL EXPERIMENTAL FARM, OTTAWA.

The third department to which I would like to devote most of the time this morning, although I may refer to fruits and vegetables later on, is that relating to forest trees. It seems to me that the more information we can get before the

farmers in regard to planting forest trees on the farm the better, because unfortunately the farmer has had a great deal to do in the past in cutting down trees in clearing his property; and the revulsion of feeling in regard to trees has not yet taken place, speaking generally, among the farmers. That is, the farmer still regards the tree to a large extent as his enemy; but the younger men and the grandsons are gradually waking up to the fact that it would be important for them to have on the farm a good belt of trees or a good block of trees from which they could draw fuel and wood for other purposes. Fortunately there are still blocks of trees on a great many farms, but on many others there are not. At the Central Experimental Farm, something over twenty years ago, Dr. Saunders, looking ahead, felt that it was very important for us to have on the farm belts of trees of different kinds where we could demonstrate to farmers the rate of growth of different forest trees by taking measurements and also getting information as to the best way for farmers to plant trees either mixed or in blocks by themselves, the best distances apart, and so on. So in the autumn of 1887 the first planting was done and at the conclusion of most of the planting in the fall of 1894 we had a belt of trees about one and three-quarter miles long. Along the western boundary 165 feet wide and along the northern boundary 65 feet wide. In this forest belt, which occupies about 21 acres, we have growing now about 23,000 trees. The forest trees are arranged in different ways. Some of them are planted 10 x 10 feet apart, others 10 x 5 feet apart, others 5 x 5 feet apart, and others only 2½ feet apart, the object being to find out which was the most satisfactory distance to plant. Then the trees are arranged in different ways. For instance, in some places we have solid blocks of white pine, in other places solid blocks of tamarack, in other places solid blocks of black walnut and butternut, in other places solid blocks of ash, and in other places the trees are mixed so as to have different kinds growing together. We have in all about 60 kinds of trees under test in these belts.

By Mr. Sinclair:

Q. Are they all native trees?

A. Not all native. There are some of the hardier exotic trees, but most of them are native trees. We have had, as I say, about 20 years' experience with forest trees and I should like to tell you a little about how they have behaved.

BEST DISTANCE APART TO PLANT TREES.

We have found that by the planting of trees 10 x 10 feet apart it is necessary to cultivate them too long for it to be a profitable undertaking. At that distance apart, unless they are cultivated, the trees make very slow growth for a long time and, therefore, it would not be wise for the farmer to plant them at that distance. We found that in order to get the best results it was necessary to cultivate about 8 years after those trees had been planted 10 x 10 feet apart, that is before they began to meet and smother the weeds and grasses. We found that by planting trees 5 x 5 feet apart we could stop the cultivation in from four to five years, depending upon the kind of tree; and we believe that for the farmer, trees planted about 4 x 4 feet apart, or at the most 5 x 5 feet apart, would be the most satisfactory distance, because at that distance trees would meet in three or four years. We have found too, that planted 5 x 5 feet apart, the branches of the trees began to die much quicker at the bottom, which is very important because you can easily understand that the branches start from practically the centre of the tree, and after they are left on for say 10, 15 or 20 years the knot in the tree comes right through, and as a result your timber is too knotty. But by having them close so that the earlier branches die off in the early history of your plantation it makes a clean trunk and clean wood. That is very important in growing these trees, and that is effected by having the trees closer than 10 feet apart, say 4 or 5 feet apart.

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BEST SIZE OF TREE TO PLANT.

Q. What age are these trees when planted?

A. We find the most satisfactory tree to plant is from 9 to 24 inches, not more than 2 feet. We have planted trees from 9 inches up to 8 or 10 feet.

Q. After four or five years' growth to what size would they attain?

A. After the second year they will make from 2 or 2½ to 3 feet or more of growth a year, depending upon the kind of tree.

By Mr. Blain:

Q. Is that the size of tree you would recommend the farmer to plant on his farm?

A. Yes, about 2 feet.

Q. Two feet high?

A. Two feet high. If only planting one row of trees he would, perhaps, need to be very careful, and if only 9 inches, the trees would be hidden by grass and that sort of thing. If putting out only a single row it would be better to plant the trees a little taller than 2 feet.

Q. I may say that in western Ontario they plant a great many trees 10 feet, and they do very well?

A. You are speaking more of avenue trees?

Q. Yes?

A. I am speaking of trees for timber purposes at the present time.

By Mr. Martin (Wellington):

Q. If you were to plant a tree a foot high and another two feet high or three feet high, what would be the difference in their height in say three years' time?

A. I believe that the tree one foot high, providing it has had good cultivation, will be as tall as the three foot tree, because the taller the tree the longer it takes for it to become established, for the reason that the larger the tree the more the roots are injured in taking it up and the longer it takes to get established. So you can easily understand the expense would be light in planting a forest plantation by getting these little trees which can be purchased very cheaply.

Q. If they are to go in a row it is necessary to have them nearly all of the same size?

A. For a wind break it does not matter so much, although it is well to start them out as nearly alike as possible.

RATE OF GROWTH OF FOREST TREES.

We have published in our reports from time to time the height and diameter of the different trees in these belts. We annually take the measurements of the trees. The diameter is taken 4 feet 6 inches from the ground, and then we take the total height each year so that we can tell how much the tree increases in height and diameter. It might interest you to know just the height of a few of them. For instance, taking the white pine which was planted in the spring of 1889 when 8 to 10 inches in height and 5 x 5 feet apart they are now 31 feet 8 inches in height. The last record I have here is that for the fall of 1906.

By Mr. Pickup:

Q. What is the diameter of that tree?

A. The diameter of that tree, this white pine, is 4½ inches, 4 feet 6 inches from the ground.

Q. We can beat that in Nova Scotia?

A. Yes, I think you can beat that in Nova Scotia.

Q. In 30 years they are 9 inches in diameter?

A. Trees both on the eastern coast and the western coast will grow much more rapidly than they do in the central part of the country. The moisture in the air seems to be favourable to their growing and they grow much faster. But, as I have already explained, our work is principally for the two provinces of Ontario and Quebec. Now white pine planted 10 x 10 feet apart is 30 feet 9 inches in height, compared with 31 feet 8 inches of the white pine planted 5 x 5 feet apart. This is the average of a number of years. Several individual trees were measured each year and then we took the average. The diameter of trees planted 10 x 10 feet apart is practically 7 inches. The reason of that is that the trees get more light and having more light make more branches, and the more leaves they have the greater growth they make. But the difficulty in regard to these trees is that the branches are not yet dead at the bottom. These big branches are growing out now from the base of the trees and that timber will be very knotty for a long time.

Then in the case of the white ash, which is a very valuable tree in the province of Ontario, the trees planted 5 x 5 feet apart at 4 feet 6 inches above the ground have a diameter of 2½ inches, and the height of the tree is 29 feet 3 inches. Planted 10 x 10 feet apart the diameter is 4 inches, 4 feet 6 inches above the ground and the height of the tree is 30 feet 7 inches. The white ash is a very valuable tree for a farmer and it would pay him well to grow that species in his plantation.

The following table showing the growth of a number of species of trees, with other notes regarding them, is submitted:—

Growth of Trees in Forest Belts at Central Experimental Farm.

Name.	Year Planted.	Years Planted.	Height or Age when Planted.	Distance.	Soil.	Height, 1906.		Diameter, 4 ft. 6 ins. from Ground, 1906.
						Ft.	Ins.	
White Pine.	1889	18	8 to 10 inches	5 x 5 ft.	Light sandy loam with gravel. . .	31	8	4 1/8
"	1889	18	8 to 10 "	10 x 10 ft.	" " " " " " " " " " " "	30	9	6 3/8
Scotch Pine.	1888	19	18 inches	5 x 5 ft.	Low sandy loam with gravel. . .	29	5	3 3/8
"	1888	19	18 "	10 x 10 ft.	" " " " " " " " " " " "	28	3	5 5/8
"	1887	20	9 "	3 x 3 ft.	Light sandy loam with gravel. . .	31	8	3 3/8
Norway Spruce.	1889	18	18 "	5 x 5 ft.	Poor, light sandy loam.	23	1	3 1/8
"	1889	18	18 "	10 x 10 ft.	Light sandy loam	27	11	5 5/8
"	1888	19	15 "	5 x 10 ft. mx.d.	Clay loam.	35	8	6 3/8
"	1888	19	15 "	5 x 10 ft. mx.d.	Light sandy soil.	33	..	5 3/8
"	1888	19	15 "	5 x 10 ft. mx.d.	Gravelly soil.	37	2	6 1/8
European Larch.	1888	19	2 feet.	5 x 5 ft.	Low sandy loam	33	11	4 1/8
"	1888	19	2 "	10 x 10 ft.	" " " " " " " " " " " "	33	..	5 1/8
Canoe Birch	1889	18	3 years.	5 x 5 ft.	Light sandy loam	35	4	4 1/8
"	1889	18	3 "	10 x 10 ft.	" " " " " " " " " " " "	37	8	5 5/8
White Ash.	1889	18	3 "	5 x 5 ft.	Black muck.	29	3	2 1/8
"	1889	18	3 "	10 x 10 ft.	Light sandy loam.	30	7	4
White Spruce.	1888	19	15 inches	5 x 10 ft. mx.d.	Gravelly soil.	34	6	6
"	1889	18	15 "	5 x 5 ft.	Poor sandy soil	17	4	2 5/8
"	1889	18	15 "	10 x 10 ft.	" " " " " " " " " " " "	20	8	4

INFLUENCE OF FOREST TREES ON ONE ANOTHER.

Then we have got a good deal of interesting information from our mixed plantation where different trees are growing, information that will be useful to the farmer to show him what kind he should avoid planting. I have taken notes which I should like to give you in regard to a number of these trees showing how they have suffered under shade; where they have been able to hold their own or where they have suffered

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and died. These notes are taken from a mixed belt of trees planted in 1894. 'The Austrian pine does not stand the shade well and in some instances it has been killed outright when shaded by other trees, although it is quite a strong growing tree.

The Scotch pine also suffers badly in shade. In some instances the trees have been killed outright, and where not killed the leader is destroyed and the tree made very weak.

White pine stands shade a little better than Scotch pine, retaining its leader when the Scotch pine does not.

Douglas fir is much weakened by shade, but retains its leader.

The Norway spruce stands the shade better than any of the pines.

The Rocky Mountain blue spruce, or Colorado spruce, stands the shade about as well as the Norway spruce, but does not stand as much chance of developing as the Norway, as it grows so slowly.

The American Arbor-vitæ or cedar, which forms our great cedar swamps in Ontario and Quebec, stands the shade very well, but in dense shade makes very little growth.

The tamarack pushes up rapidly and is holding its own, but as the foliage is comparatively thin it does not hurt other trees.

The American elm has reached the greatest height and is towering above most other trees. It has made a good straight trunk. This and the box elder, or Manitoba maple, should do well together. The dense shade of the box elder should force an upward growth of the elm and the elm be able to hold its own on account of its rapid growth.

The red and white ash and box elder.—These are almost as tall as the American elm and are still holding their own. The dense shade of the box elder is what has done most to injure the pines. The Manitoba maple, or box elder, makes a very dense shade, and if put into a plantation it will crowd out almost everything else that grows less rapidly than it does.

The black ash is little more than half the height of the white ash.

In another belt of trees planted in 1888 notes on other trees were made.

European white birch are the tallest trees, but these are now dying and some are dead. In about 18 to 19 years the European white birch dies at Ottawa.

By Mr. Sinclair:

Q. Does that differ from our own white birch?

A. Yes, it is different from our own white birch.

By Mr. Martin (P.E.I.):

Q. Is the American elm the soft elm?

A. Yes, it is the soft elm, the common elm.

White oak.—Some trees have been killed by the shade, but they appear to stand it fairly well, as trees are alive which are much shaded, although they are making little growth.

Black walnut.—In the warmer soils this has shot up tall and straight and is among the leading trees, but many were overshadowed before they got ahead and have been killed or are barely alive.

Red oak has shot up well and is one of the leading trees.

Rock elm has done well.

Norway maple has shot up well and is one of the leading trees.

Hard maple, although slender, is shooting up now and is holding its own.

Red maple, side by side with Norway maple, is affected about the same by shade, and is about equal in height. Norway maple is, if anything, leading and is the more vigorous tree.

White spruce.—Although this stands shade well it has got behind and is not a leading tree, that is where it is mixed with other kinds.

American mountain ash stands shade well.

By Mr. Christie:

Q. Did you say that black walnut would not do well when shaded by other trees?

A. It has not done well here.

Q. I have got about fifteen in Red Maple Woods, and I think they are doing better than those out in the clearing?

A. They are not over-topped by the other trees, are they?

Q. They are right in the midst of red maple timber?

A. Is there a canopy of foliage overhead?

Q. Yes?

A. Then our experience has been different. We have found that the black walnut, providing it will grow as fast as the other trees, will hold its own. Once it gets underneath other trees, it does not. Of course, your maple woods might not be very dense.

Q. They are the ordinary woods?

A. Very often in a maple wood there are little glades or open places, and those are the places where the black walnut should do well, and if planted on an even footing with young maple, black walnut should hold its own, but planted under large trees it would not stand much chance. From our experience we should suggest to the farmers that they should plant the trees which will look after themselves best and quickest. We should say that there should be a foundation of evergreens in the plantation, which would have the effect of crowding out the branches of the deciduous tree, and the three best evergreens we have found for this purpose are the white pine, the Scotch pine, and the Norway spruce. These are all very rapid growing trees, they will hold their own well in the race with the other deciduous trees, and having dense foliage they will crowd out the side branches of the latter, and in that way make cleaner timber than if they were not there. Then among these he should plant for early use the white birch, the American elm and the tamarack or the European larch. These make very rapid growth in the first 20 years, and on account of their thin foliage they do not destroy the pines and hard maple which should also be in the plantation, and the result is they may be cut out in 20 or 25 years for fuel, if necessary, leaving the plantation for the other trees. Then he should have white ash, hard maple and red oak, and a few white oak and black walnut. All these trees, by the proper mixture of them, will grow well together and the farmer will soon have a large supply of fuel and also wood for other purposes on the farm. The trees which are to remain longest should be about 10 feet apart with the others between.

Q. Taking the Norway spruce, how would you plant it?

A. In a mixed plantation on a farm the Norway spruce would not be less than 10 feet apart, because the farmer will want his other kinds between them. Even for a single row of trees 10 to 12 feet apart is a very good distance.

Q. We have planted some and they have grown up but are dying. I think they were planted too close?

A. We have a row at the farm of Norway spruce. They are planted 10 feet apart, but my intention is to remove every other tree in a short time and have them 20 feet apart. That will mean that they will be far apart for quite a number of years. My idea is to leave them until they interlace and then cut them out.

By Mr. Sinclair:

Q. Will the black walnut thrive in Nova Scotia?

A. I don't think it will very well. We have found that it needs a very warm soil. It might thrive in the Annapolis valley in Nova Scotia, but here in Ottawa we

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find that on the heavier soils it won't thrive at all. It needs to be on a warm soil, although in western Ontario it grows well in the bottom lands. But here you have got to get a warmer soil or the tree is pretty nearly at a standstill. The farther north you go and the cooler it is the slower progress the tree makes.

By Mr. Wright (Renfrew):

Q. Is the walnut growing here?

A. Yes, our trees have been bearing fruit for quite a number of years.

Q. We have one in Renfrew growing on a clay soil?

A. We have a plantation on clay soil, or at least some on clay soil that are doing fairly well; but on cold sandy soil the trees are practically at a standstill, they don't make more than an inch or so of growth yearly. On a warm sandy soil they do very well and on a well drained clay soil they also do well, but not so well as on a warm sandy and gravelly soil. We find that the farther north the tree grows from its native place the warmer the soil has to be. We all know how the hard maple starts to climb the hillside to get into the sunshine. As you go north you find the hard maple, and other trees, gradually climb the hillsides where they get the light and heat.

LEAF BLIGHT OF HORSE CHESTNUT—PEAR BLIGHT—APPLE SPOT.

By Mr. Blain:

Q. In western Ontario a large number of horse chestnut trees are dying off. Have you been experimenting or making inquiries as to the cause?

A. We have looked into that trouble and it is caused by a leaf disease called *Phyllosticta sphaeropsoides*, but no spray has been satisfactory in checking it up to the present time, although Bordeaux mixture is recommended. The pear blight is another disease difficult to control, which is practically impossible to eradicate unless all the diseased parts are cut out, and that is an almost impracticable method. The pear blight has reduced the California pear orchards, I understand, nearly one-half, if not more, during the last few years since the disease was introduced there, and our fruit growers in Ontario know what a terrible thing it is. The difficulty is that it is a bacterial disease. It enters through the flowers and tender buds and once it gets in you cannot get it out with any spray. The only plan, as I say, is to keep cutting out the diseased parts, and even then unless everybody else adopts the practice the disease spreads very rapidly.

By Mr. Christie:

Q. Does not the horse chestnut do better in a warm climate?

A. Yes.

Q. In the northern part of our county they do not succeed, but in the southern half they do splendidly?

A. You will not see very many horse chestnuts about Ottawa. We have tried them over and over again. They will live for a number of years and then gradually get stunted. I do not think there are very many chestnuts about Ottawa. There are one or two, I think, on Kent street, but as a rule they do not succeed in this district.

By Mr. Pickup:

Q. You say that the only remedy for the disease you spoke of which communicates itself to other trees is to cut out the parts affected. Does the same thing apply to spots on apples?

A. No.

Q. Would it be necessary for all to spray, right through the district in the case of spots on apples?

A. It is necessary, but not so necessary as in the case of blight; it does not carry so rapidly. The bacteria of the blight are so small they carry very much more rapidly than the spot. The spores of the spot are small too, but they do not spread so rapidly.

Q. But still the disease does spread?

A. Oh, yes, it does spread.

Q. From one orchard to the other?

A. Yes, because the birds will carry the spores on their feet from one orchard to another. The wind will also blow them.

PARTS OF THE FARM SUITABLE FOR FOREST PLANTATIONS.

The parts of a farm which I think are most suitable for such planting as I have been describing, and such as we have carried on here, are the hillsides and rocky places; and there is no reason why, if a farmer is interested in the subject, he should not be able to cover these places with first-class wood in a comparatively short time. When one considers that white pine will reach a height of over 30 feet in nineteen years, and that red oak, ash, Scotch pine, Norway spruce, tamarack and all these trees will reach about the same height in the same period, it shows how soon one could have a fine plantation; and by putting in some elm and white birch, if there is no fuel on the farm, a man could have a lot of fuel in the way of birch and elm and red oak, even in a comparatively short time, because, in our experience, red oak will grow almost as fast as pine.

By Mr. Blain:

Q. Are any of the farmers in Ontario appropriating any portion of their land to that purpose to any considerable extent?

A. The Ontario Department of Agriculture now has a forestry station at Guelph and is prepared, I understand, to furnish these forest trees to the farmers for their plantation. I hope that a certain number of farmers—I do not know just how many—are taking advantage of this offer and planting trees. The difficulty, of course, with the farmer is that he is very short of help and it is next to impossible, at least he thinks it is, for him to start a plantation; that is really the great difficulty. It is difficult for a government to do all the work and as a result this operation cannot be pushed as rapidly as it should be.

By Mr. Sinclair:

Q. Does the Ontario Government furnish these trees free?

A. I don't think they furnish them free, but practically so. I understand the applicant pays the cost of transportation. That is all.

By Mr. Christie:

Q. In the county of Durham trees have been planted on sand hills, is that the work of the Ontario government?

A. Yes. The government has established plantations in that county, and I think in Essex also. I know they have done it in the southwestern peninsula and also near Brighton, in Durham county.

By Mr. Wright (Renfrew):

Q. What are they planting there, white pine?

A. White pine largely, and I think they are also putting out some black locust and European larch which grows rapidly, and some Scotch pine, I think, also.

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HOW TO PROPAGATE PINES AND OTHER EVERGREENS FROM THE SEED.

By Mr. Sinclair:

Q. Can you propagate pine from cones?

A. Yes. The method of propagating the pine from cones is somewhat as follows: It is really very simple, but the seed bed must be looked after pretty thoroughly or you will lose the little pines. The seeds ripen in the autumn and if you are not in a timber district you have to climb the trees to get the cones. If you are in a timber district where the trees are being cut down in the early winter you can go there and collect the cones. It takes about one bushel of cones to make a pound of seed.

By Mr. Caldwell:

Q. Are any efforts being made to gather the cones here?

A. Practically none, I understand.

Q. In my own locality some young men are making a business of gathering the cones and selling the seed to the United States. The other day when I was home they told me they had extracted some \$1,600 worth of pine seed, all of which was shipped to the United States. Americans are coming over here and making a regular business of buying our pine seed, seemingly for export and not for local use. Doubtless this is more a provincial matter than it is one affecting the Dominion, but it would seem that there is something wrong in not giving the matter attention ourselves. I am sure they have collected thousands of dollars worth each year in our district?

A. And not only that, but some European houses have sent agents over, or employed agents in this country to ship seeds to Europe, especially Germany. That country has had agents in British Columbia looking for seeds of the Douglas fir. I think, they have also got a certain amount of pine seed from Ontario.

By Mr. Sinclair:

Q. Has any attempt been made to cultivate the Douglas fir in Ontario?

A. Not on a large scale. Douglas fir is doing very well at the Central Experimental Farm here. We have trees there now that are nearly 30 feet in height.

To return to the question of pine seed. The seeds are gathered in the cones and taken to a dry warm room, and in a very short time, a few weeks, the cones will open and the seed then drops out. That is screened and then becomes available. The seed is kept dry during the winter and in the spring is sown broadcast on the surface of the soil in little beds that are made just as you would prepare a garden for putting in the small vegetable and flower seeds. Usually the beds are about the width of this table, about 4 feet wide, and 10 or 12 feet in length, and they are surrounded by boards about 6 or 8 inches high, so as to keep them under control. A little sand is sifted over the seeds which are lying on the surface of the soil, but there is practically no depth of soil put over them. After seeding, the soil is beaten down with the back of a spade, or other tool, and the bed covered with a lath frame or with boards so as to keep the bed dark until the seeds germinate, which will be in a comparatively short time. After they germinate they are covered with lath frames so as to make a half shade. The laths are the width of themselves apart on the frame and the frame is raised about a foot off the bed. The difficulty is that if you have not any shade these little pines will scald as soon as they come up in our climate. Some bore holes in the boards surrounding the bed for better circulation of air, as good circulation is important. In parts of Nova Scotia, New Brunswick and Prince Edward Island they come up readily and thrive well without protection. In our climate the air is so dry they scald off in the bright sunshine and we have to put those laths over them so as to give them a half shade and moist conditions. Then they germinate in a short time. For the first season and part of the second it is necessary to keep the laths on. On cloudy

days the laths are taken off so as to give the pines as much light as possible. At the beginning of the third season the pines which are only two or three inches high, perhaps three or four, are taken out and put in plantations, four or five inches apart each way, or on a farm they might be set out in rows two feet apart and four or five inches in the rows so that they could be cultivated with a horse. They stay there one or two years. When they are four years old, by which time they are 8 to 10 inches high, they are ready for planting and from that time on they will grow very rapidly, making from two to three feet of growth in a year, and they will soon become quite large trees.

By Mr. Lewis:

Q. Does what you say apply to cedar as well as to pine?

A. Yes, to cedar and spruce.

TIME OF PLANTING FOREST TREES—CARE REQUIRED.

By Mr. Caldwell:

Q. Do you experience any trouble in transplanting pines?

A. No, but they have to be treated carefully.

By Mr. Lewis:

Q. Would you take pines from the open for transplanting?

A. They do not transplant so readily as nursery grown trees, because they have very few roots. Out in the open, as a rule, they have a hard struggle to exist, because there is much rank vegetation around them. The difficulty is that having such few roots it is harder for the tree to start. Of course, you can do it, but it must be borne in mind that the roots of pine trees must never be exposed to the sun, for even two or three minutes of sunshine may cause them to dry up very rapidly, and once the gum of trees like pine or spruce dries, it is really the end of them.

Q. What time ought you to transplant?

A. Just as early in the spring as the soil is in good condition.

Q. Ought you to do it twice a year?

A. In some magazines and periodicals it has been stated that the best time to plant evergreens is in the month of August, I don't know whether that is what you refer to, or midsummer. That recommendation has, I believe, been largely due to the advertising of persons who have evergreens for sale. The middle of summer is a comparatively slack time for the business of selling trees. The evergreens can be planted at almost any season of the year, provided you don't let the roots get dry. It has been advertised that the most successful time is in the middle of summer, but it is not so. The middle of summer is a very difficult time to transplant.

By Mr. Sinclair:

Q. Is the tree not healthier and stronger in the middle of summer when the buds are on it?

A. Yes, it is apparently so, but the difficulty is this: In the middle of summer when you transplant there is such a tremendous evaporation or transpiration of moisture going on from the top. The air is so dry and the sun so strong that if you transplant the tree then, unless the work is done very carefully the surplus moisture will be evaporated from the top.

Q. I have known spruce trees planted in Nova Scotia in July that succeeded very well. Some farmers who planted them have thought it a very suitable season?

A. Yes, they do very well there. As I have already said, the Atlantic coast is much more favourable to evergreens than the central part of Canada for the reason that the

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air is much moister and trees will stand transplanting there when they will not stand it in the interior of the country at all on account of the dry winds and the bright sun. We recommend the planting of evergreens as early in the spring as the ground is fit, or they can be transplanted with success in the autumn. We have found, however, that in our climate planting in the fall was not as satisfactory as planting in the spring.

By Mr. Lewis:

Q. What I was referring to was this: It is presumed there are two periods of growth in the year for evergreens and one for deciduous trees. Is there anything in that?

A. That is not correct. Evergreens start to grow almost at the same time as other trees, or just about the same time, in the spring and go right ahead until they stop growing. They grow very rapidly when they start and then they stop and shed their leaves just about the same time as other trees, although we don't notice it. If you go out in September or October you will find the ground literally covered with leaves. They shed a certain portion of their leaves every year and are very much like other trees in that respect.

Q. With reference to pine seed have you to keep it away from the frost?

A. No, provided it is dry it is all right. It is not necessary to keep it away, it won't be injured by frost.

By Mr. Wright (Renfrew):

Q. How is the red cedar propagated? It seems to be quite different from any other cedar?

A. The red cedar is really a juniper. That is why the seed is so different. If you examine the seed you will find it is the same kind of seed as the low-growing juniper with the little round berry. The seeds of red cedars should be planted before they get very dry. It is better to plant them in the fall before they get too dry.

By Mr. Kennedy:

Q. Have you grown any British Columbia hemlock or spruce?

A. We have some little ones at the farm that have been sent from British Columbia, but the hemlocks have not done very well.

Q. Have you anything called the Yew?

A. The Japanese yew is the most satisfactory variety to grow in this country.

Q. There is a native yew in British Columbia?

A. Yes.

By Mr. Pickup:

Q. Is the hackmatack the same species as the juniper?

A. No. It is the same as the tamarack.

By Mr. Sinclair:

Q. Is the juniper a species of larch?

A. No, it is quite distinct. The juniper is a low-growing bush with different habits and different in appearance.

By Mr. Kennedy:

Q. There used to be a lot of junipers on this very ground before it was broken for the site of the Parliament Buildings?

A. Yes, and on the road going to Aylmer you will see a lot of them growing on the rocky soil.

By Mr. Lewis:

Q. Are they hard to transplant?

A. When they are small they can be transplanted quite easily.

Q. I would like to ask a question with reference to the transplanting of young cedar trees. In the county of Bruce you go into the woods and you find little cedars growing there. It is generally mossy and you will pull up a little tree with a bunch of moss, and when you transplant it it does not seem to grow?

A. The roots are all spread on the surface, and there are very few roots comparatively.

Q. What is the best way to make those trees grow? Supposing I plant them out in the pasture field where they do grow sometimes?

A. The first essential when you remove a tree is to wrap the roots around with a wet piece of sacking or keep them wet in some way.

Q. I have turned the hose on and kept the roots moist and adopted every precaution?

A. After you plant them leave a mulch of leaves on the surface, if you like, but don't use any manure, because that may burn them. Use anything that will keep the ground cool and moist. Keeping the surface soil loose with a hoe is necessary unless the ground is mulched.

Q. Would too much water hurt them?

A. Yes, too much water will hurt them.

Q. I turned the hose on them?

A. You perhaps used too much water.

By the Chairman:

Q. When you pull out a cedar and bring up quite a bunch of stuff with it, should you plant it just in that way, or should you shake it off so as to keep the soil about the roots?

A. I would do the latter. That is the way I would do. If you take a big piece of moss and put that in with the roots it prevents the soil from getting to the roots. The moss or turf may all dry out and the roots dry also.

By Mr. Lewis:

Q. I have taken out a bunch of stuff as big as my head, but still the tree did not live?

A. That is the trouble. If you do not keep the roots in close contact with the soil they will dry out. If you dig a tree which is growing in soil and not in moss keep the soil attached if possible.

Q. When is the proper time to take the seed of the cedar?

A. Late in the fall. Place it in a dry room and it will dry out and then plant the first thing in the spring.

Q. No matter how dry it may be?

A. Yes.

Q. Will a beech nut break itself if you plant in soil?

A. A good plan often is to put them in a shallow heap in the fall with three or four inches of soil over them. In the winter the frost will crack them and then they are planted the first thing in the spring, an inch or two deep.

Q. What about the horse chestnut?

A. The same thing holds good.

Q. Would you put them in a dry room?

A. No. You must not let these nuts dry.

Q. In the case of the black walnut, if you cut the top root when transplanting, will it grow?

A. Oh, yes, it will grow well.

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I have some matter prepared relating to the importance of farmers improving their home grounds or the surroundings of their houses, with information regarding the preparation of the soil, grading and making a lawn, and laying it out with a few ornamental trees, shrubs and herbaceous plants. That comes in in connection with our botanic garden work, and I should like very much to include the matter in my evidence, if agreeable to you, because I think more information should be given to farmers upon the improvement of their homes. They sadly need it in this country; that you all know. I will be very glad to answer any questions in regard to it, but I think as we have been talking so much of forest trees it would be well to include that matter with the planting of forest belts, so as to make the subject as complete as possible.

THE IMPROVEMENT OF THE HOME GROUNDS.

To those who appreciate and who have been accustomed to attractive surroundings, many a farmer's house seems a cheerless place indeed. Exposed to the summer's sun and to the winter's blast, with rarely a tree, shrub or climber to break the uninteresting outline of its four walls, without a lawn or flower garden to separate it from the fields, it is the farmer's abode; but should we dignify it by the name of home when it is contrasted with other farmer's homes where fine trees give their refreshing shade in summer and check the cold winds in winter; where the green lawn slopes away to the roadway or separates the home grounds from the fields; and flowering shrubs, flower beds, and borders enliven the scene and make the farmer and his wife and children truly feel that 'there is no place like home.' With the easy and rapid means of transportation which we now enjoy in Canada, few farmers' sons and daughters are unable to visit some of our cities and towns during their early years. Is it any wonder that in many cases when they return home and contrast their home surroundings with those they have seen they become dissatisfied and long for a brighter place to live? And while it is true that lack of homelike surroundings is not the only reason why boys and girls leave the farm when they get an opportunity, it does, without doubt, influence them in making their decision.

There are two main reasons, we think, why farmers do not improve their home surroundings, namely, through lack of desire, and because they think they have not time. There is a third reason which might also be given, namely, want of knowledge, but information is now so easily obtained that there is little excuse on that score. How is it possible to instil a desire in farmers to make their homes more attractive? If they would only realize that their children would appreciate it and would be more likely to remain on the farm, the desire would surely come. Once the desire came, time would be found to do the work.

Making the Lawn.—The soil around the dwelling usually dries up in the spring before the fields, as the house is, as a rule, built on a slight elevation, hence work could be begun several days before there was any temptation to go to the fields. A lawn should be the first object in view, as once the extent of the grounds were defined by the grass, the further development could be gradual. A well-kept lawn is also much more attractive than flower beds in rough ground, and once the lawn has been made the farmer's wife and family will be able to render valuable assistance with the trees, shrubs and flower beds.

A large lawn will probably be neglected by the average farmer, hence the area which is to be devoted to grass should be well considered. If possible, there should be a lawn in front and at one side of the house. A lawn fifty feet wide in front makes a very good approach to a house, and if convenient this should be carried the same width along the side. More lawn would be better, but there should not be less. The less grass is cut up by roads and paths, the more effective it is, hence the paths should be arranged with a view to leaving as large a plot of unbroken lawn as possible. In order that the grass may look green most of the summer, there should be a good depth

of soil. If the soil is shallow the grass will be affected by droughts and will be brown when it should be green, hence the importance of thorough preparation. The better the soil is prepared the better the grass will grow. When the ground chosen for the lawn has been staked out and all surface stones and rubbish removed, it should be given a heavy dressing of rotted manure, and if the soil is poor it might be possible to apply some loads of good soil with manure. There is no danger of making the soil too rich. When this is done the soil should be given a deep ploughing, and then be thoroughly pulverized. A scraper will probably be necessary to grade up the ground before the final harrowing. Now comes the time when the whole household can assist. In order that the lawn should be a creditable one the surface soil should be brought into as fine condition as possible. All stones should be removed, both small and great; the clumps of soil should be broken up, pieces of sod buried where the grass will not grow again, and all holes filled up with soil. For the best effect in front, there should be a continuous, gentle, downward slope from the house to the outer edge of the proposed lawn, and this can be obtained by a judicious use of the shovel, rake and eye. No pains should be spared to make the surface of the soil smooth. Paths, and if necessary, a roadway, may now be cut out, but as the edges will no doubt be trodden on before the lawn is formed, we should advise making them about a foot narrower than they will eventually be, so that they may be cut to a desired width when a good sward has been formed. The soil is now ready for the seed, and it may be said here that the earlier in the spring the seed is sown after the soil is in condition, the better the results will be. After all the preparatory work which has been done, the prospects of a good lawn should not be marred by sowing poor seed. A few cents extra for the best seed will be repaid many times over by the results. We should not advise buying lawn mixtures. The best lawn grass is Kentucky blue grass or June grass, and this is what should be bought. As it takes some time for a thick sod to form, weeds are liable to be troublesome at first, hence a little white clover is a good thing to sow with the grass seed. This will take the place of weeds and help to thicken up the lawn. There is no danger of using too much grass seed. Three bushels per acre of seed that has a high percentage of germinating power will make a good lawn, but double that quantity is often used. White clover may be mixed with the grass seed at the rate of about ten pounds per acre. If the lawn is to occupy, say, an area of 100 by 50 feet, it would only take about six or seven pounds of grass seed and about a pound of clover seed. It should be sown broadcast and then raked in. If the seed is sown early in the spring, the soil need not be rolled after seeding, but if there is danger of the soils drying out before the seed germinates, it should be rolled with a light roller to bring the moisture to the surface and hasten the germination of the seed. If there are children about it will be necessary to define the border of the lawn in some way at first. A wire is a good thing for this purpose, but if this cannot be obtained binding twine will answer the purpose. It is necessary to have something continuous, like wire or twine, as children easily forget, and a few stakes will not stop them. The grass seed will usually germinate in a few days and grow thriftily, but the grass should not be cut the first time until it is long enough to be cut with the scythe, as if cut too soon it may be injured by the sun or dragged out of the soil. Weeds should, however, be cut off with the scythe in order that the grass may get a good chance to thicken. In order to keep a lawn in good condition, one should have a lawn mower, for once a lawn is established it will be so much appreciated that there will be a pride in making it look well.

Planting the Home Grounds.—While it would probably not be possible in many cases to do all the necessary planting of trees, shrubs and vines the first season, a beginning should be made, even though it be with a vine or two or a few shrubs and trees. Sometimes planting is put off from year to year because it is thought that there will not be time to do all that is in our mind, whereas, if a beginning were made and a little done each year it would be surprising how soon there would be a change in the appearance of the home surroundings.

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There is nothing which improves a place so quickly as vines, and there is an advantage in beginning with them, as they can be procured and planted by almost any member of the household who is old enough to know how to plant anything. Three of the best climbers are three of our commonest wild plants, namely, the Wild Clematis or Virgin's Bower, Climbing Bitter-sweet, and Virginian Creeper. If these vines are not growing somewhere on the farm, one should be able to recall where he has seen them growing wild, and they can usually be obtained without cost. For a veranda we prefer the Virgin's Bower, as it has attractive foliage and flowers, and is not troubled with insects, and hence the veranda is kept cleaner, and one can sit out with comfort. The Climbing Bitter-sweet is also a very clean vine, and it is not affected with insects either. It has bright green leaves and although the flowers are insignificant its highly coloured fruit, which remains on the plant most of the winter, makes it quite attractive at that season of the year. It is a very strong grower and will soon add much to the appearance of the place. The third climber, and one which is perhaps more often used than either of the others, is the Virginian Creeper. As is well known, this is a rapid grower and will cover a veranda in a short time, and in the autumn is very attractive on account of its highly coloured foliage. This vine is, however, much troubled with a little hopping insect called a thrip, which is so destructive to the foliage that many of the leaves wither, and often during the latter part of the summer the vine is quite disfigured.

This is a very difficult insect to control, and because of this we prefer keeping this vine more in the background, where its luxuriant growth in the early part of the summer and its brightly tinted foliage in autumn may be seen from the distance. There is a self-fastening variety of Virginian Creeper which will cling tightly to a wall, and this is very useful for the side of the house or unsightly outhouses. In the warmer parts of the province of Ontario the Japanese or Boston Ivy is one of the best plants for covering walls. There are other climbers with more beautiful flowers than any of those mentioned, but they are not so hardy. Among the best of these are the Crimson Rambler rose, the flowers of which are a gorgeous sight in summer; the Scarlet Trumpet Honeysuckle, and the large flowering varieties of Clematis.

Climbing plants should be dug up with as many roots as possible, but instead of trying to save all the plant, only about two feet or less of the wood should be left on, the rest being cut away. If this is done the plant will grow much more thriftily than if a long piece of wood is left. The earlier in the spring the planting is done the more growth there will be, but if planting is neglected at the proper time we should not hesitate to dig up a plant even when it was in leaf, as if the roots are not allowed to become dry before planting and the soil is moist it will be almost sure to grow, although it should be well cut back when planted. If the soil close to the house is not very good, it should be removed to a depth of about eighteen inches and for about two feet in width where the climbers are to be planted, and replaced with good soil. The strong growth which is made when this is done will well repay any trouble which is taken. As the planting is done close to the house, there should not be much disturbance of the surrounding soil, which, we are taking it for granted, is seeded down with lawn grass. In planting, the roots should be well buried beneath the surface of the soil and the latter pressed against them. There is no danger in planting the Virgin's Bower, Climbing Bitter-sweet and Virginian Creeper too deep. They are better planted a little on the deep side, as they root readily along the stem and will be in moister soil. We have discussed climbers at some length as they are so easily obtained, will make such an improvement in a short time, and can be planted by almost any member of the family, and hence will be more likely to be planted than trees and shrubs, some of which may have to be ordered from a nursery. If the vines are cut back from time to time they can be kept well under control.

It is a mistake to plant trees too close to a house, as when they grow up they prevent a free circulation of air, and sometimes make the house too dark. Some of our native trees are among the best for planting, and there is no tree which in time will

give such character to the farm home as the American elm. As it is a rapid grower and reaches a great size it should not be planted within fifty feet or more of the house, and should be placed in such a position that when it grows up it will not shade too much of the lawn. Elms look well when skirting a roadway, and an avenue made of these trees is a fine sight, but even one or two will show up well. They have an advantage over the hard maple in that they may be pruned up when necessary without losing their graceful appearance. Other large growing trees which may be used with good effect, but which are too large for a small lawn, are the hard maple, Norway maple, red oak, white, red and Scotch pines, and the Norway spruce. They may be grouped at the rear of the house and back of the lawn, and will form an excellent background if planted in a clump, and will make a splendid windbreak both in winter and summer.

For shade and ornament on the lawn and near the house, smaller growing trees and shrubs may be used to advantage. There are many to choose from, but a few only will be mentioned, all of which are easy to get and are among the most ornamental. One of the most useful of the smaller growing trees is the European Mountain ash or Rowan tree. This is a hardy, rapid growing, symmetrical tree and is attractive in flower, foliage and fruit. It looks best when the branches are left on near the ground.

Cut-leaved Birch.—While this tree is a little more expensive than some of the others, it is so graceful and ornamental that one will never tire admiring it. It is very hardy and a quick grower.

Crab Apple.—There is no tree more suitable for a farmer's lawn, or for any lawn, for that matter, than a well shaped crab apple tree, the wealth of sweet scented flowers in the spring and the highly coloured fruit in late summer or autumn making it very ornamental, and the fruit being always in demand for preserving and jelly making by the thrifty housewife.

Among ornamental shrubs, the following will give bloom for most of the summer, among the earliest flowering being the Spiræas, which begin to bloom early in May, and become a mass of white flowers. Two of the most satisfactory are *Spiræa Van Houttei* and *Spiræa arguta*. As these are under five feet in height they may be planted near the house and look well if several are grouped together. Following the Spiræas are the Lilacs. There has been such a marked improvement in Lilacs during the past few years that the old-fashioned kind is now surpassed by many of the newer ones, which vary much in colour and have both single and double flowers; but even if these cannot be obtained there is no more popular shrub which blooms in the spring than the common lilac, and it should not be difficult to get some from friends. Then, there is the Tartarian Bush Honeysuckle, a hardy shrub, and a very free bloomer, which grows to about ten to fifteen feet in height. This also blooms in May. Some of the best shrubs which bloom in June are the common Mock Orange or Philadelphus, and the large flowering species which blooms a little later; the Snow-ball and the High-bush Cranberry, the latter being a native species which is not appreciated as much as it deserves, as the leaves, flowers, and fruit are all ornamental. The fruit remains on the bush most of the winter, and brightens up the ground in winter very much. A shrub or small tree not often planted, but a very desirable one, is the Japanese or Tree Lilac. This has white flowers, and grows to a height of fifteen or twenty feet, and although it does not begin to bloom so young as the common lilac, it is well worth planting. It blooms from the last of June to early in July. The last shrub which we shall mention is the large-flowered Hydrangea (*Hydrangea paniculata grandiflora*). This blooms during the months of August and September, and the immense panicles of flowers must be familiar to every one. In order to succeed best the Hydrangea needs plenty of moisture and should be pruned back severely in the spring.

When planting either the trees or shrubs mentioned, or others, the breaking or dividing up of the lawn should be avoided as much as possible, as the planting and the lawn itself are much more effective when the trees and shrubs are set towards the corners, at one side, or at the rear of the lawn, and it is better to group them as much

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as possible, instead of having them dotted here and there, without any apparent relationship to each other.

Unfortunately, a hedge is a rare sight on a farm, and yet there is nothing which defines the limits of the home grounds as well as a hedge. A hedge is more effective along the side or back of a lawn than in front, as a hedge in front of the house lessens the effectiveness of a nice approach to it. A hedge should be planted far enough back from the edge of the lawn to leave room for a wide flower border between it and the lawn. If a narrow border is left it will probably get narrower from year to year as the grass grows, and in time there will be little left. We should advise setting the hedge far enough back so that there will be at least six feet in width for a border. The *Arbor-vitæ* or white cedar makes the most satisfactory hedge, and young trees can often be obtained near the farm. The best satisfaction is obtained from planting young trees about two feet in height, and it is important to get them with living branches to the ground, as unless the branches come to the ground the hedge will look ragged. As the *Arbor-vitæ* throws out roots readily along the branches, it may be planted deeper than some other trees, and hence if it is not possible to get them with branches to the ground they may be planted deep enough to bring them down. Although the *Arbor-vitæ* will succeed in most soils, it does best in good loamy ground, and we should advise a thorough preparation of it before planting. The trees may be planted in a single row about 18 inches apart, and the earlier in the spring they are set the better the results will be. As the trees will probably be uneven in height if dug up in the fields or woods, they may be made the same height by cutting back the tallest ones after planting. Nursery grown trees are to be preferred when they can be obtained.

For large grounds the Norway spruce makes an excellent hedge, being a rapid grower and presenting a fine appearance. The young trees should not be set so close as the *Arbor-vitæ*, three feet apart being near enough. The hedge will not be formed quite so quickly set at this distance, but it will be more permanent. The Buckthorns make excellent hedges, and if an evergreen hedge is not desired the Cathartic and Alder Buckthorn are good substitutes. The soil should be kept well cultivated about a hedge during the growing season to get the best results.

How to Transplant a Tree or Shrub.—When trees die after planting it is usually due to carelessness in transplanting. Some kinds of trees transplant much easier than others, and some of those that are planted more commonly than others, such as the hard maple and American elm, are among the easiest to transplant, hence one is likely to become careless. Trees and shrubs should be dug as carefully as possible so as to retain a large proportion of the roots. The more roots there are the surer one is of getting the tree to live. The roots should not be allowed to become dry from the time of digging until the trees are in the ground again. They may be prevented from drying in transit by protecting them with wet moss or wet sacking. If the roots of evergreens, especially pines, become dry even for a short time the trees are almost sure to die. A hole should be dug large enough so that the roots may be spread out and not crowded or doubled up, and deep enough so that the tree or shrub when planted will be from one to two inches deeper than it was in the woods or nursery. By planting a little deeper than it was before, provision will be made for a little heaving which often takes place the first winter, but too deep planting is almost as bad as planting too shallow. It is important to have the tree at least as deep as it was before and, as stated, best to have it a little deeper. The soil when thrown out of the hole should be put in two separate heaps, the surface or good soil in one and the subsoil in another. If the soil is all poor, to get the best results sufficient good soil should be brought to fill the hole. The tree is now placed in an upright position and the good soil is thrown or sifted in at first about the roots of the tree. As it is important for the soil to come in close contact with the roots it should be pressed against the tree with the foot, when thrown in. If there is not enough good soil available to fill the hole the poorer soil

may be placed on top of the good. Manure should not be put in the hole with the soil as it may burn the roots and make the soil so loose that it will dry out easily. Better apply the manure to the surface of the ground in the autumn and dig in the shortest of it the following spring into the surface soil. After planting, the tree or shrub should be headed in well, the amount of heading in depending upon the amount of roots. If a large proportion of the roots are cut off a large proportion of the top should be removed, otherwise the large leaf surface will transpire so much moisture that the tree will dry up before the roots begin to take in more. This is why shade trees are cut back so severely when planted, but it is not necessary to reduce the trees to mere poles as is too frequently done, causing a bad crotch in the tree later on where the stub dies back and where rot sets in.

Evergreens are not headed back like deciduous trees as it would disfigure them too much and they have usually a fair supply of roots.

Before leaving the tree the surface soil should be loosened again so as to leave a thin mulch of loose soil on top which will prevent the moisture evaporating from the soil as rapidly as it would do if it were left hard. The surface soil should be kept loose throughout the summer and the best growth will be obtained by keeping a circle of from two to three feet or more in diameter around the tree free of grass, where the soil will be kept loose and the rain and air find a ready entrance. If trees and shrubs are transplanted with care they should usually live. Early in the spring is the best time to transplant most kinds of trees and shrubs, evergreens included. Evergreens may be transplanted in summer, but greater precaution must be taken to do it successfully, and we do not recommend it. Both evergreens and deciduous trees may also be planted in the autumn successfully, but on the whole they do not do so well as if planted in the spring.

The Flower Garden.—One frequently sees, both in city and country, crude flower beds, made by raising mounds of soil a few feet from the house and filled with any odds and ends of plants which may have happened to be in the house all winter, with the addition, perhaps, of a few others bought on the market in spring. Sometimes such beds produce quite a little bloom during the summer months, but situated, as they often are, in a dooryard with little or no attempt at improving the appearance of it, they lack attractiveness when compared with flower beds in or beside a well-kept lawn, where with the trees and shrubs they form part of the home-like picture which we should like every farmer to feel he can make about his own home.

There is no class of flowers more suited to country gardens than the hardy herbaceous perennials, for once these are established they will remain for many years, and are truly a perennial source of pleasure to even those who are not enthusiastic about flowers. If a farmer were to depend upon annuals for his flowers every year he might some years neglect sowing the seed and thus be without a good supply, whereas if there is a border well stocked with perennials he is certain to have flowers. Bulbs, also, especially tulips and narcissus, should be planted, as these likewise will remain for a long time. It is a border such as previously mentioned which should furnish bloom from early in the spring to late in the autumn. As many perennials do not need to be moved for a long time, it is important in preparing a border to have soil which will furnish abundant plant food to them, as sometimes when plants increase in size and the border is filled with them it is difficult to dig in manure. There should be good, rich loamy soil, which will not bake, to a depth of twelve inches or more in the border, and a heavy dressing of well rotted manure turned under to add still more fertility to it. The surface soil should be thoroughly broken up and levelled with the rake, but the soil should not be raised much above the level of the lawn. A great mistake is often made in raising beds high, as they dry out much easier in summer than if left but little above the surrounding level. As the whole border should be occupied with flowers, and as it may take several years to get enough perennials to fill it, some plan must be adopted to get bloom in the meantime. We know of no other flower which

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will make so gorgeous a show for as little outlay as the annual poppies, the Shirley varieties being among the best of them. The seed of these may be sown thinly over the border in early spring, and for about six weeks of the summer there will be a brilliant show. The annual poppies re-seed themselves, and once they go to seed in the border a supply of them is assured from year to year. The seed of Iceland and Oriental perennial poppies may also be sown in the same way as the annual ones. The Iceland poppies will bloom in the autumn if seed is sown early in the spring, but the Oriental poppies do not bloom until the second season. Once the latter are thoroughly established they will furnish abundant bloom during the month of May. While the poppies multiply rapidly and if left to themselves would occupy most of the border, they may be treated as weeds when not wanted, and are very easy to kill.

Some other good hardy annuals, the seed of which could be sown the first year, and every year for that matter, are Phlox Drummondii, Verbenas, Asters, Candytuft, Zinnias, all of which are very effective. Once, however, there is a border to put things into, it will not take long to get a good collection of perennials if we so desire. Friends will be only too glad to give away pieces from large clumps and there are few but could afford to buy some plants each year. There are quite a number of good perennials which can be grown readily from seed, among which are the Aquilegias or Columbines, the Larkspurs, Campanulas, Coreopsis, Gaillardia, Forget-me-not, and Hollyhocks. Foxgloves and Canterbury Bells are also hardy biennials which are raised readily from seed. Among the most desirable perennials are the Irises or Flags, of which there is a very large number of varieties, of many shades of colour. If the proper varieties are obtained, beginning with the Orris Root (*Iris florentina*), and ending with the Japanese Iris, there will be bloom for more than six weeks. The hardy perennial Phlox can also be obtained in great variety, and these will furnish bloom in mid and late summer. Some of the lilies should be planted, as these have a beauty all their own. Of these, *Lilium speciosum* should not be omitted, as it furnishes bloom during the month of September, when many other flowers are past. The Bleeding Heart, though an old-fashioned perennial, is very desirable. There are some very fine hardy herbaceous Spiræas, some of the finest being *Spiræa Aruncus* or Goat's Beard, *Spiræa Ulmaris* or Meadow Sweet, and *Spiræa Venusta*. Paeonies may now be had in great variety, and should not be omitted from the farmer's garden. We should, however, advise planting them in a clump by themselves, as owing to their great spread of foliage they may crowd out the other kinds. A place should be found for the Rudbeckia Golden Glow, as it is such a showy plant, but as it spreads so rapidly it is best planted by itself, and looks well in a corner where it is allowed to form a large clump.

In planting perennials, the height to which each grows should be learned, if possible, and the taller ones put in the back of the border, so that they will not hide the lower growing varieties, and also because the taller look best at the back. Somewhere near the front of the house there should be a good sized flower bed, the soil of which may be prepared the same as for the border. There is nothing more satisfactory for a bed of this kind than geraniums, a bed all of a crimson or scarlet variety being the most effective. Fine, strong plants can usually be obtained at very reasonable prices in most of the market towns.

Bulbs are very satisfactory for the farmer's garden—tulips, narcissus and hyacinths being the most suitable. Before the geraniums are set out in the spring the bed may be occupied with tulips, which will make a fine show during the early part of May, and may be dug up when it is time to plant the geraniums and ripened off gradually, after which they may be stored in a dry place until September, when the best bulbs should again be planted. It is, however, in the border between the clumps of perennials that bulbs give the greatest satisfaction with the least trouble. Here hardy narcissus may be left for a number of years, and will give an increasing number of flowers each year, and, as they begin to bloom in April, will give flowers when they are more appreciated than later on when so many kinds are in bloom. Tulips may

also be left for a number of years in the same place, if they are in well drained soil, but will need lifting from time to time if they multiply too fast, the large bulbs being re-planted and given more room, and the small ones planted in a less prominent place and left until they reach blooming size. Hyacinths do not always give such good satisfaction outside as tulips and narcissus, but are very desirable as they are so beautiful and have such a delightful perfume. Bulbs should be planted in September or early in October to get the best results. The price of them is so reasonable, when one takes into consideration how much they brighten up the lawn and border in spring, that no place should be without them.

Of annual climbing plants with attractive flowers, two of the most satisfactory are sweet peas and nasturtiums, and a few cents worth will give an abundance of bloom from July until frost. To have the greatest success with sweet peas the seed should be sown in rich soil as soon as it is dry enough in the spring to work, the reason being that sweet peas require an abundance of moisture, and if sown early the roots have time to get well down where moisture is always plentiful before the hot weather comes. Sweet peas also do best in full sunshine. The climbing nasturtiums will be found more satisfactory than the dwarf varieties. Unlike sweet peas, nasturtiums bloom best in rather poor soil, and seed should not be planted until danger of frost is almost past, as the nasturtium is a tender plant.

It is easy to grow the flowers above mentioned, and they can be obtained with such a small outlay that it must be only lack of desire and supposed lack of time which are the reasons for so few flowers being grown around the farm home. For the sake of our families, and for the good influence which it is sure eventually to bear on our own lives, let us force the desire upon ourselves and begin this spring to make our country homes more attractive, and if we make ourselves desire to do the work it will be done and we shall never regret it.

EXPERIMENTS IN FRUIT CULTURE AT THE CENTRAL EXPERIMENTAL FARM, OTTAWA.

With regard to fruits and vegetables, we have quite a large area, over 40 acres, devoted to these crops, and it has been our policy in the past to try and conduct experiments in that area which will be of the greatest interest to horticulturists throughout Canada. We not only plan experiments ourselves, but we ask the co-operation of fruit growers throughout the country, to secure suggestions as to the lines of work they think it will be well for us to carry on at the farm and which will be of the greatest interest to them. As a result we have carried on there during the last twenty years a great number of experiments in fruit culture. The results of these experiments have been published in bulletins which have been issued by the department, and also in the annual reports. For instance, one line of work which we have carried on in fruit culture has been the testing of varieties. We have tested between six and seven hundred named varieties of apples alone, and the value of this work you can readily understand when I say that in sections of eastern, central and northern Ontario and the provinces of Quebec, most of New Brunswick and in some parts of Nova Scotia, it is not possible to grow some of the winter apples that they grow, for instance, in western Ontario. Thousands of dollars have been expended in these parts of Canada in previous years in trying to grow these varieties which it was really impossible to grow. The farmers were, however, ignorant of the fact, and the result has been that thousands of dollars have been expended on trees which were not suitable for the sections of country where they were planted.

By Mr. Blain:

Q. What are those varieties?

A. I might mention Northern Spy, Baldwin, King and Greening. Those are the kinds that I have in mind. There is a vast territory extending, say from the city of Kingston east to New Brunswick and north to as far as you wish to go in Ontario,

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where these kinds do not succeed well. As I say, there was no very reliable information available and much money was spent in testing those apples, and different kinds of pears, plums and cherries that we find from experience it is not possible to grow.

By Mr. Martin (P.E.I.):

Q. What varieties would you recommend for growing in the maritime provinces?

A. I did not propose to discuss the varieties of fruits this morning, but I may say offhand the varieties that have proved best in the past in the most favoured parts of Nova Scotia are the Gravenstein, Blenheim, Ribston, Greening, Baldwin, Northern Spy, Golden Russett and the Roxbury Russett or Nonpareil. The Stark is also doing well.

Q. What about the Baxter?

A. The Baxter is doing well in Prince Edward Island. It is one of the most profitable apples grown in that province, but in the Annapolis valley, Nova Scotia, they would be considered a rather coarse apple. I make that statement without any reflection upon Prince Edward Island, which is more or less like parts of New Brunswick and Nova Scotia, where the best winter apples are more uncertain than they are in the Annapolis valley and most favourable sections.

Q. New Brunswick is very much colder than the cold parts of Prince Edward Island?

A. I am speaking of some parts of New Brunswick with which I am familiar, the lower part of the St. John valley. On Prince Edward Island they can grow the Northern Spy and the King with good success, but they are finding that it is more profitable for them to grow the hardier kinds of winter apples, such as we grow here, like the Baxter, for instance, the Wealthy, which is a winter apple there, the Wolf River, the Golden Russett and a few other kinds. They find it is more profitable to grow those varieties and others than the more tender kinds, because they will stand better the climatic changes.

By Mr. Sinclair:

Q. Can you account for the fact that the Gravenstein appears to be disappearing in the Annapolis valley?

A. There are two or three reasons for that. One reason is, that during the time when the Gravenstein apple is in season there is a great glut of fruit on the English market, and the result is that fruit growers are going more into the cultivation of varieties that keep longer and are easier handled. Another reason is there has been a so-called disease affecting the Gravenstein in Nova Scotia called the Collar Rot. From investigations I have made I believe this disease is more of a physiological injury than a disease caused by the late growing of the Gravenstein. In parts of Nova Scotia the fruit growers grow very large quantities of Gravensteins, but they are allowed to grow too late, in my judgment, and the result is when there is a very severe frost in the late autumn the bark separates from the tree very near the ground. We find in the case of our young trees if there is a late growth the bark will separate from the tree near the ground owing to the freezing and thawing of the sap. In that way the tree suffers and very often dies. That has been overcome now I think by stopping cultivation a little earlier in the season. On sod ground it has not been so injurious, where the trees stop growth earlier.

Another line of work has been the testing of different methods of cultivation, grafting, spraying and so forth.

APPLES ORIGINATED AT THE CENTRAL EXPERIMENTAL FARM.

Then we have been originating a great many varieties of apples, not the apples which Dr. Saunders has told you about, for the Canadian northwest, because our work is not meant to lie in the far west; but we are originating apples especially for the

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provinces of Ontario and Quebec. Our department is supposed to be confined to the provinces of Ontario and Quebec, although our correspondence covers the whole Dominion. We get almost as many letters, I think, from British Columbia as from any other province outside of Ontario and Quebec. We are working for a hardy winter apple of fair size, fine appearance and good quality. We are anxious to get apples which will compare in quality with the Northern Spy, the King, the Greening and other varieties. All of you know, I am sure, that these apples originated in the United States. The Northern Spy originated there, also the Baldwin, King, Greening, and practically all of our best winter apples. The reason they originated in the adjoining Republic is not because Canada cannot produce a winter apple. The reason is that the United States was further advanced in the early part of the nineteenth century than Canada was. Nurseries were established in that country and these apples were found out and propagated by the nurserymen and sold to farmers and fruit growers in not only the United States but also in Canada, and as a result we have them. But the difficulty is that these apples succeed only over a comparatively limited area in Canada. In Ontario they succeed, say from Kingston west and south to the Great Lakes and Georgian Bay. But taking the great central part of Ontario, from 20 to 30 miles north of Kingston, the northern parts of Ontario, all eastern Ontario, all of the province of Quebec, the province of New Brunswick, and certain parts of the provinces of Nova Scotia and Prince Edward Island, we have not got really a hardy winter apple that will compare with these best varieties in quality. But there is no reason, in my judgment, why we should not have them, and we are working with that end in view.

To show you how parentage influence offspring I might say that about 1890 we got a lot of seed from the northern part of Russia thinking that it would be good stock for us to work upon in getting hardy trees. We grew 3,000 seedlings of apples alone from that stock, and out of that number we have only four that would compare favourably with our best named summer and autumn apples in this country, the reason being that the majority of the Russian apples are either summer kinds or else kinds that would be quite inferior to Canadian. The offspring of these Russian apples has therefore, on the whole not proved to be fruits which were fit for Canada. So we started in 1898 sowing the seed of our best apples which fruited at Ottawa, mostly of the hardier kinds, including Northern Spy, because we have had it fruit here, the McIntosh Red, the Fameuse, the Wealthy, the Golden Russet and a number of other kinds. We sowed the seed of these and we have got some very good seedlings, and we expect many more promising ones in the future. We have about 2,000 of these seedlings of apples alone, and about 200 of them have fruited. Of this number fully 25 per cent have been apples that we could not discard because we thought they were so promising that they would probably fill some want in apple culture in some parts of the country. For instance we have seedlings of the McIntosh, seedlings of the Wealthy, seedlings of the Scott's Winter, which is one of the hardiest winter apples we have, and seedlings of the Northern Spy, which I think will take a place in time with our best apples and will also mature at a season when we have not got good kinds. In addition to these we have seedlings of crossed apples. For instance, we crossed the McIntosh, which is one of our best early winter apples, with the Northern Spy, which is another good winter apple, with the idea of getting a hardy, later keeping apple, and the results will soon be known. Crosses between other varieties have already fruited, and there are some promising apples among them.

VARIETIES OF APPLES TO PLANT IN BEST APPLE DISTRICTS OF ONTARIO.

By Mr. Christie:

Q. In setting out an orchard what varieties of apples would you recommend the farmer to put out? I have in mind a farmer who contemplates devoting 50 acres to apple orchard next spring, and the locality is 15 miles north of Lake Ontario?

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A. This is one of the best apple districts. He should not plant a very large number of varieties, but enough to make the season long. For instance, it is wise, in my opinion, to plant more than one or two kinds where we have the limited amount of help that we have now, so as to extend for a longer time the picking season so that we can utilize the help we have, although too large a number is worse than too few, as we have too many kinds on the market. There are the Wealthy, the Alexander, Blenheim and McIntosh for the season up to early winter, leaving out the earlier good sorts such as Astrachan, Duchess and Gravenstein. Then for winter kinds, Greening, King and Hubbardston, Northern Spy, Baldwin and Stark.

By Mr. Caldwell:

Q. Would you put the Greening before the Spy?

A. The Greening comes earlier in the season.

By Mr. Kennedy:

Q. What about the Grimes Golden?

A. It is a fairly profitable apple in some parts of the country. It is sometimes not very handsome in appearance, as unless very clean it has a sort of russety surface which shows on account of the apple being of light colour.

By Mr. Caldwell:

Q. Do you consider the Spy as the best apple we have?

A. I consider it the best apple we have, but it takes a long time to come into bearing.

Q. It is a slow bearer?

A. A slow bearer. Does the Baldwin, Mr. Christie, succeed well with you?

Mr. CHRISTIE.—Very well, but the best growing apple is the Ben Davis.

A. We have hesitated to recommend the Ben Davis. It has proved one of the most profitable apples in past years, but we do not consider it will be a very profitable apple in the future, and for that reason we have not recommended the planting of the Ben Davis. We know that the farmers grow it any way and it is far better to recommend the planting of a larger proportion of the better trees, and a small proportion of the Ben Davis, if any.

DISTANCE APART TO PLANT APPLE TREES; SOIL; CULTIVATION.

By Mr. Lewis:

Q. At what distance apart should they be planted in your judgment?

A. About 33 feet apart over the best parts of Ontario, but for eastern Ontario what we recommend is this: Planting permanent trees 36 feet apart each way and having trees like the Wealthy and the Duchess between them with an additional row. This makes the trees when planted 18 feet apart each way. By that plan you can grow trees from 18 to 20 years by which time you have got a very profitable return from the Wealthy and Duchess and then they can be cut out.

Q. Those do not live as long as the permanent trees?

A. They do not live as long.

Q. What about cultivation while growing?

A. We find it pays well to cultivate, but in some soils, where there is lots of moisture, you will sometimes get good results in sod. Unfortunately it is not the rule that one gets good results. A great many farmers and fruit growers have allowed their orchards to remain in sod, and the result last year was that owing to the dry season the crop of apples was one of the worst that was ever shipped out of Canada,

for the reason that the apples were small. If the orchards had been cultivated as they should have been, the apples would have been of much better size.

Q. You are referring to the sod when you say that it was one of the worst crops we ever had?

A. Yes, that was the result owing to the orchards being in sod. The colour of the apples, however, is a little better than in cultivated ground.

By Mr. Pickup:

Q. And they last better?

A. And they last better, if picked in good time.

By Mr. Lewis:

Q. Does not the sod strengthen the growth of the tree?

A. If there is no hay taken off the soil is little exhausted by the grass, but not improved unless there is clover or other leguminous plants growing there. There is no plant food removed from the soil by the grass being there; it goes back as the grass rots. But what happens is this: There is a tremendous evaporation from the grass in summer. Take a season like last year when we wanted all the rain that we could get. That grass was preventing the rain from getting into the soil, and it was also transpiring a great amount of moisture from the leaves, and as a result the fruit suffered.

Q. What class of soil is the best for the apples of which you have been speaking?

A. We prefer a heavy sandy loam soil well drained.

Q. My reason for asking that is that in the section from which I come in the county of Huron the best apples seem to grow on sandy soil. Around the township of Goderich there is a good deal of land that is considered to be worth very little and there they have the best orchards?

A. It is like everything else, the further north you go in the apple districts the warmer the soil must be and the better drained. Of course, Lake Huron is not what you would call a northern district, although it is fairly well north. In certain sections of Ontario they grow good apples on clay soil. In Eastern Ontario you could not attempt to grow apples for any length of time on the clay soil. The warmer soils are these poorer soils you spoke of and that is why the trees do better. Farther south the trees do well in clay soil, because the climate is warmer, and they will succeed better. The farther north you go the warmer the soil must be, and in this district we find that a gravelly sub-soil is the best.

Q. What is the best apple growing county in Canada?

A. I would not like to say that.

Q. I think we have 15,000 more apple trees in the county of Huron than in any other county?

A. Each district has its own advantages and I should not like to say which is the best. For instance, in the extreme east, in the Annapolis valley, the people have the advantage of being near the sea-board and can ship their apples in better condition than can the growers in the interior of the country. There it takes a longer time to go to the sea-board, and they do not get the same advantage though they might produce as good apples. Each district has its advantages and disadvantages and the growers are gradually learning how to profit from local conditions. In connection with our work in raising seedlings and cross-bred apples, I would like to give you some idea of the kind of work we do in keeping the record of them. I have already stated that out of 3,000 Russian seedlings only four were propagated which are likely to be useful in the central part of Canada. The others which we have will probably be useful in the Northwest. In the case of the other seedlings, of which about 25 per cent are proving really desirable apples, we keep a record of them all. This is the kind of card upon which the record is entered (exhibiting card.) When the fruit

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is harvested in the orchard I bring samples into my office. I have these cards and I tear them off the book so that I can keep a record of them alphabetically. This card gives the record of McIntosh seedling, row 22.

By Mr. Wright (Renfrew):

Q. Is that the record of one tree?

A. That is the record of one tree. This is what it says:—

EXAMPLE OF DESCRIPTIVE RECORD KEPT OF APPLES ORIGINATED AT THE CENTRAL EXPERIMENTAL FARM.

Apples. McIntosh seedling, R. 22, T. 2.

Fruit: Below medium to medium in size; roundish; cavity open, shallow to medium; stem medium length, moderately stout; basin narrow, medium depth, wrinkled; calyx closed; colour pale greenish-yellow greenish about cavity, washed with dark crimson; dots few, small, indistinct; bloom bluish; skin moderately thick, tough; flesh white, crispy, juicy; core medium, open; flavour subacid, pleasant, not high, Fameuse-like; quality good; season probably November to January.

Propagate some of this. If a better keeper than Fameuse or McIntosh may be useful. Resembles both McIntosh and Fameuse in outside appearance. Flesh and flavour markedly Fameuse-like.

This information is taken from my 1907 notes. This year when that tree fruits I will take out this card and compare my notes of 1907 with my notes of 1908, and if they will compare favourably I will mark down in a corner underneath 'confirmed.' Or if there are some changes to be made I make the change on the card. Thus we have a fairly accurate record of the fruit.

By Mr. Lewis:

Q. Do you distribute any seedlings?

A. We have been very conservative about recommending new kinds for this reason: Take a tree like that it may look well as a seedling grown from the seed, yet if we were to graft it on another tree it is just possible it might prove a weak grower, might be subject to sunscald or blight or something of that kind. Therefore, we prefer to wait until we graft scions on the roots of another tree and the tree grows and fruits. We have distributed a few of these to people interested in experiments, but we do not believe in recommending our seedlings or other new varieties for general planting before they are fully tested. There are a great many varieties of apples on the market already and we do not want to distribute anything that might be of a doubtful character.

Q. Does your branch cover small fruits too?

A. Yes, raspberries, currants, gooseberries, strawberries and vegetables.

Q. Do you distribute any of those?

A. We have distributed some, especially to northern sections, but we do not as a rule do so unless they cannot be obtained readily from nurserymen, for the reason, as you can easily understand, that the nurserymen would soon be opposed to that kind of thing and we do not wish to injure their business. We distributed some seedling currants this spring because they were new and we wanted to have them tested in a few places.

Q. Is it easier to propagate those small fruits from seed?

A. It is easier to propagate them from cuttings; that is, currants and gooseberries.

Q. But you can propagate from seed?

A. Yes, but they do not come true; each seed produces a different kind of plant. For instance, this McIntosh seedling which I have been referring to. You will notice

that it resembles the McIntosh and Fameuse somewhat in appearance. We find that although each seed produces a different variety yet it will often resemble the parent more or less. The McIntosh was a seedling of the Fameuse and we find that some of the McIntosh seedlings resemble the Fameuse or the McIntosh to a greater or less extent; the seedlings of the Wealthy resemble the Wealthy and so on; but none of them are identical; they are all different.

By Mr. Christie:

Q. Would you recommend a farmer living five miles from the railway to put out a fall apple?

A. Are you speaking of a farmer's orchard or the orchard of a man who is making apple growing a speciality?

By Mr. Christie:

Q. Let me give you a buyer's experience. A buyer told me he would rather give a dollar a barrel for a fall apple that was grown within a mile of a railway station than 50 cents for one that had to be drawn five miles?

A. There is a good deal in that?

By Mr. Caldwell:

Q. In our part of the country summer and fall apples are grown. They have found difficulty in growing the Northern Spy and the result is we have not yet produced a good winter apple in the district?

A. There are places where men are making a speciality of winter kinds. Other growers make nearly as much money from growing summer and fall apples and shipping them to the old country and the Northwest as they can out of winter apples, that is if they ship them properly.

By Mr. Christie:

Q. The buyer to whom I referred states that drawing apples five miles injures them greatly?

A. It does injure summer apples; they have to be handled much more carefully than the others. If you are speaking of a man who is a farmer as well as fruit grower I should not recommend him to plant the earlier varieties. The Wealthy comes in late enough any way and will keep until November in some parts of Ontario. The Stark is a profitable winter variety.

Q. Is that a shy bearer too?

A. No, a very heavy bearer.

If there are any other questions upon which you would like information I shall be glad to reply. There is much more material in connection with our department that I can give you if there is any special phase of the work that you would like me to speak upon. Let me repeat again that this question of raising Canadian apples is a very hopeful one. Just to give you an idea of the Canadian apples that we have. There is the Fameuse, for instance, considered by some to be the best apple of its season in the world. There is the McIntosh, a seedling of the Fameuse, which a great many people think is better than the Fameuse. These are both Canadian apples. There is the Baxter apple, which Mr. Martin spoke of, which originated near Brockville. It is one of the handsomest apples that we have. It lacks flavour and is rather coarse in flesh, but it sells well in the Old Country. It looks so much like the King that it has been taken for that variety. The Baxter will keep well on into the winter. Those are three Canadian apples. Then we have a Canadian apple which is a cross between the Northern Spy and the Wagener the Ontario. It is proving profitable to some growers and is very much like the Spy.

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By Mr. Schell (Oxford):

Q. The wood of that tree is very poor?

A. The tree is not a very good grower it is true, but this tree can be used as a filler between other trees; it bears earlier. It shows bruises sooner than the Spy.

Q. I should think it would be a mistake to advertise it?

A. We do not recommend it very much for growing. These are some of our Canadian apples and there are and will be others. Take the two that are of about equal quality, the McIntosh and Fameuse, and there is no reason why we should not get some as good which will keep longer. We are getting now apples which are nearly equal in quality to those varieties and as handsome in appearance. We believe that Canada can produce just as good apples as any other place in the world.

By Mr. Lewis:

Q. You say that the seed of an apple will not produce fruit of the same quality as the parent tree?

A. No.

Q. That is invariably the case?

A. Invariably the case.

Q. If you want an orchard of Northern Spy how do you produce them?

A. In order to produce an orchard of Spy it is necessary to take wood of a previous season's growth. These are called scions. You take scions of perhaps that length or longer (illustrating) off the tree and they are cut down afterwards. First of all we believe in taking them from the heaviest bearing trees. We have been carrying on experiments for years at the experimental farm and we find that some trees of the same variety will bear from two to three times as much fruit in a given time as others of the same age. So we believe in taking our scions from the trees which have had the best records just the same as you would select your calves from cows of the best record or poultry men would take eggs from hens of the best record from which to hatch their chickens. We find that apple trees have individuality in just the same way, and so we take these scions or cuttings from the trees that have the best record. These are taken in the fall or winter and are stored in leaves or moss until about the month of February. Then you take the little roots which you have dug in the fall and graft these scions on the roots. The process is described in detail in one of my reports, and I will be very glad to insert it in this evidence.

PROPAGATION BY GRAFTING AND BUDDING.

When a good variety has been originated, more trees of it are usually wanted, and the process of increasing the number is called propagation. Plants which come true from seed, are, as a rule, increased by growing them from the seed; but as a variety of apple cannot be reproduced in that way, other methods must be adopted, and recourse is had to grafting and budding. There are other methods of propagation, but these are what are usually adopted in this country. In grafting the apple, the name scion is given to a cutting of wood of the variety that it is desired to propagate. The stock is the tree or portion of the tree, be it young or old, that the scion is to be, or it, united with. As it is only through the stock that the scion can produce the sap which nourishes it, at least for a time, the former must be furnished with roots.

Stocks.—Some kinds of fruits may be grafted successfully on others which are closely related to them botanically, such as the pear on the quince; but there is nothing so satisfactory to graft the apple on as the apple, and, under certain circumstances, the crab apple.

Although the stock and scions are united by the process called grafting, both of them retain almost entirely their individual characteristics. The stock does, however, modify the vigour and fruitfulness of the variety grafted on it. If a variety is grafted

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on a dwarf or slower growing tree than itself the result is that the stock tends to dwarf it, as a sufficient quantity of crude sap does not pass through it to maintain the natural vigour of the top; and as a lessening in vigour tends to the development of fruit buds, this kind of stock is often used for the purpose of inducing fruitfulness in a variety and for dwarfing the tree. The Paradise stock of Europe is an example of this kind of stock. There is, however, often such a difference in the growth of the stock and the variety grafted on it that the result is not satisfactory. It is quite possible that the stock may have the effect of making the tree hardier, as if growth is checked the wood may ripen better; although the results obtained by top-grafting 92 varieties at the Central Experimental Farm on hardy stocks showed that there was not a sufficient increase in the hardiness of tender varieties to enable them to withstand a test winter. In top-grafting trees, great care should be taken that the stock is a vigorous growing variety, as, if it is not, the union may be bad, or the top outgrow it and the tree will become top heavy and finally break down. While good results have been obtained by top-grafting on crab apple stock, it is not very satisfactory and should not be used unless in exceptional cases, as the union is often bad or the grafted part outgrows the scion. Some of the best varieties for stock on which to top-graft are McMahan, Hibernian and Haas, and Tolman in the best apple districts.

Dwarf or slow-growing stocks are not recommended for use in any but the coldest parts of the country; although experiments with Paradise and Doucin stocks have shown that good results can be obtained with some varieties by their use in the best apple districts, at least for a time. The stocks used in root grafting and budding in the districts where the best apples can be raised successfully are usually obtained from apple seeds which are procured at cider mills or anywhere else where they can be got easily and in large quantities, and no pains are taken to learn what varieties produced the seeds. Stocks grown from this kind of seed, while quite satisfactory as a rule, are not desirable in the coldest parts of the country where root-killing is liable to occur, as individual trees vary much in hardiness, and one might graft a hardy variety on a tender stock without knowing it. At Ottawa, what stocks are required for root-grafting are usually grown from seeds of the Martha and other hardy vigorous crabs. Seeds from the hardiest varieties of both apples and crab apples are more likely to produce hardy stocks than if seeds were obtained promiscuously.

For the very coldest parts of Canada where the apple can be grown at all, the berried crab, *Pyrus baccata*, will probably make the most satisfactory stock for root-grafting or budding. It is perfectly hardy at Indian Head, N.W.T., where the winters are very severe, having endured the climate there. The seeds from which the stocks are to be grown for root-grafting or budding should be treated in the manner already described under the heading 'Seedling Varieties.' It is important to cultivate the young trees thoroughly the first season if it is desired to use them for root-grafting during the following winter. Only the strongest should be used for this purpose, and the others left to grow for another season, when they may be used for budding, if propagation is done that way, or for root-grafting as before. They will not be large enough for budding the first season. If it is known that a hardy variety is growing on its own roots, hardy stocks may be obtained if pieces of the roots are cut off and scions grafted on them.

There are many of the best apples which will not succeed in certain parts of Ontario and Quebec when grown in the ordinary way, as they are either root-killed, or sun-scalded so badly that they die from the effect of it. Experiments conducted at the Central Experiment Farm go to prove that by top-grafting these varieties on hardy stocks some will grow well and produce fruit of fine appearance and quality for a time, but when a test winter comes they succumb. To obtain these stocks it is necessary, first of all, to have hardy roots. This may be effected to a large extent by raising seedlings from the very hardiest apples or crab apples. A variety is then grafted or budded on them, which forms a straight, clean trunk which does not sun-scald, and on this variety is top-grafted the kind that does not succeed when grown

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in the ordinary way. The surest way, however, of obtaining hardy stocks is to grow the hardy varieties on their own roots as explained in the paragraph on root-grafting.

SCIONS.

As much of the success in grafting depends on the condition and quality of the scions, too much stress cannot be laid on the importance of having them of the best quality and in the best condition at the time of grafting.

Scions may be cut any time after the wood is well ripened in the autumn and before the buds begin to swell in the spring. The best time, however, is in the autumn, as they may then be kept in the condition desired, although scions which are not kept in good condition all winter are not as good as those cut from the tree early in spring and grafted at once.

If they are cut in cold weather, in winter, there is less sap in the scions at the time, and thus the chance of their drying up is greater than if they were cut in the autumn. One cannot tell very well, either, in winter, whether the young wood has been injured or not. Scions should be cut from healthy, bearing trees. The wood of old trees is liable to be diseased, and if diseased wood is used it is likely to produce a diseased tree when grafted. Scions should also be cut from the most productive trees. Occasionally, one or more trees of a variety will produce more and heavier crops than the others. If scions are taken from these trees, the probability is that a larger proportion of the grafted trees will produce crops like the trees from which the scions were taken than they otherwise would. The scions should be cut from the wood of the current season's growth, as older wood is not satisfactory. The buds should be well developed and the wood thoroughly ripened. It is not wise to use the water sprouts or young shoots which spring from the main branches or trunk for this purpose. They may not be thoroughly ripened, and it is also possible that sprouting propensities may be thus more developed in the grafted trees. The entire season's growth may be cut off and packed away until required for grafting, when it should be cut into pieces from four to six inches in length having three well developed buds.

Scions may be kept in good condition in moss, saw-dust, sand, or forest leaves. The last named are found very satisfactory at Ottawa. These materials should be slightly moist, but not wet; the object being to keep the scions fresh and plump without there being any danger of their rotting. They should be kept in a cool cellar which is not too dry, and should remain dormant until ready for use.

Root-Grafting.—The cheapest and one of the best methods of propagating apples, especially in Canada, is by root-grafting. The strongest of the young stocks which have been grown in the manner already described are heeled in during the autumn in a cool cellar in moist sand. Grafting may be done any time during the winter, but it is usually not started until January or February.

At Ottawa, the best success has been obtained when grafting was done early in February. By grafting early the wound has time to callus well before the grafts are planted out, which is important. Whip or tongue-grafting is the method usually employed. As only the root is required, the trunk and branches are cut off and thrown away. As there is but little advantage in using the whole root, it may be divided into several pieces, much depending on its size. Each piece should be at least four inches long. A smooth, sloping cut upwards, about two inches long, is made across the main part of the root most suited to receive the scion. The scion is prepared by cutting off a piece of the wood procured for the purpose in the autumn from four to six inches long and with about three well developed buds on it; a smooth, sloping cut downwards and across it is now made of about the same length as that already made on the stock. Clefts are now made in the sloping surface of both scion and stock, in the former, upwards; and in the latter, downwards. They are then joined together by forcing the tongue of the scion into the cleft of the stock. The inner bark or cambium, of both scion and stock should be in contact with one another on

at least one side of the graft, as it is at this point of contact where the union begins to take place. In order to ensure a speedy and successful union, waxed cotton thread is wound tightly around to hold the parts together. Amateurs are also advised to rub grafting wax all over where the two parts are joined, as with this treatment success is likely to be more certain.

The operation having been completed, the grafts are packed away in moss or sawdust until spring. They are then planted out in nursery rows about three feet apart and one foot apart in the rows, the point of union being about three inches below the surface of the soil. The ground should then be kept thoroughly cultivated throughout the season. Some varieties of apples throw out roots quite readily from the scion and after a time they thus become practically on their own roots. If it is desired to have a variety on its own roots, a scion from eight to twelve inches long may be used and the graft planted deep in the nursery row, only leaving one bud of the scion above the surface of the ground. Roots will then be thrown out on the scion, and when the tree is dug the stock may be cut away, and the tree will then be on its own roots. Or, on the other hand, a piece of root from a tree of the same variety as the scion may be used as the stock.

Crown-grafting. Crown-grafting is usually done on young stocks in the nursery row in the spring. The trees are cut at or just beneath the surface of the soil at the crown or collar. A sloping cleft is then made in the side of the crown, and a scion, cut wedge-shape at the lower end, is inserted in the cleft. The same precautions should be observed as in root-grafting, of having the inner bark of both stock and scion touching on at least one side. The grafted part should then be well covered with grafting wax, in order to exclude the air. The trees usually make a strong growth when grafted in this way, but as the work has to be done in April before growth begins it is often inconvenient to do it at that busy season of the year.

Top-grafting. Where there are trees which produce poor or unprofitable fruit they may be made to bear good fruit by top-grafting other varieties upon them. If it is desired to grow a variety which, when grown in the ordinary way, proves a failure, on account of root-killing or sun-scalding, it is possible to grow it successfully by top-grafting. Varieties which ordinarily take a long time to come into bearing will fruit much sooner when top-grafted. These are some of the most important results which may be obtained by this method.

Up to the present time in Canada, top-grafting has usually been done on old or bearing trees which produce poor fruit, and as very satisfactory results have been obtained, this practice will continue to be popular.

The work is done in the spring before growth begins, but it is possible to graft successfully even when the trees are coming into leaf, provided the scion is quite dormant, but the chances of success are much lessened if it is done late. As the shock to a large tree would be very great if all or nearly all of the branches on which the leaves develop were cut off the first season, from three to four years should be devoted to removing the top of the tree. If, however, a large number of scions are inserted, the top may be changed in less time, but, as a rule, it is not wise to do it in less than three years. Furthermore, a too severe pruning at one time will cause a large number of shoots to grow on the tree, and considerable labour will be involved in removing them if many trees are grafted. Cleft-grafting is usually adopted in top-working trees, it being a simple and satisfactory method.

The branches to be grafted should not exceed an inch and a half or two inches in diameter. If they are larger it is so long before the stub heals over that disease may set in. It is possible, however, to graft larger branches by putting in more scions. The top-grafting of a large tree should be done with a view to having the new top as symmetrical as possible, and great care should be taken in selecting the branches to be grafted upon. After the branch is sawn off, it is cleft by means of a mallet and strong knife to the depth of an inch and a half to two inches. It is held open to receive the scion by driving a wedge into it. Scions for use in top-grafting

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are cut from dormant wood which has been kept in good condition in the manner already described, or from wood taken from the tree before the buds swell in the spring. They should have about three strong buds and be cut wedge-shape at the base, one side, however, being a little thicker than the other. Two scions are now inserted in the cleft of the stub, with the wide side of the edge on the outside, and thrust down until the lowest bud is almost on a line with the edge of the stub. The inner bark of both scion and stub should meet at some point, so that the union will take place readily, and this is more easily effected if the scion is given a slightly outward slope when inserted. When the wedge has been withdrawn from the cleft the advantage of having the wedge-shaped end of the scion thicker on one side will be apparent, as it will be held much more tightly than if both sides were the same. If the scion is not a tight fit all along, there is something wrong in the way it has been cut or the stub has been cleft. The cut parts should now be covered with grafting wax to exclude the air and hold the scion in place. Cotton is also sometimes wrapped around the wax in order to more effectively hold the scion in place. If both of the scions grafted on a stub should grow, the weaker one should be removed after the other is well united and the surface of the stub at least partially healed over.

It is often desirable to top-graft young trees, and this may be done very readily. The main branches are cut back to within a short distance of the trunk, and the scions grafted on, either by cleft or whip-grafting. The closer the grafted part is to the trunk, the better, as the tree will be stronger than if the union occurred further out on the limb, since the growth of graft and scion may not be equal. It is well, however, to have one bud left on the stub so that in case the grafting is not successful a new shoot can readily start. Otherwise the stub may die back to the trunk. It is possible to cut off the whole top of the tree and graft successfully on the main trunk, when the tree is young, but unless one is sure that the union will be perfect and the top not outgrow the stock, it is better not to run the risk of losing the tree. Furthermore, if the whole top is cut off there will be such a growth the first season that the scions are liable to get broken off. In top-grafting a young tree that has been planted from three to five years, it is better to take two seasons to do the work, as the results will, as a rule, be more satisfactory.

It is necessary to examine the grafted trees during the summer and remove any young shoots from the stocks which are interfering with the scions. It is not wise however, especially when the tree has been cut back severely for grafting, to remove all the shoots until the grafts have grown considerably and furnish a good leaf surface. In the chapter on stocks, reference was made to the top-grafting of tender varieties on hardy stocks, in order to make the former hardier. The trees should be double worked as described there, planted out in the orchard, and when large enough, which will be in two or three years, top-grafted with the tender sorts.

In 1896, trees of McMahan, Gideon, Haas and Hibernial apples were planted in the orchards at the Central Experimental Farm. These are all very hardy, strong-growing varieties, which do not sunscald at Ottawa and which are fine, straight-trunked trees. They were grafted on hardy roots. In 1898 the work of top-grafting these with varieties that are not perfectly hardy was begun, and continued until 92 kinds had been tested. These included: Baldwin, Belle de Boskoop, Benoni, Domine, Early Harvest, Esopus, Spitzenburg, Fallawater, Keswick Codlin, King of Tompkins Co., Mother, Newtown Pippin, Northern Spy, Ontario, Rhode Island Greening, Roma Beauty, Sutton Beauty, Wagener, Winesap and York Imperial. Few of these varieties can be grown successfully at Ottawa as standard trees. Top-grafted, they endured several winters, but the severe winter of 1903-4 killed practically all of them, thus demonstrating the inability of hardy stocks to make tender varieties hardy enough to withstand test winters. The following experience had warranted the hope that the results would have been otherwise:—

In 1891, a tree of Duchess and two trees of Wealthy were top-grafted with Northern Spy, which will not live at Ottawa when grown as a standard tree. All of these

fruited in 1897. The grafts on Duchess produced fruit in 1897 and 1899, and those on Wealthy in 1897 and 1898. The wood of the Northern Spy appeared quite hardy until the winter of 1903-4, when this variety was killed, while the stocks on which it was grafted remained alive.

Budding.—Although grafting is a much more common method of propagating apples than budding, the latter has some advantages over the former and can also be done at a time when grafting could not be performed successfully.

The best season for budding the apple is in late summer, some time during August being the best time for Ontario and Quebec. Young stocks of the first or second season's growth from seed are generally used. The process of budding adopted for apples consists of inserting a bud with very little or no wood, under the bark of the stock and on the surface of its wood. It is called shield-budding.

Budding is best performed when there is still sufficient sap beneath the bark to permit of the latter being easily raised with a knife. On the other hand, if the work is done when the tree is still growing vigorously the bud is liable to be 'drowned out,' or, in other words, forced out by reason of too much sap and growth of the stock.

The stock which is to receive the bud should be at least three-eighths of an inch in diameter near the ground. The lower leaves are rubbed off to a height of five or six inches to enable the bud to work more freely. A perpendicular cut is now made in the stock as near the ground as possible from an inch to an inch and a half long and preferably on the north side of the tree, as the bud will not be so readily dried out by the sun on that side. The cut should only extend through the bark. Another cut should now be made across the top of the perpendicular one. The two cuts when made will appear thus:— T

The buds are cut from well developed or nearly mature shoots of the current season's growth of the variety it is desired to propagate. Before the buds are removed the leaves should be cut off the shoots; a piece of the petiole or leaf stem is left, however, by which the bud may be handled after it has been removed. A very sharp, thin-bladed knife is necessary in removing the bud. Knives are specially made for this purpose. The bud is cut off the shoot downwards or upwards, whichever is most convenient, the general practice, however, is to cut upwards. The length of the piece removed with the bud should be about one inch long, and the cut surface smooth. It should be quite thin, as but little of the wood is taken with the bud. The buds or twigs should be kept where they will not dry out while the work of budding is going on. The bud is inserted under the bark by raising the latter with the blade of the knife or the part of the budding knife made for that purpose. The bud is then pushed down and under the bark with the fingers, and finally the piece of leaf stalk which was left when it was removed from the twig is pressed with the blade of the knife to bring the bud into the proper position. The bark on each side of the bud, which should now be under the bark of the stock will hold it in position. In order to bring the bud and stock into close contact and prevent the former from drying up before the union takes place, they should be tied together with raffia or some soft string, taking care not to cover the bud with it. The bud should unite with the stock in two or three weeks, and after that time the string should be cut, as otherwise the bud may be injured. If the proper season has been chosen for the work the bud should remain dormant until spring. If it starts in the autumn it may be killed during the winter. In the following spring the stock should be cut off just above the bud, which will cause all the strength of the stock to be directed into the bud and produce rapid growth, four feet and more not being an exceptional growth for the first season.

Budding is now a very popular method of propagating apples. The first season's growth is greater than from the root-grafted trees and there is a large proportion of straight-trunked trees by this method. If it is desired also to prevent trees from becoming on their own roots, budding is preferable, as trees propagated in this way

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may be planted so that the stock is just at the surface of the soil and all roots are thrown from it.

TOOLS AND APPLIANCES USED IN PRUNING AND GRAFTING.

While grafting implements and appliances are numerous, the work can be done with a few, and as it is not often convenient for the farmer or fruit grower to get a large outfit, only the really necessary things are mentioned. These are:—A sharp, fine-toothed handsaw, to be used for sawing off large limbs, or for making the stubs on trees to be top-grafted. Unless in the hands of a careful man, a saw with one edge is better than one with two, as the upper one is liable to tear the wood above.

A strong pruning knife for cutting the smaller limbs; for smoothing the wounds made by the saw or pruning shears; for trimming off torn edges of branches, and for pruning roots of young trees when planting.

A budding knife, with a thin steel blade, for removing buds, having an ivory handle which is made thin at the end and is used for raising the bark.

A grafting knife, which is used in top-grafting trees. Home-made grafting knives can be easily made. A strong, sharp blade is the chief requisite.

Pruning shears, which are intermediate in their uses between the saw and the pruning knife. They are used for cutting off branches which are too large for the latter and too small to need the saw; for rough pruning and for cutting scions.

A wedge and mallet are also necessary in top-grafting large trees.

Raffia is one of the best tying materials. It is very strong and very pliable and is particularly useful for bandaging when budding.

Cotton yarn, which is used for tying root grafts, is one of the most satisfactory materials for the purpose. The size known as No. 18 knitting cotton is the best. It is bought in balls, which should be soaked for a few minutes in melted grafting wax before using. The yarn may also be drawn through melted wax, which ensures it all being thoroughly soaked, and is, perhaps, on this account preferable to soaking the ball.

There are many kinds of grafting wax recommended, but it is unnecessary to enumerate them all. One of the cheapest and best is that recommended in *The Horticulturist's Rule Book* under the name 'Reliable Wax,' the receipt of which is as follows:—

Reliable Wax.—Resin, 4 parts, by weight; beeswax, 2 parts; tallow, 1 part. Melt together and pour into a pail of cold water. Then grease the hands and pull the wax until it is nearly white. One of the best waxes for either indoor or outdoor use.' This should be heated before using if too hard.

The principal value of grafting wax is to exclude air from the wound, and thus prevent the wood from drying before a union takes place. A good grafting wax should not crack when on the tree, else the air will reach the wound and the wax prove of little value. Many materials may be used instead of grafting wax for this purpose, one of the simplest being a mixture of clay and cow dung, but grafting wax is much to be preferred. Strips of cotton are often used, especially in top-grafting and crown-grafting, for wrapping around the wound after the wax has been applied, for the purpose of helping to exclude the air, and also to assist in holding the scion in position until the union takes place. This cotton is unnecessary if good grafting wax is used; but if a very valuable variety is grafted it is safer to use the cotton, as when the growth of the scion is rapid, there is a chance of its getting broken off during the first season before it is thoroughly united with the stock. Large wounds on trees should be covered with some material that will protect the cut surface from the weather, prevent disease from setting in, and which will not peel off easily. A good dressing of lead paint is probably the best material to use for this purpose. Grafting wax may be used on smaller branches.

THE NURSERY.

Although, as a rule, it will be the most convenient plan to buy trees from the professional nurseryman, yet he who propagates apple trees by root-grafting, crown-grafting, or budding, for his own use, should have a nursery in which to grow them until they are ready for the orchard. A good sandy loam soil, which does not bake and is well drained, is best suited for this purpose, and will grow the strong, healthy trees which are desired. The ground should be thoroughly prepared and the young trees planted about 12 inches apart, in rows from $2\frac{1}{2}$ to 3 feet apart. Cultivation should be thorough up to about the middle of July, when it should cease, as in colder climates, especially, it is very desirable that the wood ripen well, and late cultivation would encourage late growth. It will be necessary the first year the grafted or budded trees are growing in the nursery to go over them carefully and cut out any shoots which may be coming from the stock, and also to reduce the graft to one stem should more develop. If any side branches grow, however, they should be left intact. In small nurseries it is sometimes advisable to tie the young trees to stakes the first season. This will make them straighter and will help to keep them from being broken. These trees may be planted in the orchard the following spring if one-year-old trees are to be used. By the end of the second year or the beginning of the third, after the branches have been pruned to the proper height and the tops shaped, the trees will be in the best condition for planting in the orchard.

In nurseries in the colder districts the wood of yearling and sometimes two-year-old trees will kill back in winter. Unless injured wood is cut back to healthy wood in the spring, the trees are liable to become black-hearted. The practice with the best nurserymen in the north is to cut yearling trees back to near the ground in spring, thus ensuring a healthy trunk and a strong growth for that season.

Q. Do you use any wax?

A. We use wax, but it is not absolutely necessary. The advantage of the wax is that it will keep out the air and enable the wood to heal quicker around the edges; it prevents the wood from drying out around the edges. Then we place our roots in moss, say from the 1st March until this time of the year. By that time they are what we call calloused, that is, an excrescence has grown out around the wounded part and it has begun to heal over. When you put the roots into the ground it does not take very long to complete the healing process and at the end of the first season the wood is knitted together and you have a growth of 12 or 18 inches or more depending on the strength of the soil in your particular district, perhaps it may be 2 feet in some places. We had a growth in one year of about 5 or 6 feet of plums and cherries when grafted in the open.

By Mr. Schell (Oxford):

Q. Do the nurserymen graft their trees in that way?

A. Yes, that is one method employed by the nurserymen. There is another method called budding. It is done in the latter part of the summer. Where that is done the little trees are grown in rows in the nursery. A slit is made in the bark near the ground and a bud inserted and then it is tied with a piece of string. The tree and bud will knit together and the latter remains dormant until the next spring. Then it will shoot up and make a strong growth. The top is cut off in the early part of the season and you have the young trees from the bud.

By Mr. Blain:

Q. Is there anything new in the way of grafting?

A. In the grafting of apples?

Q. Yes?

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A. One line of work that we have been investigating a little is the best stocks on which to top graft; for instance, the Northern Spy. Although, as I said, we cannot grow the Northern Spy here for a great many years, we can grow it for a certain time. In the province of Ontario there have been a great many inferior varieties of apples planted during past years and fruit growers now are beginning to ask themselves: 'What can we do with these?' We naturally find that they would like to top graft the Northern Spy upon them because that variety, when the tree comes into bearing, is one of the most profitable and surest paying apples that we have. But, unfortunately, some stocks are too slow growing for the Northern Spy, and as a result, in our own experience, we find that after a few years the top of the Northern Spy, which is a very strong grower, retains its characteristics, and if you top graft the Northern Spy upon a poor grower, in a few years it will outgrow that stock and then, perhaps, there comes a big storm and the whole top breaks off. We have been trying to find out what are the best stocks on which to top graft the Northern Spy so that those who have those stocks can use them to the best advantage.

By Mr. Blain:

Q. Is there more grafting in the apple tree line than there was a few years ago or less?

A. I believe, on the whole, perhaps there is less, although there may be more in certain sections. I believe there is more top grafting in the best apple districts, but in the colder parts of the country there is more planting because the growers now know the hardy kinds to plant. Before, they thought that by top grafting the tender kinds on the crab stocks they had, because there were a great many crab apple trees planted, they would succeed better in that way; but our experience on the farm goes to show that the top grafting of tender kinds on hardy stocks does not perceptibly increase the hardiness of the tender kinds. We have tried about 90 varieties of the tender kinds, but they were killed out in a severe winter although top grafted on hardy stocks. Our experience was that the hardiness was not increased. We have found that the Tolman Sweet and McMahan White are very good stocks for the Northern Spy. It is also said to do well on the Ben Davis. We have been sending out letters lately and getting information from fruit growers throughout the country as to what stocks they have found to be the best for the Northern Spy, because if we knew that it would be a very good thing indeed. As a general rule it may be said that strong growing stocks are best for Northern Spy.

By Mr. Sinclair:

Q. Has any system been devised by which people could be sure when they buy Northern Spy from the dealer that they are getting the right variety? Is it possible that there could be some system of inspection at the nurseries so that the people would be protected in some way from the bogus varieties that are placed on the market? It seems to me that is the greatest trouble in the province of Nova Scotia, that people buy these trees from some nurserymen and grow them and wait for a number of years only to find out that they are no good?

A. There is a movement on foot to try and get an Act passed to compel the nurserymen to guarantee the trees true to name, but there are a great many difficulties in the way. It is very difficult for a nurseryman to be absolutely sure, where he has a large gang of men at work, that his trees are all perfectly true to name. I think that on the whole our nurserymen are now sending out trees true to name. Very often trees are bought in large lots. Perhaps they have not been sold by nurserymen direct to those who are going to plant them, but are handled by irresponsible individuals who very often will change the names of trees with the result that the trees they are sending out are not true to name. My advice would be to order direct from the

nurseryman, and in that way I believe you would get in nearly every case trees true to name. The matter is being looked into now, but it is a very difficult thing to pass any Act whereby the nurseryman would be compelled to guarantee his trees. Most of our nurserymen now, I hope all of them, are trying to send out their trees true to name.

By Mr. Pickup:

Q. You would have to depend upon the reputation of the nurseryman, I suppose?

A. Yes. What I think would be a good line for the nurseryman to follow would be this: It seems to me he could arrange to have a certain number of trees for sale, which he would guarantee, for a higher price. He might have a special department where he might have a limited number of these higher priced trees, and I believe there are men who would rather buy those trees.

HOW TO-CROSS VARIETIES OF FRUITS.

By Mr. Pickup:

Q. In crossing two different varieties what method do you pursue?

A. In crossing two different varieties we decide first of all on the kinds of fruits that we would like to use as parents. Those that have the greatest number of good points are usually chosen because, as a rule, we have found that the offsprings will combine most of the characteristics of the parents in some way or other. We will say that we would like to have a tree with a vigorous habit of growth. Just before the flowers open we take a little pair of tweezers, open the flowers and cut away the male organs or anthers. Then we apply the pollen which we have gathered from another tree to the female organs of the tree we are going to make the female parent, and the flowers of which we have already worked upon. The pollen is rubbed over the stigma with the finger, and then in order to prevent bees from bringing other pollen there the cluster of flowers worked upon is covered with a paper bag for a few days until the fruit is set. After the fruit is set a gauze bag is put on so that we are able to protect the fruit from any one who might break it off. That gauze bag is left over it until the fruit ripens. When the fruit ripens it is taken off, the seeds extracted and planted the same autumn. We find it is much preferable to plant apple seeds, either of crosses or seedlings, in the autumn, because they are softened during the winter and start very quickly in the spring. If they are planted in the fall in seed beds they will germinate by spring.

By Mr. Wright (Renfrew):

Q. When do you plant plum seeds?

A. Just as soon as the fruit is ripe. If sown when the stone becomes really dry it won't germinate at all. Cherries, plums and peaches should be planted as soon as they are ripe before the kernel becomes dry. You could not get even butternut or walnut to germinate after it has been dry all the winter.

By Mr. Lewis:

Q. If the stone is in the fruit will it do the same?

A. If the fruit or pulp remains on it that keeps it moist longer.

By Mr. Wright (Renfrew):

Q. You could not do that with the plum?

A. Plum pulp dries very quickly. It is different with an apple. Our apple seedlings are coming up now very quickly, that is the ones we planted last fall, so you

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see how early they will start. If we planted the seed now it would lie in the ground all summer and not germinate.

Q. In the case of plums do you take the seed out of the pulp?

A. Sometimes we do. It depends usually upon whether we have time or not.

Q. And do you cover it right over with soil?

A. Yes, cover it right over with soil about one inch in depth.

Q. At one time we had in the Ottawa valley plums of a very fine quality, but nowadays we hardly see any at all?

A. That is due to blight. The correct name is Spot or Blight of the Native Plums (*Cladosporium carpophilum*.)

Q. Was that due to bringing across that Russian plum, or some other variety, and experimenting with it so that we lost our own native type?

A. No, that is not the reason. Their disappearance is the effect of disease which which has spread all through the wild plum in this district. It can be prevented by spraying with Bordeaux mixture. We have an example of the benefit of that in the case of Mr. Carstesen, a grower at Billing's Bridge, who has 400 plum trees. I understand he sprays thoroughly with Bordeaux mixture and although the trees on the fence rows are useless, the rest of his trees are quite good.

Q. Is it true that by experimenting with a Japanese plum we ruined our own fruit?

A. No, it had no effect on our own fruit at all.

Q. That is the common statement?

A. There is nothing in it at all.

By Mr. Pickup:

Q. Some fruit trees blossom out and never produce any fruit. What would be the reason of that?

A. There are two or three reasons for that. For instance, cherries in this district—

Q. These are apple trees?

A. There are two or three reasons. The principal reason is that it has been found that some apple trees are self-sterile—that is, they are sterile if pollenized by their own pollen and it is necessary to have other trees that will furnish the pollen.

Q. I noticed in this orchard a few trees that will produce apples, but the balance have never produced?

A. Yet they bloom.

Q. Yes, they blossom very freely?

A. That is probably the reason.

Q. The idea would be to plant some other tree?

A. Yes.

POLLINATION OF APPLES.

It is now known that the cause of the unproductiveness of some varieties of apples when planted in large blocks by themselves is often due to either complete or partial self-sterility of the blossoms. It has also been found that varieties self-sterile in themselves will, if planted near each other, be cross-fertilized, if the two varieties bloom at the same time, and fruit will set on both kinds. As it has been found that a variety which is self-sterile in one locality is not necessarily so in another, it is impossible to give an accurate or complete list of those which are self-sterile and those which fertilize themselves. The relative blossoming periods of the different varieties of apples, however, are fairly regular in the provinces of Ontario and Quebec, and by planting those kinds which bloom about the same time it is not absolutely necessary to know whether a variety is self-sterile or not. For five years observations on the dates of blossoming of varieties of apples were made by persons in various

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parts of Canada for the horticultural division of the Central Experimental Farm. The data thus accumulated have been compiled and it is now possible to give the following list of apples, divided into three groups, according to the average time of blooming. While this division may not hold good in all parts of Canada, it will be found to be fairly correct on the whole.

EARLY GROUP.

Antonovka, Duchess, Early Harvest, Fameuse, Gravenstein, Gideon, Haas, Hurlbut, Longfield, Patten Greening, Red Astrachan, Scott Winter, Shiawassee, Tetofsky, Wagener, Scarlet Pippin—16 varieties.

MEDIUM GROUP.

Alexander, Baldwin, Baxter, Ben Davis, Blenheim Pippin, Canada Baldwin, Esopus (Spitzenburg), Fallawater, Fall Jenetting, Gano, Golden Russet (American), Hubbardston, Jonathan, Keswick, King, McIntosh, McMahan, Magog, Maiden Blush, Malinda, Mann, Newtown, Pippin, Peach, Pewaukee, Pomme Grise, Primate, Louise, Greening, Roxbury, St. Lawrence, Salome, Stark, Swaar, Swayzie, Wealthy, Winter St. Lawrence, Wolf River, Yellow Transparent, Ontario, Ribston, Colvert, Brockville, (Beauty)—42 varieties.

LATE GROUP.

Blue Pearmain, Cranberry Pippin, Grimes, Lawver, Northern Spy, Roseau, Tolman, Wallbridge, Westfield (Seek-no-Further), Yellow Bellflower—10 varieties.

For instance, the Northern Spy is a late bloomer and it has been found that wherever that tree is planted in solid blocks it does not bear nearly as well.

By Mr. Lewis:

Q. Would you advise planting late winter fruits or summer fruits next to each other?

A. You put the kinds together that bloom at the same time. We have got together records for five years containing information obtained from fruit growers all over the country giving the kinds of fruit which bloomed at the same time in each district. By means of this information, if you were going to put out an orchard we could tell you the varieties that bloom at the same time and those which do not—that is the early bloomers, the bloomers of mid season and the bloomers of late season.

Q. In the case of those that bloom at the same time would you put them alternately?

A. One row would pollenize perhaps three or four other rows. It is not necessary to put every other row of the same kind, although if there were an equal number of trees of each sort it could be done.

By Mr. Caldwell:

Q. Would that have any effect on the fruit?

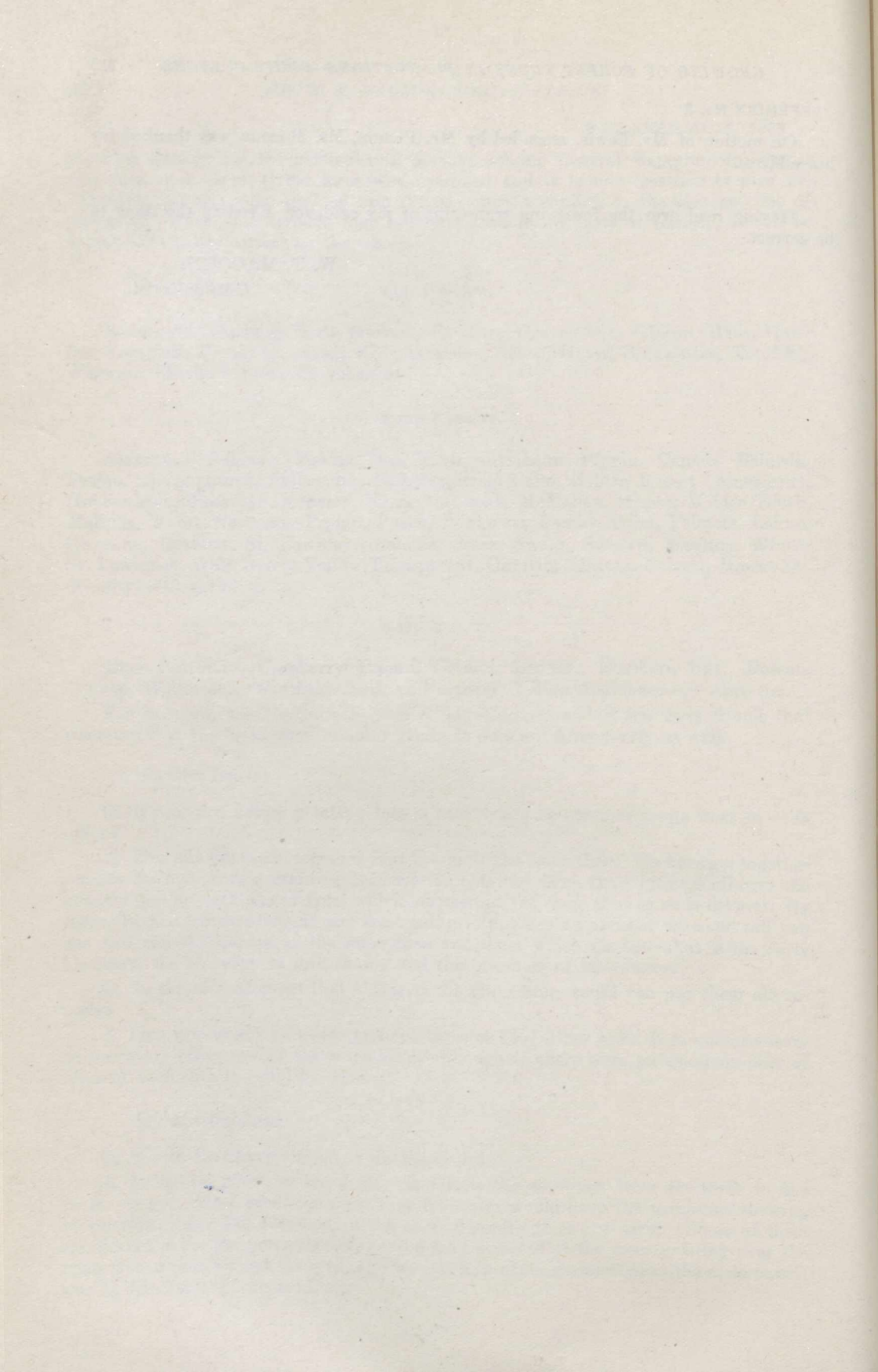
A. It has no effect on the fruit. It affects the seedlings from the seeds in the fruit. If you raised seedlings from that fruit you would have the parentage showing in the offspring. For instance, in the case of seedlings at the farm. Some of them we did not know the parentage of, but we kept a record of the trees growing near the trees from which we got the seed, and we can now often surmise what the male parent was by the fruit of the seedling.

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On motion of Mr. Lewis, seconded by Mr. Pickup, Mr. Macoun was thanked for his address.

Having read over the foregoing transcript of my evidence, I testify the same to be correct.

W. T. MACOUN,
Horticulturist.



THE EVIDENCE

PART II.

AGRICULTURE AND COLONIZATION

THE EVIDENCE

PART II

AGRICULTURE AND ORGANIZATION

CANADIAN IMMIGRATION.

HOUSE OF COMMONS,

COMMITTEE ROOM, No. 62,

Wednesday, April 29, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock, a.m., Mr. McKenzie, chairman, presiding.

THE CHAIRMAN.—As you will notice by the motion read from the minutes, it was decided at the last meeting that Mr. W. D. Scott, Superintendent of Immigration, be summoned to appear before the committee at its present meeting for examination on the subject of immigration into Canada. I am sorry that Mr. Monk, at whose instance Mr. Scott was summoned, is unable to be present to-day. This will necessitate, perhaps, some change in the arrangement made. Had Mr. Monk been able to be present he would have conducted Mr. Scott's examination. Now in view of his absence there is a difference of opinion amongst the committee as to what should be done. Some members have suggested that we should postpone this meeting and ask Mr. Scott to attend on a subsequent occasion; others think that it would be better to proceed with the examination of Mr. Scott to-day, when it is possible that the information desired by Mr. Monk may be brought out. By adopting the latter course we may save the time of Mr. Scott and also that of the committee.

MR. SPROULE.—I think it would be better to proceed, allowing Mr. Scott to make a statement in regard to immigration and then any members desirous of examining him can do so.

THE CHAIRMAN—Very well then, we will ask Mr. Scott to proceed with his address.

MR. SCOTT.—The work of the Immigration Branch, possibly more than any other department of the government, is of such a character that frequent changes in the methods of procedure are necessary to secure the most satisfactory results. Hundreds of propositions are yearly placed before the department showing how Canada may be prominently brought before the countries whose climatic conditions promise a suitable class of settlers for the Dominion and on the department rests the responsibility for sifting all propositions, putting into operation such as deemed worthy of trial and rejecting those of whose ultimate success there appears to be doubt.

METHODS EMPLOYED.

The principal methods adopted at the present time for bringing Canada's claims prominently before the emigrating population of suitable countries is by payment of bonuses to steamship booking agents, payment of bonuses to sub-agents in the United States, advertising in the press, distribution of literature, lecturing tours of farm delegates, display of Canadian products in government offices, booking agents offices and in moving wagons or motor cars, and lastly by maintaining at the most advantageous points offices in charge of salaried agents whose duties are to keep Canada's claims to the forefront and make every effort to secure suitable settlers.

OBJECT IN PAYING BONUSSES.

In no branch of the immigration propaganda has more interest been evinced than in that of the payment of bonuses. Criticism of the method has been frequent and varied, but the fact that for forty years in one form or another the system has been followed leads to the belief that in the eyes of those responsible for the administration of the department satisfactory results have followed from money so expended.

The object in paying bonuses on the continent and in the British Isles is to secure the co-operation of the booking agents in directing to Canada the classes of settlers desired. The booking agents distribute immense quantities of literature, advertise extensively in the press, have suitable displays of Canadian produce in their office windows, and in general carry on the same work in each of the towns and villages in which they reside as would a salaried immigration agent if he were stationed there. It is urged by some that as selling tickets is the agent's business he would endeavour to do so even if no bonus were allowed, but it must be remembered that the booking agents selling tickets to Canada are the same parties who sell tickets to Australia, New Zealand, South Africa, South America and the United States, and if there were no financial inducement for him to give Canada the preference he might not do so, in fact, except for the bonus paid by the Canadian government it would be more in his interest to sell a ticket to some country situated in the southern hemisphere as his steamship commission would be larger. Even with the assistance of the British booking agents Canada has now a strong competitor in Western Australia which country arranges for assisted passages at £7, to agriculturists possessing £100, or over, and a fare of £13, for suitable immigrants not possessing that amount.

The department is constantly in communication with over 1,800 booking agents in the British Isles, and frequently when some of them consider that the regulations in regard to classes wanted are being too strictly enforced, cite the cases of other countries who pay the bonus without such strict regard to the occupation followed and other qualifications. As a mistaken idea exists in many quarters that a bonus is paid on all the immigrants arriving in the country it is interesting to note what the actual figures are.

NUMBER OF IMMIGRANTS ON WHOM BONUS PAID.

Fiscal Year.	Immigrants Arriving.	Immigrants on whom bonus was paid.
1904-5.....	146,266	23,836
1905-6.....	189,064	33,680
1906-7 (9 months).....	124,667	14,094
1907-8 (9 months).....	235,328	20,492

During the period above mentioned there were paid in bonuses \$433,159, but part of that amount was for immigrants arriving in other years before those given.

It is also worthy of note that the United States, for years looked upon as a land or promise by emigrants of the United Kingdom and Continental Europe, while in 1900-1 receiving over four times as many from the British Isles as did Canada last year, had over 7,000 less British immigrants than did the Dominion. The figures are as follows:—

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IMMIGRATION FROM THE BRITISH ISLES.

Period.	To Canada.	To U.S.A.
July 1, 1900 to June 30, 1901.....	11,810	45,546
" 1901 " 1902.....	17,259	46,036
" 1902 " 1903.....	41,792	68,947
" 1903 " 1904.....	50,374	87,590
" 1904 " 1905.....	65,359	137,134
" 1905 " 1906.....	86,796	102,193
" 1906 " 1907.....	120,779	113,567

Not only does the payment of bonus to booking agents induce them to make exertions to secure the classes desired for Canada, but it puts the department in a position to impress strongly upon them the classes not wanted, and the times when for various reasons it is undesirable for large numbers to arrive. If a booking agent is discovered sending persons unsuited for the country or in other manner departing from the policy of the department in carrying on his Canadian business, his attention is drawn to the fact and his refusal to change his methods is followed by drastic measures which soon remove the cause of complaint. In this regard can be quoted three recent cases. One of the largest booking agencies in the British Isles persisted during the past winter, when work was scarce here in advertising for 2,000 labourers for Canada, and, in spite of the protests of the department, refused to cease such practice. They were removed from the bonus list and representations made to the British authorities which caused the cancellation of their booking license.

Another organization sent to Canada an undesirable family which it was found necessary to return to the old country. The organization was made to pay all expenses incurred. An organization sent a number of immigrants to Oshawa, who in the fall of the year were thrown out of employment. The organization was charged with and has paid the cost of the transportation of their people to a point where work was available.

By Mr. Wilson (Lennox):

Q. Would you mind telling us how many persons they sent away and how much it cost them?

A. I have not the figures here.

Q. Have you the information at your office?

A. Yes, I have it at my office.

A statement is sometimes made that a Canadian bonus is paid on immigrants proceeding to the United States. No bonus is paid on any immigrants except those who state that they intend to take up their residence in Canada, and whose intended and past occupations bring them within the bonus class. Any immigrant who having declared Canada as his destination and who later desires to remove to the United States must appear before the American authorities to receive permission to do so. This department obtains monthly from the American authorities a list of all immigrants who apply for admission to the states within one year of their arrival in Canada. This list is checked name by name with the list on whom bonus is paid, and in all cases where the bonus has been paid and the immigrant afterwards proceeded to the United States, the bonus is deducted from the next payment made to the agent selling the ticket. While the number who proceed to the United States averages almost 10,000 per year for the last five years, the great bulk of such persons is made up of those whom (on account of their occupation, past or intended) no bonus has been paid. While mechanics may have a better chance of success across the border, the

opportunities for remunerative employment for domestic servants, farm or railway labourers, is as good, if not better, in Canada than anywhere else on the American continent; and consequently only a small percentage of those of such occupations leave Canada after arrival. During the past year where 15,677 went to the United States only 1,212 were those on whom bonus had been paid. The system of checking those going to the United States upon whom bonus is paid is so complete that no danger exists of money being thus wrongfully expended.

By Mr. Sproule:

Q. Was that money paid in bonus upon persons who went to the United States deducted from the next payment to these booking agents?

A. Yes, from the agent's next account.

Q. How do you allot that among the agents sending them out, how do you keep your accounts in that regard so as to insure that they are correct?

A. It will take some time to explain that. If you will allow me to go on reading my statement I will show you the forms we use, afterwards.

The State of Virginia at present carries on an immigration propoganda in Belgium from which country Canada has in the past secured some very desirable settlers. In its printed literature the Virginian authorities compare the advantage offered by their state with those offered by Canada. Some of the noticeable passages are :

'The price paid to the Virginia farmer is higher than that paid to the farmer in western Canada for his products. The winter climate is very mild and winter lambs are very easily raised and are far superior to those raised in the north and known as "hot house lambs," also the cost of raising them is far less.

'An enormous number of persons who are not able to stand the rigorous climate of Canada and of the northern states have come to Virginia and found there health and prosperity.'

From these extracts it will be seen that Canada has at least one competitor in Belgium, and as already stated, Australia is also a competitor, in the British Isles, so that the assistance of booking agents will be seen to be of great value in presenting the claims of the Dominion to intending emigrants. Visits are paid by our agents to the offices of the booking agents and I quote as samples of reports the three following:—

'Mr. Henry Courtier, 44 Aberdeen Walk, Scarborough, is agent for all the Canadian companies, also American and South African, being the only steamship agent in town. He does a rural and city business. The character of his advertising is newspaper, bill-posting and distribution of literature. Mr. Courtier is a very good agent; he has an emigration office down town, and also one at his private house where has large bills displayed outside, and his wife thoroughly understands the business as well as he does himself. They have the same complaint that the other agents have that they could have done far more business if they could have got the emigrants away when they wanted to go, though their business is better than last year, with a prospect of a better business still. They make a better display than a great many of the other agents of posters with reference to emigration.

(Sgd.) L. BURNETT,

Canadian Government Agent.'

July 5, 1907'

'Messrs. Chapple & Son, Ilminster, are agents for all Canadian lines. They do a rural business and the character of their advertising is extremely good. They are a good enterprising firm who do a lot of advertising both on the premises and by

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sending circulars to the surrounding districts, the result being that they have got quite a lot of passengers both last year and this.

(Sgd.) H. M. MURRAY,
Canadian Government Agent.

'Mr. R. Richards, 30 Bridge St., Newton, Montg., is agent for Allan, Dominion, White Star and Cunard steamship companies. He does a rural and city business. Mr. Richards drives around the country a good deal and takes opportunity to deliver bills and pamphlets, posts bills. He is an elderly but energetic man. Been agent for thirty years and well known. Once paid a visit to Canada and being able to speak from personal experience helps him in emigration work in which he evidently takes a keen interest. Receiving good reports from those sent out. Good agent.

(Sgd.) G. E. MITCHELL,
Canadian Government Agent.

CHILD BONUSES.

In 1867 an arrangement was made whereby certain philanthropic societies in the British Isles were to receive a bonus of \$2 per capita on children under 18 years of age emigrated to Canada who had not been inmates of workhouses, reformatories, industrial schools, penitentiaries, prisons or other public institutions of a like character. This arrangement is still in force in its original form, the bonuses so paid amounting in the past seven years to \$22,180. It will thus be seen that 11,090 children of the classes specified have been settled in Canada during the period mentioned, and generally speaking, have been very successful and satisfactory as was shown by the fact that the private institutions who attend to the placing of them, yearly receive thousands of applications more than they are able to fill. These children before leaving the old country are inspected by a Canadian government official who certifies that they are a desirable class, and any to whom he objects would not be allowed to come. This inspection is, of course, in addition to the usual medical and civil examination which all immigrants must undergo upon arrival at a Canadian ocean port.

ICELANDIC BONUSES.

Until 1900 the work of the Immigration Department had been carried on in Iceland by sending agents to that country to point out the advantages of Canada as a country to which to emigrate. It was found that the cost of transportation was a serious difficulty in securing for Canada as many Icelanders as desired, and in 1900 by an arrangement with the steamship companies the adult fare was reduced £1 and half tickets reduced to 10s., the department paying those amounts as a bonus to the steamship companies bringing Icelandic immigrants to Canada.

In the early days, agents endeavoured as far as possible to get Icelanders residing in the country to advance amounts, either in cash or by promissory notes, such advance being used to bring friends of theirs from Iceland. This is no longer handled by the department, although numbers of prepaid tickets are still forwarded by residents of Canada to their friends in Iceland.

CONTINENTAL BONUSES.

Bonuses to continental booking agents were established in 1882, and in 1889 it was decided to discontinue the practice. But Sir Charles Tupper, High Commissioner, expressed his disapproval of this course so strongly, that the order discontinuing such payments was countermanded, and all bonuses paid which had been earned during the period intervening between the first and second decisions. In 1893 Sir Charles Tupper again expressed himself as being strongly in favour of continuing the bonuses. In

1895, the question of paying a bonus on immigrants coming to eastern, as well as to western Canada was introduced, but it was decided that as the land in eastern Canada was under the jurisdiction of the provincial governments, the department should leave the question of bonuses to provincial parliaments.

In 1897, the High Commissioner recommended more prompt payment of British bonuses and the continuance of the \$5 continental bonus.

In 1899 an agreement was entered into with the North Atlantic Trading Company, by which they were to receive a bonus on all immigrants to Canada of the farming or domestic service class from certain specified countries in which they were to carry on an active propaganda. From time to time alterations were made in this contract, but generally speaking the bonus was £1 per head, and the countries affected, Russia, Germany, Austria-Hungary, Norway, Sweden, Denmark and Switzerland.

This contract was terminated on November 30, 1906, and on March 1, 1907, the department commenced to pay to certain selected continental booking agents a bonus of 10s. on adults and 5s. on those between one and 18 years of age who came to Canada to engage in farm work or railway construction work, and who had been for at least one year one of the following classes, viz., farmers, farm labourers, gardeners, stablemen, carters, railway surface men, navvies or miners. This bonus was also paid on domestic servants.

On February 1, 1908, this bonus was increased to £1 on adults and 10s. on those between one and 18 years of age, the same classes as those paid on in the former arrangement.

By Mr. Sproule:

Q. When you speak of continental bonuses, to what countries do you refer?

A. The countries on the continent covered by the order in council at present are Norway, Sweden, Denmark, Holland, Germany, Austria-Hungary, Russia, France, Belgium and Switzerland.

By Mr. Wilson (Lennox):

Q. Can you give us any reason for that increase of bonus on immigrants between one and 18 years of age?

A. I could not. I simply got instructions to increase the bonus.

By Mr. Burrows:

Q. The last order in council gave a bonus to immigrants from more countries than were included in the North Atlantic Trading Company contract?

A. No, I think not. I think they are the same.

By Mr. Wilson (Lennox):

Q. I think you had one or two more countries in the contract with the North Atlantic Trading Company?

Q. It was changed at one time. Servia and Northern Italy were at one time covered by the contract.

Q. Changes would not be made under the contract with the company?

A. I could not say as to that; I know that changes were made.

By Mr. Sproule:

Q. You have referred to steamship agents and booking agents, what distinction do you draw between the two?

A. They are the same. They are men who sell tickets on commission.

Q. They are one and the same thing?

A. One and the same thing.

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By Mr. Wilson (Lennox):

Q. Here is the arrangement under the contract with the North Atlantic Trading Company (handing document to witness). See which countries are left out?

A. There is only one that is left out apparently, that is Luxembourg. That is the only one that I see.

BRITISH BONUSES.

On September 27, 1890, the government passed an order in council providing:—

1. To pay a limited amount, not exceeding in any case \$50, to the class of 'return men' not exceeding fifty to Europe, towards recouping their expenses on sufficient proof furnished of success in bringing immigrants to Canada.

2. To pay a bonus to steamship agents in the United Kingdom, of \$5 for each adult settler on land, of 18 years of age and over, on certificates of 'booking' and shipping such settler to Manitoba, the Northwest Territories or British Columbia, and on certificate of a Dominion Lands agent, to be furnished as proof of such settler.

3. To pay a bonus of \$10 to each homesteader, the head of a family, and \$5 for each member of such family at the adult age of 18 years and over, with an additional \$5 to any such member of a family who may within 6 months of arrival in Canada become a homesteader, on settlement on land in Manitoba, the Northwest Territories or British Columbia, on proof being furnished of such settlement by the certificate of a Dominion Land agent.

While this arrangement was in force, numerous communications were received at the department from the High Commissioner and others, recommending that the regulations be altered so that the bonuses to the booking agents would be payable when the immigrant arrived in Canada, instead of when he took up land. It was finally agreed to pay a bonus to booking agents of \$1.75 on adults and half that amount on children from the British Isles arriving in Winnipeg. This system remained in force until April 1, 1906, with the exception that in later years it applied to immigrants to eastern as well as western Canada, and that it was allowed only on those coming to the country to engage in farm work or domestic service. It was found that while this system secured the cooperation of the booking agents, still the bonus was paid on numbers who leaving the farm drifted into other occupations for which their past experience fitted them and were thus lost to the agricultural communities. With the object of securing as large a percentage as possible of those who would remain on the farms, it was decided to limit the classes from which intending farmers could be drawn on whom the bonus would be paid. By doing this, while the incentive to the booking agent would be to secure the classes for which the department is catering, still as the class from which he could draw would be so much curtailed, his earnings would be decreased if the bonus remained at the same rate. To encourage the booking agents and secure their hearty cooperation, the bonus was consequently raised on April 1, 1906, to £1 on adults and 10s. on those between one and 18 years of age who came to Canada to farm and who in the British Isles had had at least one year's experience as farmers, farm labourers, gardeners, stablemen, carters, railway sectionmen, navvies or miners. The bonus was also payable on domestic servants.

By Mr. Wilson (Lennox):

Q. Were all these classes specified on April 1, 1896?

A. Those are the classes that were specified in April, 1906.

Q. Not 1896?

A. In 1906 the bonus was increased, but the occupations were changed.

Q. That covers other classes besides farmers or farm labourers?

A. Farmers and farm labourers.

Q. Stablemen and gardeners?

A. Gardeners, stablemen, carters, railway sectionmen, navvies or miners who have had one year's experience in farming in the old country and who declare their intention of following that occupation in Canada.

By Mr. Sproule:

Q. The bonus was paid on men who declared their intention of going on a farm?

A. Provided they have had one year's farming experience in the old country.

By Mr. Wilson (Lennox):

Q. Or provided they say so.

A. We take it that they tell the truth.

By Mr. Wright (Renfrew):

Q. And they must be British subjects?

A. I am speaking of the British bonuses now.

By Mr. Wilson (Lennox):

Q. If natives of another country living in Britain wanted to come to this country, provided they have been following these occupations would the booking agent not get the bonuses on them?

A. Yes, if they were British subjects by naturalization.

Q. But not if they were not British subjects by naturalization?

A. No.

By Mr. Sproule:

Q. Do you not pay a bonus to booking agents in other countries for the same classes of immigrants?

A. Only to the booking agent living in the country where the immigrant was born or residing. That is to say, we would not pay a bonus on a German immigrant to a booking agent living in Belgium.

Q. No, but you would pay a bonus to a booking agent living in say Norway, Sweden or Denmark.

A. We would pay a bonus to the booking agent in Norway on a Norwegian, to the booking agent in Sweden on a Swede, to the booking agent in Austria-Hungary on an Austrian or a Hungarian.

Q. On the same principle that you would pay it to—

A. To a British booking agent. The immigrant and the booking agent must be of the same country. For instance, at Antwerp, we will say, a great many emigrants pass through. They come from Austria-Hungary, Germany and other countries. Now the booking agent in Antwerp, even though he sold the tickets and the men belonged to the right classes, would not get a commission because the immigrant would not belong to the country of the booking agent.

By Mr. Wilson (Lennox):

Q. He might arrange for the payment with the booking agents living in those other countries from which the immigrants come, that is the booking agent at Antwerp might do that?

A. I suppose he might.

Q. So that a bonus would be paid upon them?—A. I suppose he might.

Q. I don't see how you could help that?

A. But the immigrant has left his country long before that.

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By Mr. Sproule:

Q. You say that a booking agent who booked a passenger belonging to one of these classes, or one who expressed his intention of going upon the land no matter what his previous occupation had been, would be entitled to a bonus on that man?

A. The immigrant must first sign a statement that he has been of the farming class for at least one year in Great Britain or on the continent.

Q. When was that provision introduced?

A. We have had it in force for some time, I think since 1906.

Q. Here is the mystery to me. I have had some experience with these immigrants and I have been told by them that they were given to understand they would have some special advantage by saying they intended to go on the land in Canada when they reached here. When you question these men, as I did some three or four of them that I had working for me at different times, they admitted they had never been a month or a day on the land. Yet they came out here representing that they were farmers and were going on a farm?

A. Have you got the names of those men and the ships they came out in? If so I can tell you whether bonuses were paid on them or not.

Q. I can easily get their names as soon as I return home because I employed them.

A. If you have the names of the men and the ships they came out in I can tell you what they said at the ocean ports?

Mr. SPROULE.—They represented themselves as farmers.

By Mr. McIntyre (Strathcona):

Q. Has the immigrant any means of knowing that a bonus is paid on him?

A. No, none whatever.

Q. He certainly does not know whether that man will be accepted?

A. No.

Q. The booking agent cannot tell that?

A. No.

PAYMENT OF BONUSES TO BOOKING AGENTS.

By Mr. Blain:

Q. That is a very important question and I want to understand it. How does the booking agent put his bill into the government?

A. I was just going to show you. I have got a ship's manifest here and will show you how the whole thing is done from start to finish. I have here a manifest of the SS. *Victorian* of the Allan Line which arrived at Halifax on March 20 of this year. Now, this manifest is prepared according to law by the purser of the steamer. It gives the number of the passenger's ticket, his name, his age, states whether the passenger is a male or a female, gives a list of the children under 14 years of age, whether they can read or write, whether the passenger is married or single, states their profession or calling, the country of birth and the place of ultimate destination of passengers, excepting the tourists and returned Canadians who are so described. When the steamship arrives in Canada, according to law, the master of the ship must deliver to the immigration agent this manifest of the people on board, which has been filled out at sea, and in regard to it declares as follows: 'I certify that the above is a correct description of the SS. *Victorian* and a correct list of the passengers on board the same at the time of her departure from Liverpool, and that all the particulars therein mentioned are true.'

Q. May I ask are there any particulars about the passenger as to whether he has been a resident on the land for 12 months prior to this?

A. On the face of them?

Q. Yes?

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A. No, but I will come to that later on. Now that manifest is handed to the immigration agent at the port of landing. This particular manifest was handed to the agent at Halifax. These people are landed from the ship and placed in a building where nobody has any communication with them at all and are medically examined. After undergoing a medical examination they have to pass a civil examination, and it is upon that examination that we pay the bonus. Now, in the case of this particular bonus—

By Mr. Sproule:

Q. What is the civil examination?

A. The examination made by our own officers, by the immigration agent and his assistants at the ocean ports.

Q. At the ocean port?

A. Yes. The examination by the immigration agent of the immigrants individually and separately at the port of debarkation.

By Mr. Wilson (Lennox):

Q. I see according to the agent's report that your inspector examines the immigrants in batches of hundreds at a time?

A. I cannot help that. I am telling you what actually takes place.

By Mr. Sproule:

Q. What ought to take place?

A. What I am saying is what actually takes place. Every immigrant is individually examined both medically and civilly.

By Mr. Barr:

Q. That is a very important point. You say they are examined separately, whereas the agent in his report says they are examined in numbers?

A. They are examined in numbers, yes. Every ship is examined by itself.

Q. Every ship?

A. Yes. This particular ship had 838 passengers on board.

By Mr. Herron:

Q. Give us the length of time which is occupied by this examination, have you any information in regard to that?

A. Well, this particular ship, the *Victorian*, sailed from Liverpool on March 13 and arrived at Halifax on the 20th at 11.55 a.m. The passengers started to land at 12.5. There were 39 saloon passengers, 359 second cabin passengers, and 440 steerage passengers or a total of 838. The second-class passengers were medically examined by Dr. Hawkins. The examination began at 1.25 p.m., and was completed at 2.30 p.m. The civil examination of the second-class passengers was made by Messrs. Barnstead and Blackadar.

By Mr. Sproule:

Q. How many second-class passengers were there?

A. 359.

Q. And the medical officer examined that number in an hour and five minutes?

A. In one hour and five minutes.

Mr. SPROULE.—That would be a great examination.

Mr. BARR.—That is an impossibility?

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- A. The civil examination was begun at 1.25 p.m., and was completed at 3 p.m.
 Q. That is one hour and three-quarters?
 A. Yes.
 Q. And the number was how many?
 A. 359.

By Mr. Herron:

- Q. They could do no more than merely walk by in that length of time?
 A. The steerage passengers were examined by the same medical officer who begun that work at 4.15 p.m. and completed it at 5.40 p.m.

By Mr. McIntyre (Strathcona):

- Q. There is a good deal of discussion regarding this method of examination. Is it not true that the man upon whom no bonus is paid passes the civil examination in a moment?
 A. Yes, in a moment.
 Q. But the man on whom the bonus is claimed must stop and be examined particularly?
 A. That is right.
 Q. Every person upon whom the bonus is claimed must have a special certificate made out by your examining officer?
 A. Yes.
 Q. But the man upon whom no bonus is claimed is allowed to walk down the plank without interference?
 A. Yes.

Mr. WILSON (Lennox).—I would like, Mr. Chairman, the witness to tell us why a man on whom a bonus is paid should be examined more carefully than one upon whom no bonus is paid. I think we are all equally interested in the class of immigrants coming to this country, whether the bonus is paid on them or not.

The CHAIRMAN.—In one sense at least.

Mr. WILSON (Lennox).—It is not a matter of \$5, but whether the immigrant will make a good citizen or a bad citizen. I would like to have my question answered.

The WITNESS.—I did not hear the question.

Q. Very well, I will repeat it, apparently it is not of much importance. I want to know why a more particular examination should be made of a man upon whom a bonus is paid as to health?

A. There is no difference in the examination as to health.

Q. Why should there be a more careful examination of that man than of the man upon whom no bonus is paid?

A. As far as his health goes, there is no difference.

Q. Dr. McIntyre says there are two different examinations, as I understand it?

A. Dr. McIntyre is talking about the civil examination. You are talking about the medical examination.

Mr. McINTYRE (Strathcona).—My point was this. I made the statement that there were two checks upon the immigrant upon whom a bonus was paid—that there was a certificate issued in regard to them by the booking agent, and a certificate issued by the inspector on this side.

Mr. BARR.—Before going any further we want to know how many of these immigrants bonuses were paid and upon how many they were not, also how many seconds it takes to pass each immigrant?

The WITNESS.—I have that information here.

By Mr. Wilson (Lennox):

Q. Let us settle the question as to who undergoes the examination; the man upon whom the bonus is paid or the man upon whom no bonus is paid. I understand Mr. Scott to say that there is no difference in the examination?

A. There is no difference in the medical examination.

Mr. MCINTYRE (Strathcona).—I made no such statement that there was a difference in the medical examination. The examination to which I referred is the civil examination.

By Mr. Barr:

Q. What we want to know is just how many immigrants came out on this ship and what time was occupied in their examination?

A. I was explaining that when I was switched off. I have told you that the medical examination of the steerage passengers was begun at 4.15 p.m. and completed at 5.40 p.m.. The civil examination of the steerage passengers was begun by Messrs. Barnstead and Blackadar at 4.15 p.m. and completed at 6 p.m. One steerage passenger for Canada was detained and three for the United States. The C.P.R. passengers left on a special at 8.45 p.m. and the I.C.R. and G.T.R. passengers on a special at 9.45 p.m. A number also left by the I.C.R. regular train.

By Mr. Blain:

Q. On how many of those were bonuses paid?

A. If you will just excuse me one moment. This particular ship, as I have already said, had 838 passengers on board. They were first medically inspected and afterwards civilly examined. Upon inspection 505 were classed as immigrants for Canada and 78 for the United States, 208 were returned Canadians, 8 were tourists, and 39 saloon passengers who were not examined. Following our usual practice neither tourists, return Canadians, those going to the United States or first class passengers were included in our immigration proper. In other words there were 838 passengers on board, and of that number 505 were classed as immigrants. Of these immigrants, 29 were Austrians, 2 Bohemians, 4 Hungarians, 14 Belgians, 34 Dutch, 8 French, 2 Germans, 331 English, 1 Welsh, 18 Scotch, 3 Irish, 9 Russian Hebrews, 2 Polish Hebrews, 1 Japanese, 1 Austrian Pole, 37 Russians, 1 Swiss, 3 Danes, 1 Swede, 1 Armenian, 1 Syrian and 2 who had been citizens of the United States.

On this ship British bonuses were claimed upon 55 men, 22 women and 23 children. According to information secured by the inspectors at the ocean port, the bonus was allowable and has been paid upon 41 men, 14 women and 13 children, leaving 14 men, 8 women and 10 children disallowed, because from the information obtained by the port agent it did not appear that they did come within the proper bonus classes.

The total British bonus claims paid on this ship amounted to £61. 10s.

Continental bonus was claimed on 37 men, 9 women, and 3 children, and was allowed on 31 men and 5 women, amounting to £36, leaving 6 men, 4 women and 3 children claimed on but disallowed.

SYSTEM OF CHECKING BONUS CLAIMS.

Now, speaking of the bonus claims, we will take the first one that we come to. Michael Sullivan appears on line 14, page 6 of the manifest. His ticket number which is taken by the purser is given as 7365; age, 26; occupation, farmer; nationality, Irish; and destination, Calgary. When Michael Sullivan purchased his ticket he filed an application which gives his name, his age, his address in the old country, how long he was engaged as a farmer, when and where his last occupation prior to sailing, and how long so engaged, whether he was a British subject by birth or naturalization, his

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intended occupation in Canada and the boat that he intended to sail in. That application is signed by the immigrant himself. The booking agent sends that to the head office here in Ottawa and on it he says, 'I, the undersigned booking agent, have to-day sold ticket 7,365 to the party or parties mentioned in this application and believe that the statements made therein are true and correct.' That is signed by J. Barter & Sons, of Cork. Now, when this boat arrives the purser hands to the immigration agent a manifest of all the passengers on the vessel. Neither the immigration agent nor the purser have seen the application; that has been sent direct by the booking agent to the head office here. The immigrant arrives in Canada and is first medically inspected, and then goes before our immigrant agent and is civilly examined by him. On that occasion Michael Sullivan gave his age as 26, stated that he was a farmer and had been engaged all his life at that occupation, he intended to farm in Canada and was going to Calgary to farm, was Irish by birth, and had never been in Canada before. I may say that the immigrant, in addition to the questions that appear on the manifest, is asked the question if he has ever been in Canada before and if he intends to remain in Canada or is simply passing through. If he has been in Canada before he is classed as a returned Canadian; if he intends to simply pass through Canada he is classed as a tourist.

By Mr. Sproule:

Q. I asked the question earlier if the booking agent did not know that he was getting a bonus. I understand both yourself and Dr. McIntyre to say that he did know?

A. Which, the immigrant?

Q. No, the booking agent. If that booking agent got a certificate filled in in the same manner as you say and had complied strictly with the regulations as to the class upon which a bonus is payable, would he not then know that he was going to get a bonus on the immigrant?

A. The bonus will be given provided the immigrant is the proper class and passes inspection at the ocean port. I have already given you a statement of the number on which bonuses were paid on this particular ship.

BONUS CLAIMS OF AGENTS DISALLOWED.

By Mr. Wilson (Lennox):

Q. It is not an uncommon thing to disallow bonuses, because the agents put in all the claims they can?

A. We don't pay the claims unless they are properly due.

Q. It is not an uncommon thing to dock them?

A. No. I have a statement here and you can see that hundreds of claims are made that are not allowed. A great many of them were of the domestic class.

By Mr. McIntyre (Strathcona):

Q. Then the booking agent does not know and cannot tell what bonuses will be paid?

A. No.

By Mr. Wilson (Lennox):

Q. That does not follow at all. The booking agent is furnished with a copy of the order in council showing the class under which bonuses are paid?

A. No, he is not.

Q. What arrangement then do you have with the booking agent who is employed to get immigrants?

- A. A circular was sent to the booking agents in the Old Country.
 Q. Will you read it?
 A. Certainly. (Reads.):

IMMIGRATION BRANCH, DEPARTMENT OF INTERIOR.

Ottawa, Canada, November 15, 1906.

Circular to Steamship Booking Agents in the United Kingdom.

'Sir,—This circular takes the place of my circular of March 20 last, and I beg to inform you that the following rules will come into effect respecting tickets sold to emigrants arriving in Canada on and after the 1st January, 1907.

'(1). Bonus will be paid provided the regulations of the department are complied with, upon tickets to Canada sold to British subjects, whose occupation in the United Kingdom has been for at least one year, one of the following, viz.: Farmers, farm labourers, gardeners, stablemen, carters, railway surfacemen, navvies or miners, who have signified their intention of following farming or railway construction work in Canada; and female domestic servants.

'(2). Bonus is only payable on emigrants landing at Canadian ports, excepting those landing at Portland, Maine, during winter.

'(3). The bonus will be £1 on each person of prescribed classes, 18 years of age or over, and 10 shillings on those between 1 and 18 years of age. No bonus on infants, tourists, returning Canadians, prepaid tickets, or persons of other occupation than one of the above named, or on persons mentally or physically unfit. To obtain bonus on saloon passengers it is necessary to obtain the certificate of one of the accredited agents of the department in the United Kingdom.

'(4). In order to enable the department to pay bonus it will be necessary to have the evidence that it is due supplied on the prescribed form.

'(5). No bonuses will be paid to the head offices of steamship or railway lines.

'(6). No bonus will be paid to booking agents misrepresenting the conditions in Canada, or whose advertising does not meet with the approval of the Immigration Department.

'(7). Payment will be made monthly, and accompanying the cheque in each case, which will be issued at the Canadian Government office in London, Eng., two statements will be sent to the payee, one giving the name, age and ticket number in each case of the passengers on whom bonus is allowed; and the other giving name and particulars of passengers on whom bonus is not allowed, stating also the reasons for such disallowance.

'(8). A supply of blank forms for use under this system has already been sent to the line for which you act as agent, and from whom you may obtain a supply. The agents are particularly requested to refrain from sending any claims on persons not fully coming within the requirements as to occupation, &c. If the head of a family comes out in advance of his family, bonus may be claimed later on the members of the family when tickets are purchased for them, the bonus being allowed in the meantime on head of family alone. Booking agents should secure and retain the home address of the emigrant or his friends.

'To insure the payment of bonus, in respect of passengers of the classes above mentioned landed in Canada, a certificate may be secured from one of the accredited agents of the department in Great Britain or Ireland, as per form on emigrant's application ticket. The persons entitled to sign this ticket are as follows:—

'J. Bruce Walker, Asst. Superintendent of Emigration, 11 and 12 Charing Cross, London, W.C.

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'A. F. Jury, Canadian Government Agent, Old Castle Building, Preeson's Row, Liverpool.

'G. H. Mitchell, Canadian Government Agent, Newton Chambers, 43 Cannon Street, Birmingham.

'H. M. Murray, Canadian Government Agent, Exeter.

'John Webster, Canadian Government Agent, 35 and 37 St. Enoch Square, Glasgow.

'Ed. O'Kelly, Canadian Government Agent, 17 Victoria Street, Belfast.

'And any others who may hereafter be appointed for that purpose.

'Your obedient servant,

'W. D. SCOTT,

'*Superintendent of Immigration.*'

In addition I issued a supplementary circular as follows:

'IMMIGRATION BRANCH, DEPARTMENT OF THE INTERIOR.

SUPPLEMENTARY CIRCULAR.

'OTTAWA, November 15, 1906.

'*To Booking Agents in the United Kingdom:*

'It is the desire of the Immigration Department of Canada to have the most friendly relations with the booking agents of the United Kingdom. With a view to preventing misunderstanding it is deemed desirable to set forth in plain terms the purpose of the government of Canada in pursuing an active immigration policy, and the reasons governing it in the conduct of that policy.

'The bonus to booking agents of one pound on adults, and ten shillings on children between one and eighteen, is given to make it worth while for the booking agent to use his best exertions in securing for Canada the particular classes of people upon whom the bonus is paid.

'In a country with a population of nearly fifty millions, such as the United Kingdom, which has no new territory for occupation, there must necessarily be a large yearly increase of population, which must either find an outlet or add to the congestion of the great cities. Every year there is a very large movement of people from the United Kingdom to North America. For a long time the larger part of this yearly movement went to the United States and a very small part to Canada. That which went to the United States was lost to the Empire; the part which went to Canada aided in building up the Empire.

'It is not the expectation of the government of Canada to increase unduly the outflow of people from the United Kingdom, but it is its desire to turn to the benefit of the Empire in Canada a greater proportion of the natural and necessary annual outflow from the mother country.

'The Canadian government in confining the bonus to emigrants of certain callings has selected those callings which may fairly be expected to fit people for the opportunities existing in Canada. By making special exertions to secure these classes for Canada, the booking agents will be doing their best for the emigrants themselves, for Canada and for the Empire.

'It is believed that, although the classes particularly desired by Canada might find a field for employment at home, the removal each year of some part of the natural increase there will leave room and opportunity for others who would, under other circumstances, be crowded out of these advantages.

'The classes of people on whom bonus is paid by the Canadian government are expected, by reason of their experience at home, to find scope for their abilities in the occupation of the vacant lands of Canada, in employment upon the lands now occupied

and cultivated, or in the railway development now in progress. And while it is not asserted that people of other callings or conditions of life should not come to Canada, or may not find a career open to them in this country, it is desired to have it well understood that the government of Canada assumes no responsibility with respect to any other immigration than that of the classes mentioned as eligible for bonus payment. It is not asserted that the farmer or farm labourer is necessarily a more desirable citizen than any other, but it is a simple fact that the demand in Canada is for people to occupy the as yet vacant lands of the country, to aid in the cultivation of those already occupied, and also to assist in providing additional transportation facilities. This it is which justifies the government in assuming the expense of immigration effort. To go beyond the attempt to meet these requirements would be to use the money of certain classes of Canadian taxpayers for the purpose of securing competitors against them in their several callings, for which they would naturally hold the government to account.

‘For these reasons booking agents will be good enough to understand that the present large bonus is only offered to secure the fullest compliance with its conditions and they must expect the officials of the Immigration Branch to look strictly into every bonus claim made, not as showing any lack of faith in the booking agents, or as discriminating against any class of people, but simply as a matter of business to make sure that money is not being paid except on the due fulfilment of conditions that have the sanction of all classes of the Canadian people, who, in fact, are paying the money.

‘In the circular of March 20 last, announcing the payment of £1 bonus, it was required that the person eligible by reason of his calling should be then employed at that calling and had been so employed for at least one year. This condition is altered in the new circular forwarded herewith so that the requirement is now that the person shall have been in such employment for at least one year, without special regard as to when that was, and the list of questions to be answered by the emigrant when applying for ticket has been altered accordingly.

‘In the circular of March 20, bonus was restricted to persons of certain classes therein mentioned, who signified their intention of following farming in Canada. This provision has been amended by adding ‘or railway construction work’ so that whether the immediate intention is that of following farming or securing employment in railway construction work the person is eligible for bonus.

‘These changes enlarge the number of people upon whom bonus may properly be paid, but as they enlarge the number and to that degree are to the advantage of the booking agent, so the officials of the department may be expected to hold more closely to the express terms of the circular issued and to the intent which its terms express.

‘It is important that the provisions of the Canadian Immigration Act of last session, prohibiting the landing in Canada of certain classes of people, should be carefully studied, (copy herewith) so that the booking agent will understand thoroughly that for his own credit and the advantage of his business he will not book people of these classes. They are liable to be returned to the place from whence they came at the expense of the steamship company. This liability exists for two years after their landing in Canada. It will be noticed that the following classes of people are prohibited from landing and are subject to deportation within two years:—Feeble minded, idiotic, insane, or who have been insane within five years, afflicted with any loathsome, contagious or infectious disease; anyone who is a pauper, who is destitute, who is a professional beggar or vagrant, or who is likely to become a public charge, any prostitute or person who lives by the proceeds of prostitution, or any convicted criminal. Persons who are deaf and dumb, blind or infirm may be admitted if accompanied by members of the family who will be responsible for their support and safekeeping. Unless so accompanied, they are subject to deportation.

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'Bonuses are only payable on passengers travelling by lines which land at Canadian ports or at Portland, Maine, during winter, and only on persons who are British subjects.

'In the past it has been found necessary on occasions to discontinue business relations with booking agencies for various reasons, such as presentation of improper claims, booking of undesirables, the special booking of artisans under contract, and improper advertising. It is hoped that no difficulties of this kind will arise in future; but as the Immigration Department is a part of the public business of Canada, it is necessary that its work and connections should be kept clear of misunderstandings of every kind. The department would prefer not to have relations with any agency with which it might find itself at cross purposes, and whose actions might subject its work to misrepresentation.

'In the past it has not been the practice of the department to pay bonus on first class passengers. This has not been because such payment was contrary to the intent of the bonus system, if such passengers were of the classes listed for bonus, but because first class passengers are not subject to inspection on arrival in Canada, and therefore the department had no means of checking the propriety of the payments. If, however, booking agents will avail themselves of the provision contained in the circular herewith, which is the same as was contained in the circular of March 20, 1906, by securing a certificate from one of the accredited agents of the department in the United Kingdom, as therein provided, the bonus will be paid, but not otherwise.

'The provision for granting certificates in the United Kingdom by emigration agents to insure payment of bonus is permissive and not compulsory. If such a certificate is granted in proper form the Immigration Department will not question the payment of the bonus. If such a certificate is not secured, then the payment of the bonus must depend upon the examination by the immigration officer at the port of landing. It is because of the necessity of inspection at port of landing that it has been found necessary to restrict payment of bonuses on emigrant passengers to those landing at Canadian ports, with the exception of those landing at Portland, Maine, during winter.

'Previous to issue of circular of March 20, 1906, there was some discrimination in bonuses paid under certain circumstances, but with the coming into effect of that circular, the terms of which are repeated in the accompanying circular, all booking agencies were placed on an equal footing, the same bonus being paid under the same conditions in all cases. It is the desire of the Immigration Department to deal quite fairly with all booking agencies, the result aimed at being to secure desirable emigrants for Canada up to the yearly requirements of the country.

'It is not in the interest of the individual emigrant that he should remove to Canada unless there is reasonable prospect of his success there. The arrival of any large number of immigrants to this country who are unfitted for the conditions here, must necessarily react against the continuance of the emigration movement. In spite of the fact that his failure to succeed is due to personal causes, the unsuccessful man will blame the country, and complain to his friends at home, thereby deterring them from coming out, and the efforts of the Immigration Department will be discredited with the people of Canada who will therefore withdraw their support from these efforts. The men wanted in Canada are those who will do well, who are recognized in the United Kingdom as being fit, but who are looking for the wider opportunities of the new country, not to be found at home. The efforts of the Canadian Immigration Department are not directed towards those who are merely looking for a place where they may live, but towards those who, while they are able to live under present conditions in the United Kingdom, are on the lookout to better their position in life.

'It is suggested that booking agents take for future reference, the home address of the emigrant upon whom bonus is to be claimed and also that of some of his relatives remaining at home.

'It is the desire of the Immigration Department that its work in the United Kingdom shall be carried on in co-operation with the licensed booking agencies. So far as possible, literature and sample products will be supplied to booking agents on application, and our salaried agents are instructed to reply promptly to all communications received from booking agents, and to give all proper information, and all the assistance in their power to the legitimate booking of passengers of the classes upon which bonuses may be paid.

'In the past, some booking agents have been in the habit of sending in bonus claims on persons who intended to follow mechanical pursuits in Canada, and on others who had never engaged in any of the specified occupations, or who had less than one year's experience in such occupations. Kindly see that in future you make claims only on British subjects, who have had at least one year's experience in one of the specified occupations, and who come to Canada to engage either in agricultural pursuits or railway construction, and on female domestic servants. By pursuing such a course, the work of this office will be materially lessened, and the just claims consequently more promptly attended to. You are also requested to see that every blank space in emigrant's application for ticket is properly filled

'The Department should be notified at once in all cases where an emigrant transfers his passage from the boat on which he originally books. The name and date of sailing of the vessel upon which he first booked should be given, as well as that of the ship to which he has been transferred.

'All communications with regard to the non-payment of any claim made should be sent direct to me. In every case the name, age, and contract ticket number of the emigrant, with the name of the vessel, and date of its sailing should be carefully given. In any case where the Canadian government finds it necessary to deport any immigrant within 12 months of his arrival in Canada because of criminal tendency, disease or other cause, or where the immigrant has left Canada for the United States within that period, the bonus paid upon him will be deducted from the account of the agent to whom it was paid.

'W. D. SCOTT,

'*Superintendent of Immigration.*'

My Mr. Sproule:

Q. If the booking agent has these circulars and sends an immigrant forward in compliance with them does he not naturally reach the presumption that he is going to get a bonus on that immigrant?

A. If the immigrant upon examination is found to be physically and mentally sound.

Q. But admitting that?

A. Yes.

By Mr. Wilson (Lennox).

Q. Then he knows he is going to get a bonus. Therefore, you do not adhere to the statement you made before that the booking agent does not know?

A. The booking agent does not know that he is going to get the bonus.

Q. Not if he complies with the law?

A. If he complies with the law he does get the bonus, but he does not know that.

Q. Do you not give him the bonus to stimulate his efforts?

A. To stimulate his efforts with respect to the right class of people.

Q. If he has no assurance that he is going to get a bonus it is no stimulus to him.

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By Mr. Smith (Nanaimo):

Q. Supposing the immigrant complied with the conditions at Liverpool but on landing in Canada did not pass the medical examination, would the bonus be paid?

A. No.

By Mr. Wilson (Lennox):

Q. If the immigrant had been a farmer in the old country for a year and stated that he was going on the land in Canada would not the booking agent get a bonus?

A. Providing the immigrant was found to be physically fit.

By Mr. Barr:

Q. It has been proven beyond a doubt that the booking agent gets a bonus if the man arrives in Canada?

A. And passes the inspection.

By Mr. McIntyre (Strathcona):

Q. Is it not true that a majority of those who classify themselves as domestic servants in the office of the booking agent refuse to acknowledge that occupation when they come before the Canadian inspectors?

A. A great many of them.

By Mr. Wright (Renfrew):

Q. As I understand you, on board the *Virginian* there were a certain number of immigrants for whom the booking agent thought he was going to get a bonus?

A. Yes.

Q. But there were a certain number that failed to pass to pass the examination?

A. Yes, when the ship arrived at Halifax.

By Mr. Herron:

Q. I would like to know if the examination which the Superintendent of Immigration has described with respect to immigrants on the *Virginian* is a fair example of the character of examination made of immigrants arriving in Canada?

A. I simply went upstairs to the clerk to let me have a manifest and I suppose he gave me the first one that he picked up. There was no selection made.

Q. Is there a medical examination of the immigrants made only when they arrive in Canada?

A. No, they are examined at the ocean port before they leave by the medical officer of the Board of Trade.

Q. If it is the same medical examination as when they arrive in Canada I do not think it amounts to very much?

A. I cannot say what the character of the examination is over there.

By Mr. Blain: .

Q. I have here two printed applications that have to be signed by the intending immigrant. One reads: 'Emigrant's application for ticket. Name. Age. Address. Occupation. How long engaged in such occupation.' Those are the first few lines of the application. I notice that a change was made and a different application is now signed by the intending immigrant?

A. Yes.

Q. It reads, 'Emigrant's application for ticket. Name. Age. Address. How long engaged as farmer, farm labourer, miner, stableman, gardener, carter, railway surfaceman, navvie or miner.' That is an addition. When was that change made?

A. As I explained in the circular which I have just read, in April, 1906.

Q. Why was that change made?

A. Because we limited the occupations. We ask for certain classes of people in the circular—farmers, farm labourers, gardeners, stablemen and so on. Prior to that it was not necessary that the man should be of any of these occupations. He might be a clerk in a dry goods store and come out to Canada and say, 'I am going on a farm in this country,' and we paid a bonus on him.

By Mr. Wilson (Lennox):

Q. That was up to 1906?

A. Up to 1906 that was always the practice. Then we limited the number of classes but we increased the bonus.

FORMS OF CERTIFICATES.

By Mr. Blain:

Q. A statement was made in the House the other day that a different certificate was signed by those on whom the bonus was to be paid from that signed by the emigrant upon whom no bonus was to be paid?

A. That is not correct.

Q. Then my friend Mr. McIntyre was decidedly wrong in his statement?

A. To explain the practice I showed you two forms. One is the form signed by the immigrant and the other is the form filled in upon the immigrant's arrival here.

Q. Then a change was made in the application to be signed by the immigrant. The change is what I have stated, and that is before the booking agent and before the immigrant when he steps up to get his ticket?

A. Yes.

Q. Before that the immigrant did not write under what class he was to come. Now he writes that he belongs to one of the following classes—farmer, farm labourer, gardener, stableman, railway surfaceman, carter, navvie or miner. The emigrant understands that?

A. The emigrant does not understand that, because he does not know what he has signed for. The emigrant does not know what that is and there is nothing on the face of the application to tell him?

Q. He knows what he is signing for?

A. He is signing an application for a ticket.

Q. That makes it all the worse I think?

A. Signing an application for a ticket?

Q. Because the booking agent has the emigrant's answers to his questions in his hands?

A. Certainly.

Q. Now you have said that a change was made and you have given the reasons. Here I have another set of applications?

A. These are not applications.

Q. Well, I have another set of forms?

A. They are filled out by the agent at the ocean port.

Q. And signed by whom?

A. Signed by the receiving agent, the agent who examines the immigrant.

Q. Is it not signed by the immigrant?

A. No.

Q. In any case?

A. No.

Q. Whether a bonus is paid for him or not?

A. No.

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Q. It is not signed by the immigrant?

A. It is filled out by the agent or his clerk.

Q. The only signature signed by the immigrant—

A. Is to the application for his ticket.

Q. This form in my hands is the one that the farm labourer is questioned upon?

A. He is asked those questions set out therein.

Q. A man who is not a farm labourer, is he questioned as to this also?

A. No, he is simply asked his name, occupation and destination.

Q. Here is the other form: 'Occupation prior to sailing. How long so engaged. How long engaged as farmer, farm labourer, gardener, stableman, carter, railway surfaceman, navvie or miner.' Does the immigrant have to sign this?

A. No.

Q. Is this another certificate then?

A. That is when the immigrant is being questioned. If upon asking him his occupation the immigrant says he is a farm labourer the agent fills one of these out.

Q. Now, Dr. McIntyre stated in the House: 'My informant is the Commissioner of Immigration. When the farmer lands in this country he himself need have no knowledge of whether that booking agent is receiving a bonus or not. When he comes to the Canadian side of the water he is received by the inspector, who asks him whether he is a farmer or a farm labourer, and if he comes under these classes a different certificate is made out.' I want to find out is that correct?

A. That is the certificate that you read from.

Q. A different certificate to what?

A. To the application for ticket he signed in the old country.

Q. Would you call that a certificate?

A. Yes.

Q. A different certificate. The fact is that the immigrant does not sign any application but the one?

A. He signs one application.

Q. And if a man does not come under these headings, 'farmer, farm labourer, gardener, stableman, carter, railway surfaceman, navvie or miner,' is there any record of him taken at all?

A. None, except on the manifest.

Q. This form is not filled out?

A. No, if he is not a farmer.

Q. It is not filled out at all?

A. No, further than that the purser of the ship or our agent at the ocean port does not know that the application for ticket has ever been signed at all. The booking agent sends his claims to me direct. The information contained in the form filled on this side is obtained by the agent, who does not know that the claim has been made at all.

Q. I did not suggest that, but I am very glad to have the explanation. Now, when these 300 passengers—we will take 300 for the purpose of illustration—come out and the medical examiner commences to examine them does he take these certificates with him?

A. The medical examiner has nothing to do with these certificates.

Q. Who has?

A. The agent who makes the civil examination.

Q. Does he take the certificate of each immigrant with him and go over each?

A. The immigrants come up to the desk and he examines them.

Q. How does he find out who are farm labourers?

A. By asking the question.

Q. He must ask the question from these certificates?

A. No.

Q. Then what does he get it out of?

A. Out of his head.

Q. He must use these certificates for every man that comes up?

A. No.

A. Well, I cannot see any other way?

A. We will take the first name on this manifest. The first man whose name appears there is named Thomas Adams. He was 35 years of age, he could read and write, he was a farm labourer, he was born in England, had transportation over the C. P. R. and was going to Manitou, Manitoba. After he had been medically examined that man goes before the civil examiner. He has a card, without a name on it, which simply says his name will be found on line one, page one, of the manifest.

Q. Who gives him the card?

A. The purser of the ship before he lands. It is the only quick means of identifying the 838 passengers on the ship—speaking, for example, of the number that was on the *Virginian*. If the officer had to look individually over the whole of the names it would be very difficult for him. However, a card is furnished to him and the officer turns to the manifest and finds his name. He asks the immigrant whether he can read and write and what his occupation was in England. The immigrant tells him that he is a farm labourer and then he will take a form and fill it out.

Q. Supposing he said he was a plumber or an engineer?

A. The immigration officer would not fill out one of these forms. There would simply be the information on the face of the manifest.

By Mr. Adamson:

Q. Would you consider the second form to which Mr. Blain has referred to be a certificate or not?

A. That is the evidence upon which we pay the bonus, and it was the evidence upon which the bonus on 32 persons on this ship were disallowed.

By Mr. Sproule:

Q. I understood Mr. Scott to read from the circular of instructions issued to booking agents that a party might set forth these facts in his application for his ticket and then if the statements were in strict compliance with the regulations the party holding that or the duplicate would be entitled to collect the bonus?

A. No, you misunderstood me. In the case of first class passengers we do not examine them at ocean ports excepting persons of foreign birth who may be in first class compartments. The arrangement we have with the steamship companies is that we let the first class passengers go without inspection if the officers on the ship produce for inspection any foreigners who are in first class compartments. First class passengers speaking English are not examined by the immigration officers, but some of the booking agents in the Old Country claim that they should be allowed a bonus upon the first class passengers. In reply to that we said: 'We do not examine them, we do not know what their occupation is, and we cannot verify your statement.' We said to the agents: 'We will put a certificate on the bottom of the bonus claim which reads 'I have to-day examined the party or parties above mentioned and believe that the particulars given are in accordance with the facts. I consider that the parties are physically and mentally sound, that they belong to one of the classes prescribed by the Canadian regulations and that they are in all respects desirable persons for Canada. If that booking agent had an immigrant before one of our officers in London, Liverpool, Birmingham or any other point where we have paid officers, and that officer considers the persons concerned are desirable men for Canada he would sign this certificate at the bottom that would entitle the booking agent to the bonus irrespective of any examination on this side. But that is only in the case of first class passengers who are not examined.'

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By Mr. McIntyre (Strathcona):

- Q. Does not the medical officer of a ship give a clean bill of health?
A. Yes.

MEDICAL EXAMINATION OF IMMIGRANTS.

By Mr. Pickup:

- Q. Is there not a medical examination before leaving Liverpool?
A. Yes, by a Board of Trade doctor.

By Mr. Macdonald (Pictou):

- Q. In regard to the question of determining the health of people who enter Canada from Liverpool, are they not inspected when they go on board.
A. They are inspected by a Board of Trade doctor.
Q. In Great Britain?
A. Yes on board the ship there.
Q. And by the ship's doctor after going on board?
A. Yes.
Q. Of course, if there was any contagious disease or any kind of disease that would be likely to spread to others or cause illness it would be apparent to the doctor during the voyage?
A. Yes.
Q. Then the quarantine authorities have to receive a clean bill of health with respect to these people before they are permitted to land?
A. Yes.
Q. Then a subsequent examination is made by your officers?
A. Yes.

By Mr. Sproule:

- Q. Is the ship's doctor only called in the event of sickness?
A. No, the doctors have instructions—I did not bring a copy of those instructions with me but I can furnish one to you—
Q. To examine all passengers?
A. To keep them under observation. In the case of epileptics those are reported to our doctors and they are immediately deported I do not think that any doctor can say upon merely examining a man that he is an epileptic.
Q. No?
A. But where he is on ship board for 8 or 10 days and through the excitement of coming on or going off the ship he might have an epileptic fit, that is reported by the ship's doctor to our officers.
Q. But that comes accidentally to his notice. What I want to get at is this: Is it the duty of the ship's doctor to make any examination of the passengers?
A. No, he does not strip them or anything of that kind.

By Mr. Macdonald (Pictou):

- Q. The immigrant gets a clean bill of health from the medical officer when he comes on board?
A. I don't know what he gets, but he is inspected.

By Mr. Barr:

- Q. As a matter of fact, are they examined when they come on board?
A. The medical officer stands and inspects them as they come on board, but they do not strip for inspection.

Q. They are inspected just as they are passing on board?

A. In the case of foreign emigrants when they come to Liverpool, they go to the company's boarding houses and there they are carefully examined. That is shown by the number of deportations. Since the medical inspection act went into force in December, 1902, we have detained at ocean ports 16,353 people of whom 3,294 were rejected and were not allowed to enter Canada at all. During that same period we have deported to the countries from whence they came 1,402 people. That is they got through our inspection, but we exercised the provisions of the law and deported them. The major portions of this number were English people, 883, because they are not as carefully examined at the ocean port of departure as the foreigners are. Of the foreigners 7 were Russians, 8 Germans, 8 French, 8 Belgians, 1 Roumanian, 1 Doukhoboar, 1 Turk and 1 Assyrian.

By Mr. Blain:

Q. Who is the immigration agent at Halifax?

A. Mr. F. W. Annand.

Q. At the bottom of a number of these certificates I see no signature?

A. Is there not a rubber stamp?

Q. A rubber stamp, but not a signature?

A. We take that as evidence of whether the immigrant has landed or not.

Q. Then the agent does not sign the certificate?

A. In some cases he does, or else he stamps them.

Q. Just examine those and see whether they are signed (handing certificates to witness)?

A. These are signed 'F. W. Annand, Halifax, N.S.' They are all stamped.

Q. None of them are signed by the agent?

A. None.

Q. The agent does not sign any of them?

A. He may not have been there.

By Mr. Macdonald (Pictou):

Q. Would you regard that stamp as the signature of the agent?

A. Yes.

By Mr. Blain:

Q. Is there the signature of the agent on any of that lot (exhibiting certificates)?

A. They have all got the rubber stamp of the agent affixed.

Q. I am asking is the signature of the agent on any one of them?

A. There is a rubber stamp.

Q. Is the signature of the agent there?

A. They are rubber stamped.

Q. That is not a signature. I am asking the question whether there is the agent's signature on any one of these documents?

A. No, not in pen and ink.

Mr. WILSON (Lennox).—I would like, Mr. Scott, at the next meeting, to bring the report of Mr. N. B. Miller, the agent for Lennox and Addington, the lists that were sent out and the answers received.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 62,

WEDNESDAY, May 13, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock, a.m., the Chairman, Mr. McKenzie, presiding.

The CHAIRMAN.—We have met this morning for the purpose of resuming the examination of Mr. W. D. Scott, in the matter of immigration. Mr. Scott will continue from where he left off at our previous meeting.

Mr. SCOTT.—At the last meeting of the Committee which I attended I was explaining to you the system upon which the British bonuses were paid and checked. I had taken, for purposes of illustration, the Allan SS. *Victorian* which arrived at Halifax on the 20th of March of this year. I have already explained that the immigrant signed an application for a ticket setting forth the fact that he had a year's experience in farm labour, and that was forwarded to Ottawa, and it was upon that application, together with the examination made by the immigration agent at the ocean port of arrival, that the bonuses were paid. This particular ship, the *Victorian*, arrived at Halifax with 838 passengers on board. Of this number 505 were classed as immigrants, 78 as going to the United States, 208 as returned Canadians and 8 as tourists.

By Mr. Owen:

Q. You said there was an examination, an examination for what?

A. Where, at the ocean port?

Q. Yes?

A. There is a medical examination and a civil examination. First the immigrant is medically examined and then he is civilly examined and the civil examination—

Q. Is the immigrant medically examined in order to ascertain if he is suffering from disease?

A. Yes, as to whether he is suffering from disease. That is the medical examination. Then he is civilly examined as to his name, his last occupation prior to sailing, how long so engaged, how long engaged as a farmer, farm labourer, gardener, and so on, and when and where, as to whether he was a British subject by birth or naturalization, his destination in Canada, his intended occupation in Canada, if ever he had been in Canada before and how much money he had with him.

Q. Do I understand that every steamship passenger who is forwarded to this country by a booking agent is examined thoroughly?

A. All except first class passengers. First class passengers are not medically examined unless in the case of a foreigner occupying a first class stateroom. According to the arrangement made with the steamship company, if they have a foreigner in a first class cabin they produce him for the inspection of the medical officer, that being the condition—that we would not examine other first class passengers, provided the company produced foreigners who travelled in that class for examination. I have prepared a statement showing the number of immigrants that have landed at our ocean ports for a number of years.

By Mr. Wilson (Lennox):

Q. You gave us that statement at the last meeting, did you not?

A. No. I will hand in the statement for the information of the Committee.

STATEMENT showing total arrivals of immigrants at ocean ports, divided into classes, from 1897—1907-8.

Period.	Immigration Proper.	Returned Canadians.	Tourist.	Saloon Passengers.	Totals.
Calendar year 1897.....	19,304	484	.....	13,076	32,864
“ 1898.....	22,781	541	100	8,137	31,559
“ 1899.....	32,598	596	196	11,334	44,724
First 6 months of 1900.....	15,352	352	151	2,849	18,704
Fiscal year 1900-1.....	31,162	1,170	205	9,761	42,298
“ 1901-2.....	40,991	1,377	420	9,756	52,544
“ 1902-3.....	78,891	1,870	304	11,026	92,091
“ 1903-4.....	85,159	2,485	524	9,587	97,755
“ 1904-5.....	102,723	5,354	2,001	9,552	119,630
“ 1905-6.....	131,268	10,913	3,124	13,296	158,601
Fiscal period (9 mos.) 1906-7.	90,008	9,293	2,414	12,444	114,159
Fiscal year 1907-8.....	204,157	17,652	5,463	13,575	240,847
Totals.....	854,394	52,087	14,902	124,393	1,045,776

Immigrants are those who have never been in Canada before and who declare their intention to reside in Canada permanently.

Returned Canadians are those who were born in Canada or who have been in Canada before.

Tourists are those who say they are simply in Canada on a visit

Saloon passengers are those travelling on first-class tickets..

Returned Canadians, tourists and saloon passengers are not included in our immigration figures.

By Mr. Owen:

Q. That statement includes women and children, I suppose?

A. It includes women and children, every person travelling on a ticket.

The system of paying bonuses is still in force. On this particular ship there were 208 passengers classed as returned Canadians. Agents had made claims on a number of those that were disallowed. For instance, one agent at Leicester, a man named Andrew claimed bonus on an immigrant shown on page 12, line 34, of the manifest, On being examined by our agent at the ocean port the man said he had been in Canada before, and the claim for bonus was, therefore, disallowed. Another claim by the same man was made on a woman going to her husband, who was said to be farming in Saskatchewan. Our agent at the ocean port elicited the fact from the woman that her husband was a tailor. The bonus was not allowed in the case of that claim either.

By Mr. Crocket:

Q. How many claims were disallowed?

A. Fifteen claims out of this lot were disallowed.

Q. Out of how many?

A. I will give you a statement of the total number. Bonuses were claimed on 55 men, 22 women and 23 children. According to the information collected at the ocean port, the British bonus was allowed and payable upon 41 men, 14 women and 13 children, leaving 1 men, 8 women and 10 children disallowed. In connection with the same vessel the continental bonus was claimed on 37 men, 9 women and 3 children, and was allowed on 31 men and 5 women. The total British bonus paid was £61 10s., and the continental bonus amounted to £36. These particular foreigners were an exceptionally good class of people. They were Hollanders principally and were going to

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Calgary and possessed sums of money varying from \$100 to \$8,000. We do not ask English-speaking immigrants landing at ocean ports what amount of money they have, further if they are in possession of \$25 it is deemed sufficient to last them for a reasonable time after they land. Of course, foreigners always have been examined as to the amount of cash in their possession.

By Mr. Owen:

Q. Referring to the examination for disease, who is that made by? By the agent or a practising physician?

A. By practising physicians.

Q. Employed by this government?

A. Yes, employed by the government.

Q. Do you know who they are?

A. Yes, I know who they are. At Quebec there is Dr. Page, who is the chief, Dr. Nadeau, Dr. Potvin, Dr. Lessard and Dr. Dobbin.

Q. Is there any examination made until the arrival of the immigrants at Quebec?

A. They are examined medically before they go on board ship.

By Mr. Wilson (Lennox):

Q. By whom is that examination made ?

A. By the Board of Trade doctor and the company's own doctor.

Q. Under what authority?

A. The Merchant's Shipping Act.

Q. When was that Act passed?

A. I could not tell you that.

Q. Do you not remember a report made by Lord Strathcona saying that he had failed to get a clause inserted in the Bill which was before the Imperial Parliament, as it was too late in the session?

A. I could not tell you anything about that.

Mr. WILSON. (Lennox).—If you had read his report you would have seen it.

By Mr. Owen:

Q. My reason for asking the question is that I enquired in the House the other night if all the immigrants that were sent to this country by booking agents were examined thoroughly for disease before being allowed to go on board at the port of embarkation, and I was told no.

A. They are examined. They are examined by the Board of Trade doctor and also by the company's doctor.

By Mr. Barr:

Q. The Board of Trade in England?

A. The Board of Trade in England.

Q. What interest would they have in not allowing diseased persons to go on board?

A. To prevent the spread of disease on the ship, I suppose.

NUMBER OF BOOKING AGENTS PRESENTING CLAIMS.

By Mr. Crockett:

Q. How many booking agents presented claims last year?

A. I think we have about 1,600 booking agents.

Q. What would be the actual number of claims presented in a year?

A. I should think they probably amount to \$100,000, or somewhere around that sum.

Q. That is the amount that you pay?

A. That we pay. We keep an open account with each booking agent.

By Mr. Sproule:

Q. Was there any overlapping of accounts, any instance where the booking agent was paid more than once?

A. On the same man?

Q. On the same man?

A. No.

By Mr. Heron:

Q. How would you prevent that?

A. Only one man issues the ticket and that is the booking agent who makes the claim. Where immigrants, upon whom bonus has been paid, are afterwards found to have gone to the United States, or have been returned to Great Britain as undesirable, or for any reason, we deduct that amount from the next payment to the booking agent. Occasionally we deduct from the bonus paid to booking agents the cost of sending a man back to England. We had a case the other day where a man had been sent out to Nelson, B.C., under misrepresentations. That man produced evidence that I thought was satisfactory, and we returned him to the country that he came from and charged the cost to the booking agent with whom we had an open account. In other cases where they have misrepresented things to immigrants we have their licenses cancelled through representations to the British Board of Trade.

By Mr. McIntyre (Strathcona):

Q. In the British Isles booking agents must register and take out a license?

A. Yes, they must get a license from the Board of Trade.

MAJORITY OF BOOKING AGENTS IN AGRICULTURAL DISTRICTS.

By Mr. Christie:

Q. Do you urge upon your agents that they ought to try and attract agricultural immigrants?

A. It is only to the agricultural class that we appeal.

Q. Do you have agents in the agricultural districts?

A. The great bulk of these booking agents are in agricultural districts.

Q. My reason for asking that is that we do not get the right class of people?

A. Only about 7 per cent of the population of Great Britain is rural.

Mr. CHRISTIE.—A neighbour of mine went to get help and ran across an immigrant who was a likely looking fellow. He was asked what wages he would want, and said that he would require \$75 a month to go on a farm. My neighbour told him he had made a mistake.

By Mr. Savoie:

Q. You cannot take that as an example?

A. No. I have made the statement to the press, to different people and to immigrants themselves, that if any immigrant can produce to me any evidence that he was sent out to this country under misrepresentations, I will not only pay his passage back to Great Britain, but assist him in the prosecution of the booking agent who induced him to come out. The Merchant Shipping Act of Great Britain is very definite on that question. However, I have never seen the man yet, when it came down to a question of furnishing evidence, that could produce it. I think, on the whole, the booking agents are very careful in the statements they make to immigrants.

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By Mr. Christie:

Q. They are all urged to say they have worked on the farm?

A. I have not found that to be the fact and I have talked with hundreds of immigrants.

Q. I have heard the statements of lots of them, and there were a great many who, I suppose, never did any farming.

A. No doubt a great many immigrants come to this country who have never been on the land before. As I have already said, only 7 per cent of the population of Great Britain is rural, and we must naturally expect to get a great many from the towns and cities. I should explain that booking agents in the cities, such as the Canadian Pacific Railway, the Allan Line, the Dominion Line and the Donaldson Line, all the head offices, do not receive bonuses for immigrants. It is only the sub-agents working under them that get the bonus. I have never been able to find an immigrant who would tell me that he had been sent out under misrepresentations, with the exception of an odd case like that at Nelson, where the man produced evidence to show that his statements were well founded, and I had him returned to Great Britain.

By Mr. Monk:

Q. What is the name of that booking agent?

A. The agency was managed by Walter Stark, of Liverpool. They called themselves the British Emigration and Tourist Association.

Q. They were at that time accredited booking agents?

A. Yes, of different lines.

Q. And what is the name of the immigrant in this case?

A. I have not it here.

Q. What was the charge?

A. That they had sent the man out to Canada under misrepresentations.

Q. How much did the expenses in that case come to?

A. I think about \$67, between that and \$70.

Q. Is the matter settled to-day?

A. We have it charged up against the company yet.

Q. Have they admitted the charge?

A. They simply said they did not carry out their part of the contract because Mr. Hammond, to whom the immigrant was sent, had not carried out his part of the arrangement.

Q. The matter is still in controversy?

A. No, not at all as far as we are concerned. We not only had their license as a booking agent cancelled, but they lost all their steamship agencies.

Q. Is that booking agent still on our list?

A. No, he not only lost his commission as booking agent, but his license as a shipping agent for all of the companies.

Q. On account of this?

A. Presumably, and I suppose they had other reasons for their action.

Q. Is there any correspondence in relation to that particular case?

A. There is as regards returning the immigrant to England.

Q. You have that correspondence?

A. Yes, in the office.

Q. Will you bring it up at a future meeting of the committee, please?

A. Yes.

By Mr. Lalor:

Q. You said there were 1,800 booking agents. How many active agents are there making claims?

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A. There are a great many more booking agents in Great Britain. We simply have open accounts with that number.

By Mr. Crocket:

Q. And you paid the 1,800 a total of \$100,000 last year?

A. I think \$100,000.

Q. I thought you mentioned booking agents who had presented claims for 50 in one case and in another case for 30?

A. When?

Q. This morning?

A. No, that was for the whole ship. That ship had 838 passengers on board.

By Mr. Monk:

Q. Let me understand about the particular case you spoke of a while ago. Did the government pay the cost of returning this man to England?

A. Yes.

Q. Which amounted to about \$60?

A. I think, speaking from memory, \$67, but I will let you know the actual amount.

Q. And that amount was charged to the booking agency which is in Liverpool?

A. Yes.

Q. Has that booking agency a claim against the department at present, has it made a claim?

A. They have a number of claims; they had sent out a great many immigrants.

Q. What do their claims amount to in the aggregate?

A. I suppose that last year about—

Q. Roughly speaking?

A. Last year perhaps £500.

Q. And have you paid the balance to that booking agency less this amount of \$67?

A. I think we paid £400 on account.

Q. Leaving the other £100 in abeyance?

A. Until we settled these accounts.

Q. This particular item?

A. That was one of them.

Q. Were there others?

A. I could not say, but that was one of the items which was to be deducted.

By Mr. Crocket:

Q. Would that be about the largest amount that any single booking agent had claimed?

A. Yes, I think it would be in the year. That may have covered more than one year. For instance, the people that shipped in March. The fiscal year ends in March and they would come in in this year.

By Mr. Lalor:

Q. Can you recall the largest payment which has been made to any one booking agent?

A. No, I cannot.

By Mr. Monk:

Q. Have you ceased completely doing business with this particular booking agent?

A. We have ceased to do business, and he has lost his license. Then there have been other cases. There was the case in London last year where a woman named

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Kendall misrepresented to people the conditions in Canada and persisted in advertising in the London papers contrary to the facts. My assistant in London notified them to change their advertisement, but they refused to do so, so we made representations and they lost their license.

SYSTEM ADOPTED IN PAYING BONUSES.

Q. What I would like to get at—perhaps you have stated it already—is the system adopted. Do you control personally the payment of bonuses or is there in the department some person specially charged with overseeing that branch?

A. There are clerks that are doing it.

Q. There is a clerk that has special charge?

A. Yes.

Q. Under your direction.

A. Yes.

Q. What is his name?

A. His name is Parlow.

Q. He has charge especially of the overseeing of the payments of bonuses?

A. Yes, he checks them.

Q. And is there a separate record kept for each ship that arrives? By that I mean is there a dossier, a record, made for each ship?

A. As to the bonuses paid on each ship?

A. As to the whole of the immigrants brought over by that ship?

A. Yes.

Q. Is that record put in special books?

A. No, it is fastened to the manifests, that is the statistical part of it.

Q. You could turn up the records of any ship I mean?

A. Yes, any name on the ship.

Q. You have just produced before the committee the record of the *Victorian*?

A. Yes, I took one at random.

Q. Which sailed from the British Isles?

A. The *Victorian* sailed from Liverpool on the 13th March and arrived at Halifax on the 20th.

Q. You have a record similar to that of steamers sailing from the Continent?

A. Yes.

Q. There was a question put in the House some time ago, if you remember, about one ship that arrived in this country from the continent?

A. Yes.

Q. You have the record?

A. Yes.

Q. Will you bring it at the next meeting?

A. Yes.

Q. Now, as regards the payment of bonuses and emigration expenses generally, are the payments made in England?

A. For bonuses?

Q. For bonuses, advertisements and salaries?

A. Yes.

Q. All payments, if I understand right, are made in England?

A. They are made in England. The mode is this: we have a number of agents in Great Britain. We have them in Glasgow, Aberdeen, Liverpool, Birmingham, Belfast, Dublin, Exeter and so on. Each of these agents, at the end of the month, puts in an estimate of his expenses for the month following. Those are sent to London. The London office makes up its estimate and then adds to it the estimates of the other agents. Whatever it amounts to is sent over here and then we cable that amount. There is a letter of credit which goes to the credit of Lord Strathcona and

Mr. Obed Smith, my assistant in London. All cheques against that credit are signed by Lord Strathcona and Mr. Smith. In reference to the bonuses, the claims are all made up here. This is the only place where the information is available for that purpose. Those are sent over and the total is added to the—

Q. I am speaking of the British Isles now?

A. Yes, and I am speaking of the British Isles also. The total of these bonus accounts is added to the London estimate and included in the letter of credit. I have a sample of the accounts here for the steamship *Victorian* and the amounts are divided up. Here is a booking agent at Leicester who gets £1 bonus on one immigrant. These accounts are all made up and sent over to London and they issue the cheques there.

Q. Then if I understand right, every month you receive from the London office an estimate of the salaries and expenses?

A. For the month following.

Q. And added to that is a specific statement of the bonuses earned during that month which is sent to you?

A. No, I add that here.

Q. You add that?

A. Certainly. As I have already said, the only place where the information is available is here.

Q. You have that information and cable the total amount. Upon what data do you add that? The claims for bonus have been sent to you direct?

A. The claims are sent direct here by the booking agent. I have explained that already.

Q. Therefore, any agent who has earned a bonus must send his claim direct to Ottawa?

A. Direct to Ottawa.

Q. And he sends his claims in monthly?

A. We get them by every English mail.

Q. Will you bring, for the next meeting, a dozen of these periodical claims for bonus?

A. What do you mean by periodical?

Q. You say you get them by every English mail?

A. Yes, I have got bunches for this particular ship. I have them all here.

Q. You have them for that particular ship that we have been discussing?

A. Yes, for that particular ship. Would you like them for the other ship that you were asking about?

Q. Not immediately. My object is to find out the way of arranging matters in Great Britain. If you would kindly bring up a dozen claims for bonus?

A. I have 50 of them here.

Q. They are filed before the committee?

A. Yes, I can leave them here.

Q. When you get those, what process do they go through in your hands?

A. As I explained before, every immigrant when he lands at an ocean port is first medically examined and then civilly examined. In connection with the latter, he is asked certain questions. Our agent fills out one of these particular forms and it is sent to this office. It is upon the evidence of the immigrant himself at the ocean port that the bonus is paid.

Q. Will you show me the claims for bonus on this ship (the SS. *Victorian*)?

A. Here is the manifest (handing over the manifest).

By Mr. Wilson:

Q. Does the examiner have a conversation with each immigrant?

A. Yes, with each immigrant. Those are the claims allowed, Mr. Monk (pointing out on the statement). Here are the claims that were disallowed and the reasons therefor, and the line on the manifest where the man's name is to be found is also given.

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By Mr. Monk:

Q. Does the claim of the booking agent come out on the ship with the manifest?

A. No, that is mailed direct by the booking agent. This particular one was mailed to me by this man Andrew and was received here on March 20.

Q. Then what you do is to compare that with the manifest of the ship?

A. And the evidence taken before our agent at the ocean port.

Q. Well, let us take the first name on that list?

A. Take any particular name here. Those the the names of persons on which the bonus was allowed. Take one at random.

Q. Let us take Joseph Watkins Thomas?

A. His name is to be found on page 6, line 28 of this manifest. Here it is (pointing to the information), Joseph W. Thomas. He was a farm labourer going to New Westminster, B.C. He was single, 32 years of age, and held transportation over the Canadian Pacific Railway. He travelled ocean ticket No. 5,081.

Q. And what is that certificate at the foot, the Canadian Government agent's certificate, which does not seem to be filled in?

A. I read the circular in connection with that the other day. The booking agents claim they should be paid a bonus on first class passengers very often. We say 'no.' We don't examine them, so that we cannot verify your statements. But if you have your passenger appear before our agents in the old country and have them examined there and sign this certificate, we will pay a bonus or we will pay it on second or third-class passengers.' That is optional.

Q. But none of these certificates appear to have been signed?

A. In some instances they do not. It is optional with them.

Q. Have you produced a list of the booking agents in the British Isles?

A. I have one here. I might say, continuing the matter of this claim, here is the claim made by the agent in the case of Thomas and here are the particulars of the examination made by our agent at the ocean port. It says there that Thomas is a farmer and has been a farmer all his life and is going to New Westminster.

Q. In whose handwriting is that?

A. That of our agent or one of his clerks. Would you like this manifest filed, Mr. Monk?

Q. If you please. Did I understand you to say that you would produce a list of the booking agents in the British Isles?

A. Yes, I have a copy of it here. I have a list of the booking agents authorized by the government in the British Isles and here is an addition to them.

Q. I am speaking of the authorized booking agents?

A. Yes, I will also leave the accounts in connection with this particular ship the *Victorian*.

By Mr. Crockett:

Q. Are these claims paid entirely on the booking agents' certificates and the ship's manifest?

A. Yes.

Q. That is all the data the department has before it?

A. It has first the statement signed by the immigrant, then the ship's manifest and the agent's examination at the ocean port.

Q. What you have there is a claim sent in by the booking agent. The application for a ticket is signed by the immigrant himself and certified by the agent?

A. Yes.

Q. Have you anything beyond that from the immigrant?

A. We have his examination at the ocean port and the manifest, which is declared to be correct by the master of the ship.

By Mr. Monk:

Q. The list which you have just produced purports to be a list of steamship agents in Great Britain and Ireland?

A. Yes, Great Britain and Ireland.

Q. Revised up to September 1, 1907?

A. Yes.

Q. Do you mean to say that each of these men has a letter from the department authorizing him to act as a booking agent?

A. He has the circulars sent out by the department.

Q. But I understood from your previous testimony that none but those specially authorized by the department could act as booking agents and collect bonuses?

A. I did not say so. In Great Britain we allow any booking agent to put in a claim for bonus and as long as he does not break any of the rules of the department by issuing advertisements or inducing people to come here that he should not, we continue to pay him the bonus. When we find that he issues advertisements that are not correct or sends out people that the government do not want, we cut him off:

Q. Then there is no special authorization given by the department to booking agents in the British Isles.

A. No, we recognize all booking agents.

Q. What is the license to which you refer?

A. That is given by the British Board of Trade to booking agents in Great Britain.

Q. Upon what conditions?

A. I have not seen a copy of them.

Q. You do not know what the conditions require?

A. No.

Q. Is the firm of J. Smart & Company, Limited, an authorized booking agent?

A. If they are on the list which I have produced that is correct.

Q. You should know better than I?

A. The names on the list are in alphabetical order (after examining list). I do not see that firm's name on the list.

Q. Do you know, as a matter of fact, whether they are authorized to book?

A. I don't think they are. I think Mr. Smart has an agent in Glasgow that does his booking.

Q. Has that firm or company ever been paid any bonus?

A. Yes, they have.

Q. About how much in the aggregate?

A. I could not tell you that. I could get the exact sum for you.

By Mr. Crocket:

Q. Did you say that the Smart firm was an authorized booking firm?

A. No, I think he books through an agent in Glasgow. I think he has a man who does the booking there.

By Mr. Monk:

Q. Would you give us at the next meeting the total amount of bonus paid to that firm, or association, for the past four years?

A. Yes.

Mr. CROCKET.—Is that the same Mr. Smart who was manager for the North Atlantic Trading Company?

By Mr. Monk:

Q. Yes. On the Continent, I understand, a different system prevailed. No booking agent can make claim for bonus unless he has been duly authorized by the government?

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A. Yes, unless he has been selected by the government.

Q. Have you a list of the selected agents on the continent?

A. If I have not the list here, I can get it for you. Yes, I have a list of the agents here (producing list).

Q. Would you be good enough to leave it with the Committee?

A. Yes, I can file it.

Q. Do I understand from you, Mr. Scott, that each of the men mentioned in this list of continental agents has an authorization from the Dominion Government to book immigrants and to claim bonus?

A. They have been selected by my assistant in London to act as booking agents, that is, we will accept claims from them. The order in council with respect to continental booking agents is dated February 19, 1907. I will read it (reads):

EXTRACT from a Report of the Committee of the Privy Council, approved by the Governor General, on the 19th February, 1907.

On a report, dated 31st December, 1906, from the Minister of the Interior, submitting, in view of the termination of the contract with the North Atlantic Trading Company, for promoting continental immigration, that it is necessary that some other arrangement should be made to ensure the continuance of work in the interests of Canada in European countries.

The minister, therefore, recommends that a commission of ten shillings for each adult, and five shillings for each child be allowed to the steamship booking agent on immigrants of the same classes as those upon whom bonus is paid in Great Britain and Ireland, viz.:—Farmers, farm labourers, gardeners, stablemen, carters, railway surfacemen, navvies, or miners, who have signified their intention of following farming or railway construction work in Canada, and female domestic servants.

An adult, for the purpose of this arrangement, would be a person, male or female, eighteen years of age or over, and a child, a person between one and eighteen, no bonus being paid on infants under one year of age.

It is recommended that the bonus be paid to selected steamship booking agents in Norway, Sweden, Denmark, Holland, Germany, Austria-Hungary, Russia, France, Belgium and Switzerland, and that the immigrants upon whom it is paid shall be natives of these countries and not of other countries ticketed in transit.

The minister, in view of the restricted emigration laws in most of the European countries, recommends that the agents to whom the bonus arrangements will apply, shall be carefully selected by the Assistant Superintendent of Emigration for Canada in London, as by restricting the arrangements in this way it will be possible to make selection of responsible and reliable agents who may be depended on not to provoke any conflict with the authorities responsible for the administration of the emigration laws above referred to.

The minister also recommends that the agent so selected should submit their claims for bonus in the same way as the British booking agents do, and that all allowed claims be paid direct from Ottawa, such payments to be made out of the appropriation for immigration.

The Committee submit the same for approval.

RODOLPHE BOUDREAU,

Acting Clerk of the Privy Council.

To the Honourable,
The Minister of the Interior.

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IMMIGRATION BRANCH,

DEPARTMENT OF THE INTERIOR,

OTTAWA, CANADA, August, 1907.

Circular to Steamship Booking Agents in France, Belgium, Holland, Sweden, Denmark, Norway, Germany, Switzerland, Austria-Hungary and Finland, who have been authorized by the Canadian Government to receive bonus upon tickets sold to emigrants to Canada.

SIR,—This circular takes the place of my circular of March last, and I beg to inform you that the following regulations apply to payment of bonuses on tickets to Canada.

1. The bonus offered by the Government of Canada will be paid on tickets to Canada sold to persons whose occupation in their native country has been for at least one year, one of the following classes, viz.: Farmers, farm labourers, gardeners, stablemen, carters, railway surfacemen, navvies, or miners, who have signified their intention of following farming or railway construction work in Canada, and female domestic servants.

2. The bonus is only payable on emigrants landing at Canadian ports, excepting those landing at Portland, Maine, during the winter.

3. The bonus will be 10s. on each person of prescribed classes, 18 years of age or over, and 5s. on those between one and 18 years of age. No bonus on infants, tourists, saloon passengers, prepaid tickets, persons of other occupation than one of the above named, persons mentally or physically unfit, or on persons previously domiciled in Canada.

4. In order to enable the department to pay bonus it will be necessary to have the evidence in support of claim supplied on the prescribed form.

5. No bonuses will be paid to the head offices of steamship or railway lines.

6. No bonus will be paid to booking agents misrepresenting the conditions in Canada, or whose advertising does not meet with the approval of the Immigration Department.

7. Payment will be made monthly, and accompanying the cheque in each case, which will be issued at the Canadian Government office in London, England, two statements will be sent to the payee, one giving the name, age and ticket number, in each case, of the passengers on whom bonus is allowed, and the other giving name and particulars of passengers on whom bonus is allowed, stating the reasons for such disallowance.

8. A supply of blank forms for use under this system will be sent to you in due course by Mr. J. Bruce Walker, assistant superintendent of emigration, 11-12 Charing Cross, London, S.W., England, from whom you can obtain more when required. Agents are particularly requested to refrain from sending any claims on persons not fully coming within the requirements as to nationality, occupation, &c. If the head of a family comes out in advance of his family, bonus may be claimed later on the members of the family when tickets are purchased for them, the bonus being allowed in the meantime on head of family alone. Booking agents should secure and retain the home address of the emigrant or his friends.

9. If it is found after sending in a bonus claim that the immigrant on whom the claim was made did not sail on the steamship or at the time stated on the claim, the booking agent is requested to forward immediately an amended claim which should be marked 'corrected bonus claim.'

10. Please note carefully that the bonus referred to above is only paid on natives of your own country, ticketed by you to Canada, and not to persons of any other nationality.

11. The object in offering this bonus is to interest the booking agent in sending to Canada a desirable class of persons who will settle permanently in this country, and,

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therefore, in any case where the Canadian Government finds it necessary to deport any immigrant within twelve months of his arrival in Canada, or where the immigrant has left Canada for the United States within that period, the bonus paid upon him will be deducted from the account of the agent to whom it was paid.

12. All communications with regard to the non-payment of claims should be sent direct to us. In every case the name and age of the emigrant and other particulars necessary for identification should be given.

N.B.—No bonus will be paid to any booking agent who has not previously been officially authorized by the Assistant Superintendent of Emigration for Canada in London, England, to receive such bonus.

Your obedient servant,

W. D. SCOTT,
Superintendent of Immigration.

ORDER IN COUNCIL INCREASING AMOUNT OF BONUS.

Certified copy of a Report of the Committee of the Privy Council, approved by His Excellency the Governor General on January 6, 1908.

The Committee of the Privy Council have had under consideration a report, dated January 2, 1908, from the Minister of the Interior, stating that on December 31, 1906, he reported that in view of the termination of the contract with the North Atlantic Trading Company for promoting continental immigration, he considered it necessary that some other arrangement should be made to ensure the continuance of work in the interests of Canada in European countries, and recommended that a commission of ten shillings for each adult and five shillings for each child be allowed to the steamship booking agents on immigrants of the same classes as those upon whom bonus was paid in Great Britain and Ireland, viz., farmers, farm labourers, gardeners, stablemen, carter, railway surface men, navvies, or miners, who signified their intention of following farming or railway construction work in Canada and female domestic servants; an adult, for the purpose of this arrangement, being a person, male or female, eighteen years of age and over, and a child, a person between one and eighteen, no bonus being paid on infants under one year of age.

The Minister further states that it has been found in practice that the bonuses thus recommended and subsequently authorized by order in council of February 19, 1907, have not been sufficient to accomplish the desired object, and that in order to enlist the full sympathy and interest of the selected continental booking agents in the work of promoting emigration to Canada it is necessary to put them on the same footing as the British agents.

The Minister therefore recommends that the bonuses above referred to be increased to one pound, and ten shillings, respectively, and that the order in council of the 19th February, 1907, be amended accordingly.

The Committee submit the same for approval.

RODOLPHE BOUDREAU,
Clerk of the Privy Council.

By Mr. Wilson (Lennox):

Q. Is that order in council you first read in force now? I understand there is on superseding that under which the bonus has been doubled.

A. I have read that one also.

Q. There is not much use in putting that on the record if it has been superseded?

A. One is the basis of the other.

Q. Before you go any further, I understand that during the last nine months, just before that order in council was passed, we got 30,000 immigrants more than we did in the previous nine months?

A. I will give you a statement as to that. Continental immigration, is it, you wanted?

Q. I want the immigration altogether?

A. I have prepared a number of statements. The first one is a statement showing the total immigration to Canada.

Q. From what date?

A. From January 1, 1897, to March 31 of this year.

Q. Have you got it for the previous nine months also?

A. Of which?

Q. Have you got the figures for the last nine months. Have you also got them for the previous nine months?

A. I am giving the figures for the past eleven years:

TOTAL IMMIGRATION to Canada from January 1, 1897, to March 31, 1908.

	Number.
Calendar year 1897.....	21,916
" 1898.....	31,900
" 1899.....	44,543
First six months of 1900.....	23,895
Fiscal year 1900-.....	49,149
" 1901-2.....	67,379
" 1902-3.....	128,364
" 1903-4.....	130,331
" 1904-5.....	146,266
" 1905-6.....	189,064
Fractional fiscal year (9 months) 1906-7.....	124,667
Fiscal year 1907-8.....	262,469

BRITISH IMMIGRATION to Canada from January 1, 1897, to March 31, 1908.

	Number.
Calendar year 1897.....	11,383
" 1898.....	11,173
" 1899.....	10,660
First six months of 1900.....	5,141
Fiscal year 1900-1.....	11,810
" 1901-2.....	17,259
" 1902-3.....	41,792
" 1903-4.....	50,374
" 1904-5.....	65,359
" 1905-6.....	86,796
Fiscal period (9 months) 1906-7.....	55,791
Fiscal year 1907-8.....	120,182

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CONTINENTAL IMMIGRATION to Canada from January 1, 1897, to March 31, 1908.

	Number.
Calendar year 1897.....	7,921
" 1898.....	11,608
" 1899.....	21,938
First six months of 1900.....	10,211
Fiscal year 1900-1.....	19,352
" 1901-2.....	23,732
" 1902-3.....	37,099
" 1903-4.....	34,728
" 1904-5.....	37,255
" 1905-6.....	44,349
Fiscal period (9 months) 1906-7.....	34,217
Fiscal year 1907-8.....	83,975

Q. You have not given me the comparison I asked for all the same. I want to show there was no justification for the increase of bonus, that is that there was no justification by reason of the falling off in immigrant arrivals?

A. I will give you that just in a moment.

By Mr. Sproule:

Q. What was the object of increasing the bonus, to stimulate a larger immigration?

A. Of a desirable class, yes.

Q. Have you any figures that will show relatively how many immigrants were of the desirable class for the nine months during the last two periods?

A. I have some figures prepared and I will read them in a few moments.

Q. Because it seems to me that would indicate whether there was a falling off sufficient to justify the increase in the bonus?

A. In addition to the other statement given, I have one showing the immigration from the United States to Canada from January 1, 1897, to March 31, 1908.

IMMIGRATION from the United States to Canada from January 1, 1897, to March 31, 1908.

	Number.
Calendar year 1897.....	2,412
" 1898.....	9,119
" 1899.....	11,945
First 6 months, 1900.....	8,543
Fiscal year 1900-1901.....	17,987
" 1901-1902.....	26,388
" 1902-1903.....	49,473
" 1903-1904.....	45,229
" 1904-1905.....	43,652
" 1905-1906.....	57,919
Fiscal period (9 mos.) 1906-1907.....	34,659
Fiscal year 1907-1908.....	58,312

8 EDWARD VII., A. 1908

ENGLISH and Welsh Immigration to Canada from July 1, 1900, to March 31, 1908.

	Number.
Fiscal year 1900-1901.....	9,401
" 1901-1902.....	13,095
" 1902-1903.....	32,510
" 1903-1904.....	36,694
" 1904-1905.....	49,617
" 1905-1906.....	65,932
Fiscal period (9 mos.) 1906-1907.....	41,658
Fiscal year 1907-1908.....	91,412

By Mr. Wilson (Lennox):

Q. How many of these people were sent out by charitable societies?

A. I have not got that information here.

Q. You have already given that information elsewhere?

A. I had it printed and distributed.

Q. Can you tell us how long those societies have been sending out this kind of immigrants?

A. No.

Q. You have no knowledge of that?

A. No, all the knowledge I have is that they have stopped sending.

Q. Have you had no reports from your agent in England?

A. I don't think we ever had a report on those lines.

Q. How did you get the information you have?

A. From my assistant in London.

By Mr. Crocket:

Q. Then the figures you gave include immigrants sent out by charitable societies?

A. They include all second and third-class passengers, all people who declare their intention to remain in Canada.

SCOTCH IMMIGRATION to Canada from July 1, 1900, to March, 31, 1908.

	Number.
Fiscal yea 1900-1901.....	1,476
" 1901-1902.....	2,853
" 1902-1903.....	7,046
" 1903-1904.....	10,552
" 1904-1905.....	11,744
" 1905-1906.....	15,846
Fiscal period (9 mos.) 1906-1907.....	10,729
Fiscal year 1907-1908.....	22,223

By Mr. Sproule:

Q. Give us a statement of the Irish immigrant arrivals?

A. Here it is.

APPENDIX No. 2

IRISH IMMIGRATION to Canada from July 1, 1900, to March 31, 1908.

	Number.
Fiscal year 1900-1901.....	933
" 1901-1902.....	1,311
" 1902-1903.....	2,236
" 1903-1904.....	3,128
" 1904-1905.....	3,998
" 1905-1906.....	5,018
Fiscal period (9 mos.) 1906-1907.....	3,404
Fiscal year 1907-1908.....	6,547

Q. How many agents have you in Ireland?

A. Two regular agents, and then we have the booking agents besides.

Q. Who are the two regular agents and where are they located?

A. In Belfast and Dublin. Mr. O'Kelly is in Dublin and Mr. Webster in Belfast. They are both Irishmen.

By Mr. Crocket:

Q. Do the government pay any bonuses on immigrants coming into Canada from the United States?

A. Yes.

Q. What bonuses?

A. \$3 on a man, \$2 on a woman and \$1 on a child.

Q. They are restricted to certain classes of persons?

A. Yes, practically. They are all on immigrants to western Canada.

Q. Is the bonus restricted to the agricultural and domestic servant classes?

A. Just the same as the others.

Q. The same as the others under the regulations?

A. Yes. I have prepared some interesting figures showing the number of these people who took up homesteads.

STATEMENT showing the number of Homesteads entered for from January 1, 1897, to December 31, 1907, also showing the number entered for by English, Scotch, Irish, American and Continental Immigrants.

Period.	Total Entries.	English.	Scotch.	Irish.	American.	Continental.
Calendar year 1897.....	2,384	300	83	33	164	673
" 1898.....	4,848	489	161	75	581	1,270
" 1899.....	6,689	578	192	97	1,064	1,796
First 6 months of 1900.....	7,426	350	95	50	833	1,643
Fiscal year 900-01.....	8,167	659	182	99	2,026	1,866
" 1901-02.....	14,673	1,096	300	184	4,761	2,653
" 1902-03.....	31,383	2,186	724	336	10,942	7,260
" 1903-04.....	26,073	3,486	911	267	7,730	4,909
" 1904-05.....	30,819	4,284	1,225	421	8,532	4,999
" 1905-06.....	41,869	5,897	1,657	543	12,485	5,955
Fiscal period (9 mos.) 1906-07.....	21,647	3,032	807	252	6,059	2,951
9 mos. Apr. 1 to Dec. 31, 1907-08.....	25,682	4,062	866	280	6,682	4,607

The average number of persons for each entry is 25. The percentages would therefore be English, 18 per cent; Scotch, 20 per cent; Irish, 23 per cent; American, 43 per cent; and Continental, 28 per cent.

By Mr. McIntyre (Perth):

Q. Is a bonus on all immigrants from the United States?

A. On all the agricultural class.

Q. Do any immigrants of the agricultural class come in without a bonus being paid on them?

A. We don't pay our own agents a bonus, we pay them a salary. We have a number of sub-agents in the United States.

By Mr. Sproule:

Q. Are your agents paid on commission?

A. We have a certain number of state agents and also a number of sub-agents.

Q. What would be the relative number of sub-agents?

A. I will give you the exact figures later on.

NUMBER OF IMMIGRANTS DEBARRED.

I have also had prepared a statement showing the number of immigrants debarred at ocean ports.

By Mr. Monk:

Q. Is not that your annual report? What is the use of your giving us anything that is in that report?

A. The reason I took these figures out is that almost every day I am asked by members of parliament for them. I am going to hand them in now so that if members want to utilize them they will be available.

Q. What we want to know are things that are not in your report?

A. Perhaps these figures are not in the report:

STATEMENT showing the number of immigrants debarred at ocean ports since December, 1902, when the Medical Act went into force. Also the number held for further inspection:

Period.	Number held for further inspection.	Number Rejected.
Fiscal year 1902-1903.....	273	273
" 1903-1904.....	1,835	274
" 1904-1905.....	2,559	611
" 1905-1906.....	3,570	524
" 1906-1907.....	3,543	440
" 1907-1908.....	4,573	1,172
Total.....	16,353	3,294

Q. What became of those immigrants who were rejected?

A. They were returned to the country from which they came.

Q. What period do those figures cover?

A. The period from 1902-03 to the end of March, this year.

By Mr. Wilson (Lennox):

Q. At whose expense were they deported?

Q. The expense of the steamship company.

Q. Does the government pay for the deportation of some and the steamship company for the deportation of others?

APPENDIX No. 2

A. It depends upon the length of time that this particular class were in the country. I am speaking of immigrants that were debarred. These were never allowed to come into the country.

Q. You cannot deport them in two years, can you?

A. I will explain that later.

NUMBER OF IMMIGRANTS DEPORTED.

I am going to give you a statement showing the number of immigrants that were deported. Those are immigrants who passed inspection and afterwards became a public charge from one cause or another and were returned to the country from which they came, during 1903-4, 1904-5, 1905-6, fractional fiscal year (9 months) 1906-7 and 1907-8.

English..	883	Russian, N.E.S..	7
Scotch..	80	Hungarian..	7
Bulgarian..	63	Buckowinian..	5
Americans..	51	Icelandic..	5
Irish..	47	Hindoo..	5
Galician..	32	Austrian, N.E.S..	3
Swedish..	23	Polish, N.E.S..	2
Norwegian..	19	Australian..	1
Italian..	17	Chinese..	1
Danish..	13	Belgian..	1
Finnish..	11	Hebrew, Polish..	1
Dutch..	10	Hebrew, German..	1
Hebrew Russian..	10	Newfoundland..	1
Hebrew, N.E.S..	8	Roumanian..	1
French..	8	Doukhobor..	1
German..	8	Turkish..	1
Welsh..	8	Syrian..	1

1,335

During the fiscal year 1902-3, when deportations first began, 67 were returned to the country from which they came but no record was kept of their nationality. The total number of deportations up to the end of the fiscal year 1907-8 were 1,402.

By Mr. Monk:

Q. You must know the names of those people?

A. I can get the names.

Q. You must know their names because they were deported after they came to the country?

A. They got through the inspection.

Q. Have you a special book in which you keep that list?

A. I cannot say whether it is in book form or not, but I will bring a statement giving the name and nationality of each person. I have that information, the name, the nationality and the reason for deportation.

Q. These people had entered the country?

A. Yes, they had passed inspection.

Q. They were found afterwards in different parts of the country?

A. Found afterwards in different parts of the country, either public charges in asylums or jails.

By Mr. Wilson (Lennox):

Q. In your statements you do not give the cause for which they were deported?

A. I only give the nationality and the number.

Q. The cause of deportation should be stated also?

A. I can prepare a statement.

By Mr. Monk:

Q. Those were not all deported at the expense of the steamship company?

A. Some of them were. The arrangement we had with the steamship companies under the law was that we could deport undesirable immigrants at any time within two years at the cost of the steamship company that brought them into the country. The companies complained to the minister that that was pretty hard, that an immigrant might be an exceptionally good person when he came to the country, but might turn out bad afterwards. The minister agreed that where the immigrant had been more than one year and less than two years in the country we would pay what was called a charity rate of \$15 from the ocean port to Liverpool or Glasgow. If less than one year the steamship companies would undertake the cost.

Q. For my part I do not require the whole of these 1,400 names, but I would like you to make a list covering the last two years of those who have been deported by the Dominion Government, and those who have been deported by the steamship company?

A. It will be just as easy to give the 1,400. You would like the name and the nationality?

Q. The cost of deportation, what place in the country the person was found at and where sent to?

A. The total cost of deportation and who paid it?

By Mr. McIntyre (Perth):

Q. Supposing the deported immigrant is the father or mother of a family? What about the little children?

A. At an ocean port where the father or mother or any members of a family are found to be inadmissible under the law, the whole family is deported. In the case of a family in the country we simply deport the one undesirable person, but in the greatest number of cases the whole family goes.

By Mr. Wilson (Lennox):

Q. In the case of there being one member of the family able to take care of those that were not desirable, you would allow them to come in?

A. No.

Q. You would not?

A. No. We refused them the other day.

Q. Is that on account of the existence amongst them of contagious disease?

A. That would be on account of insanity.

By Mr. Sproule:

Q. These ailments are hereditary?

A. Some hereditary taint. I have brought with me this morning a copy of the medical instructions which it may be interesting for you to look at. I will lay those on the table.

By Mr. Monk:

Q. I would like to know, I don't think you have stated exactly, how the continental booking agents are selected. Who are they selected by?

A. By my assistant in London.

Q. You have nothing to do with the selection of them?

A. No, my assistant in London does it.

Q. Does he give them a special letter of instructions or send them a circular as in the case of the British booking agents?

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A. I imagine he sends them a circular.

Q. There is no special form of authorization?

A. Not that I have seen.

Q. Is it from London that you received this list which you have filed of the European agents?

A. Yes.

Q. There are no others?

A. No.

Q. Then if I understand right every booking agent, of the number licensed in England, is entitled to the bonus when he earns it?

A. Yes, if he does not break any of our regulations.

Q. That is understood. And on the continent those to whom your assistant in London sends a circular becomes an authorized agent?

A. I think so.

Q. There is no special form of authorization?

A. Not to my knowledge.

Q. Please explain to the Committee how the payment of bonus to continental booking agents is made?

A. In the same way as I explained to you in the case of other booking agents.

Q. Does he transfer his claim to you?

A. The booking agent sends his claim direct to the office here. The claims are checked up with the ship's manifest and with the evidence taken at the ocean port. The account is compiled from that, is forwarded to London, and is paid from there the same as in the case of the claims of British booking agents.

Q. Then when you transfer the money to London you give instructions to pay so much out of it to continental booking agents?

A. We send the accounts to London. After they are paid they are returned here receipted. I will file samples of those accounts.

Q. Then the account comes from the continental booking agent to you?

A. The account comes to me.

Q. It is examined by you and checked and then forwarded to London?

A. No, the account is compiled from the claims just the same as in the case of the British booking agents, giving the ticket number of the immigrant upon whom we are paying, his name, his age, the name of the ship and the name of the agent. These accounts are sent to the London office, and on the strength of that they make the payment.

Q. They do not wait, then, for any communication from the continental agent, they merely send him his cheque?

A. Send him his cheque. Those cheques are all returned here in time.

Q. Have you all the London cheques?

A. No, the Audit Department has them.

Q. But you got them in the first instance?

A. No, they came direct to the Audit Office.

By Mr. Crocket:

Q. When was the North Atlantic Trading Company's contract terminated?

A. On November 30, 1906.

Q. Have they any claims against the department outstanding at the present time?

A. No, they have all been settled.

Q. How much was paid to the company after the termination of the contract?

A. I think the last payment we made, which cleaned it all up, was about \$37,000 or \$38,000.

Q. What does that make the total amount received by the North Atlantic Trading Company?

A. I have not got the information here, but I can get it for you.

By Mr. Monk:

Q. Perhaps you will allow me to finish this question of the booking agent. Who are the booking agents in the United States?

A. They are not booking agents in the United States.

Q. Commissions then are paid to whom?

A. We have a number of sub-agents there. They are in some instances railway agents, newspapermen and men of different classes who are working in small districts.

Q. Are they specially authorized?

A. Yes, specially authorized.

Q. Will you produce a list of those sub-agents in the United States?

A. I think I have it here.

By Mr. Sproule:

Q. And the amount paid to each?

A. That information I have not here.

Mr. WILSON (Lennox).—You used to give us the number of immigrants sent in by our regular salaried agents in the United States. We have not had that information for some years.

Mr. SPROULE.—It would be desirable to have a list of the regular salaried agents and how many immigrants they sent in.

By Mr. Monk:

Q. Your last annual report contains no report from any of our American agents. Did you not receive any last year?

A. Yes, I think we got reports from all quarters.

Q. There used to be a short printed report from each of the American agents?

A. Yes, but our reports were getting so bulky I thought we should cut them down as much as possible this year.

Q. Is there a superintendent for the United States?

A. Yes, Mr. W. J. White is the present inspector of agencies over there.

Q. Does he inspect them?

A. Yes.

Q. Where does he reside?

A. In Ottawa when he is at home.

By Mr. Wilson (Lennox):

Q. If the department would publish the Immigration Report separately it would be handier and nicer?

A. We do that for our own purposes. We have always printed the Immigration Report separate from the general report of the Department of the Interior because there is a demand for hundreds of copies.

By Mr. Monk:

Q. There are only a few agents in the United States, could you bring up their reports the next time you come here?

A. Is that the salaried agents? You want the amounts paid to them and the reports they made?

Q. Yes, please.

A. You mean the last reports because the others are in the general report?

Q. Once a bonused immigrant has landed in Canada and passed inspection you do not follow him?

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A. We do, but I do not say that we follow every one. Of the immigrants who stay in Canada less than a year we get a list from the United States officers and they are checked with the ship's manifest.

Q. I am speaking of the immigrant, the bonused immigrant who has arrived in Canada to stay. Do you follow him?

A. Beyond the ocean port?

Q. Yes. Do you follow him?

A. That is impossible. I have already given you the number of homesteaders of different nationalities from January 1 to December 31, 1907, showing the English, Irish Scotch, American and continental.

Q. Have you the names of these homesteaders?

A. No, they run into the thousands.

Q. Does it serve any purpose in regard to following the bonused immigrant?

A. Except to show that the number of immigrants upon whom we pay a bonus is not as great as that who take up homesteads.

Q. Evidently, because we do not pay a bonus upon all immigrants, there is no question about that. What I want to know is, whether you have any means of tracing the bonused immigrant after he has arrived at the ocean port and passed examination, admitting that he will remain in Canada?

A. No.

Q. What are the means at the disposal of your department for tracing the immigrants who go to the United States?

A. We get a list of every man who goes across the International boundary, or rather we are supposed to get it, and those names are taken individually, and according to the information on the list checked with the manifest of the ship.

Q. Who furnishes you with that list?

A. We get it from Montreal, from Mr. Clark.

Q. At what intervals?

A. Every month.

By Mr. Smith (Nanaimo):

Q. Is the same information furnished in regard to persons who cross to the other side at the western seaboard?

A. Yes, it covers every immigrant who crosses the International boundary.

Q. Does it cover the ordinary traffic between Victoria and Seattle?

A. Yes, so far as immigrants are concerned.

By Mr. Monk:

Q. You get that information twelve times a year from Mr. Clark?

A. Yes.

By Mr. Crockett:

Q. How does Mr. Clark get it?

A. From the United States officer at the International boundary. We have inaugurated a system of inspection of our own at the International boundary. We have had it in force now for about a month and I think that in the course of another month or so it will be pretty well completed. We propose to put inspectors on the International boundary line. Speaking from memory, at one point on the boundary one of our officers stopped at least 100 immigrants during the last month who were coming in to work. They did not have sufficient funds, or there were other causes, and we would not allow them to enter.

By Mr. Monk:

Q. How many of these posts have you at present?

A. We are just organizing the system.

Q. Have you completed the organization of any one?

A. Yes.

Q. Which one?

A. We have them all through the mountains along the International boundary south of British Columbia.

Q. Through the Rocky Mountains?

A. Yes.

Q. The next time you are here you will bring the twelve last reports furnished you by Mr. Clark?

A. Yes.

Q. What do those reports furnished by Mr. Clark cover, speaking generally?

A. They give the immigrants' name, the name of the ship they came by, the port, whether a Canadian or American, the date they landed, and the date when they applied to enter the United States. A great many come from an American port, work here for a few months and then go back again.

Q. I think they are divided into three classes for American statistical purposes?

A. They show on their face what they are. I will bring the reports at the next meeting.

I have also had a statement prepared showing the percentage of immigrants upon whom bonus was paid.

Period.	BRITISH.			AMERICAN.			CONTINENTAL.		
	Arrivals.	Paid on.	%	Arrivals.	Paid on.	%	Arrivals.	Paid on.	%
Fiscal year 1904-05..	65,359	11,974	18.	43,652	3,681	8.04	37,255	11,881	31.88
1905-06..	86,796	17,694	20.04	57,919	3,134	5.04	44,349	8,741	19.71
Fiscal period 1906-07	55,791	8,861	15.08	34,659	2,561	7.04	34,217	1,198	3.50
Nine months 1907-08	111,238	14,710	13.02	46,925	2,425	5.	77,165	2,093	2.71
Average.....	.....	.....	16.54	.....	.....	6.28	.....	.....	14.45

From the above statement it will be seen that from July 1, 1904, to December 1, 1908, bonus was paid on 16.54 per cent of the British immigrants, 6.28 per cent of the immigrants coming from the United States and 14.45 per cent of the immigrants from the continent.

Q. Have you had occasion to take action on any of these reports furnished you by Mr. Clark as regards bonuses to agents?

A. We deduct a great many payments.

Q. You have found some payments of bonus that should not have been made?

A. In these cases we have deducted the payment from the agent's next account.

Q. Upon what ground can you take the bonus away from an agent, when the immigrant who was sent out has passed inspection here, and has gone to the United States?

A. The immigrant must declare his intention of staying in Canada. One of the conditions is that if he does not stay here in Canada we deduct the bonus.

By Mr. Ralph Smith (Nanaimo):

Q. Is that fact known to the booking agent?

Q. Yes, certainly.

APPENDIX No. 2

By Mr. Monk:

Q. Will you give us a list of those in respect of whom you have made deductions?

A. For what period?

Q. For the last two years?

A. That will be a pretty long job, but I will get the information for you if it is possible.

Q. There must be a great many if the compilation will be a long job?

A. There are voluminous reports to go over. It means going over thousands of names.

Q. But as I understand it once you get Mr. Clark's report you simply ascertain whether there are any bonused immigrants among them?

A. Yes.

Q. Then you make a list of them and deduct the bonus from the next payment to the agent?

A. Yes.

Q. And you say there are a large proportion?

A. It involves going over thousands of names to get the information you have asked for.

Q. Do you make a separate list of those that are deducted?

A. Yes, we do in the accounts.

Q. How are the bonuses on immigrants from the United States paid, direct from here?

A. Yes.

Q. The claims are sent in to you?

A. The claims are sent in to us.

Q. How are the claims verified?

A. Our agents and sub-agents have the privilege of issuing a certificate which entitles the immigrant from the United States to a low rate on Canadian railroads. For instance, an immigrant leaves St. Paul, Minn., and goes up to Portal on the international boundary. There he shows that certificate to the ticket agent for the Canadian Pacific Railway. That is the agent's authority for issuing a ticket at the rate of one cent a mile. At the end of the month the Canadian Pacific Railway agent reports that he has issued certain tickets at a reduced rate and attaches to his report the certificates of our agents or sub-agents. As soon as the Canadian Pacific, or the Canadian Northern, as the case may be, has checked up the reports of their ticket agents they are sent to us here and it is on these men that the commission is paid to sub-agents in the United States.

Q. Then you only pay bonus on immigrants from the United States upon the certificates returned to you by the railway companies?

A. Yes.

Q. And upon no others?

A. No others. You will notice from the figures already given that the amount paid is very small.

Q. In all during the last fiscal year how much have you paid in bonuses?

A. To sub-agents in the United States? In the nine months from April 1 to the end of December there were 46,925 arrivals in Canada. Of that number we paid bonus on 2,425 or 5 per cent.

By Mr. Crocket:

Q. You say the Canadian railway companies give these immigrants a cent a mile rate?

A. A cent a mile rate. At some points in the mountains it is 1½ cents.

Q. Does the department make that good to the railway companies?

A. No, that is what they contribute towards immigration. If the immigrant is coming from the United States, say from Iowa, Illinois, or any other state he has got to pay the local rate, which is high, to the international boundary.

By Mr. Monk:

Q. Are the statements of these bonuses made out monthly?

A. I imagine they are made out monthly.

Q. The agents send in their claims monthly?

A. They send in reports monthly.

Q. And the certificates of the railway companies come in monthly?

By Mr. Crocket:

Q. How many Doukhobors were brought into this country?

A. That was before my time, but I can find out.

There are a number of other statements that I would like to put in. One is the immigration via ocean ports showing the occupation or calling.

	1903-04.	1904-05.	1905-06.	1906-07.*	1907-0 .	Totals.
Number of immigrants.....	85,159	102,723	131,268	90,003	204,157	613,315
" farmers and farm labourers.....	30,278	33,418	38,591	18,191	41,866	162,347
" general labourers.....	19,354	22,575	31,110	26,807	63,172	163,018
" mechanics.....	14,715	24,943	36,085	24,414	56,335	156,492
" clerks, traders, &c.	3,530	5,283	7,360	6,686	15,930	38,789
" miners.....	3,493	2,447	3,142	2,878	4,562	16,522
" domestics.....	3,504	5,259	6,343	4,583	10,499	30,188

*Nine months.

Another statement gives the immigration from the United States showing the occupation or calling:—

	1903-04.	1904-05.	1905-06.	1906-07.*	1907-08.	Totals.
Number of immigrants.....	45,229	43,652	57,919	34,659	58,312	239,771
" farmers and farm labourers.....	16,917	23,434	42,037	29,677	43,323	155,388
" general labourers.....	2,798	1,314	1,582	1,852	4,322	11,868
" mechanics.....	1,435	1,037	1,429	1,384	2,226	7,511
" clerks, traders, &c.	1,240	665	1,169	92	1,294	5,260
" miners.....	321	141	442	425	917	2,246
" domestics.....	34	3	51	73	58	219

*Nine months.

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Another statement gives the expenditure on immigration from 1897 to 1908:—

Year.	British Isles.		Continental.		U. S. A.		Canada.		Total	
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	\$	cts.
1897-98.....	61,000	00	31,000	00	87,000	00	82,194	90	261,194	90
1898-99.....	41,000	00	37,000	00	75,000	00	102,878	88	255,878	88
1899-1900.....	96,000	00	63,000	00	112,000	00	163,562	61	434,562	61
1900-01.....	110,000	00	43,000	00	144,000	00	147,729	63	444,729	63
1901-02.....	121,000	00	58,000	00	178,000	00	137,841	55	494,841	55
1902-03.....	205,000	00	60,000	00	161,000	00	216,913	74	642,913	74
1903-04.....	235,000	00	78,000	00	205,000	00	225,788	50	744,788	50
1904-05.....	181,000	00	111,800	00	325,000	00	354,556	69	972,356	69
1905-06.....	148,000	00	102,600	00	248,000	00	344,068	23	842,668	23
1906-07.....	174,000	00	42,000	00	151,000	00	244,200	76	611,200	76
1907-08.....									1,075,603	33

By Mr. Sproule:

Q. Does that cover everything, including the literature?

A. That covers the whole expenditure.

Q. That does not appear in your report, does it?

A. I have nothing to do with the financial part of it.

By Mr. Wilson (Lennox):

Q. If you have printing done in the United States which goes to Great Britain, where is it charged?

A. That would be charged to Great Britain.

Q. Your statement does not tell where the printing was done?

A. No, I have not prepared that.

By Mr. Sproule:

Q. You say you have absolutely no control of those who embark on vessels for Canada?

A. We have no control until they come within the three-mile limit.

Q. Within Canadian waters?

A. Within Canadian waters.

By Mr. Wilson (Lennox):

Q. How is it in the United States?

A. I have no connection with the United States part of it.

Q. They claim to have rejected 65,000 persons last year?

A. Where?

Mr. WILSON.—At the port of debarkation.

By Mr. Monk:

Q. I will ask you to bring with you, when you next come before the Committee, the four last monthly statements of bonuses to the American agents and sub-agents, and the railway certificates serving to prove that the bonuses had been earned; also the letter, or letters, if any, of your assistant in London notifying the department here of the names of the duly selected booking agents on the continent?

A. There will be quite a number because they were not all selected at the one time.

Q. I understand you have given us a list?

A. There would be more than one list because the agents are not always selected at the one time and the number is added to from time to time or deductions made, as the case may be.

By Mr. Wilson (Lennox):

Q. I see that Miller was paid \$194 for locating immigrants in my riding and there is still a balance of \$20 which has not been paid?

A. I could not tell you. There may be some deductions to be made. We have open accounts with all these men.

Q. Are they paid for locating immigrants with grocery men in towns?

A. No, if such payments are made we find it out and deduct the payments from the agent's account.

Q. I see that you pay for women and children?

A. Yes.

Q. Why do you do that?

A. Because it is very difficult to find a man who would take an immigrant with his wife and family. The farmers all want single men or married couples without children.

Q. I know that in several cases this man had nothing whatever to do with locating the immigrants?

A. I know nothing about that.

Q. There is a man by the name of Denison, a groceryman in our town, who is employing an immigrant with a wife and seven children. In the lists which I got from you there are several persons alleged to be located by Mr. Miller that he had nothing whatever to do with. You are aware of that, are you?

A. I am not aware of that. If you can give me any information I shall be only too willing to investigate the matter. Personally I do not look at the lists of these men.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 62,

May 20, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 11 o'clock a.m., the chairman, Mr. McKenzie, presiding.

The CHAIRMAN.—As you understand, the business of to-day is the continuation of the examination of Mr. Scott, the Commissioner of Immigration, relating to immigration to Canada.

Mr. SCOTT.—At the last meeting several questions were asked. The first was as to the total amount paid to the North Atlantic Trading Company. The accountant advises me that the total amount paid from November 18, 1899, the date of the first agreement, until November 30, 1906, the date of the cancellation of the contract, was \$367,245.85.

Mr. WILSON (Lennox).—That was brought down to the House, but the Auditor General's Report shows that since then an additional \$67,000 has been paid. Can you vouch for the correctness of this statement?

Mr. SCOTT.—That is furnished to me by the accountant.

Mr. WILSON (Lennox).—I think you will find in the Auditor General's Report that another amount has been paid.

Mr. SCOTT.—I asked the accountant's branch, that is all.

APPENDIX No. 2

By Mr. Monk:

Q. Will you make sure whether there is an additional \$7,000 paid?

A. Yes, I can ask the accountant. The second question was as to a list of salaried agents in the United States, the amount paid for salaries and expenses and their annual reports. (List produced.) The next question for a list of salaried agents and sub-agents in the United States and the amount paid to each for five years. (List produced.) I was also asked for papers in connection with the deportation of a man from Nelson, who had been sent out by the British E. T. Society. (File produced.) Then I produce a manifest of the SS. *Montreal*, and also a statement showing the amount paid to Mr. Smart for bonuses for four years. The seventh question was as to the number of deportations since the Medical Act went into force. I find that 1,402 immigrants have been deported.

Q. At what time?

A. Since the Medical Act went into force. Then a statement was asked for giving the name, nationality, where deported from, where to, the cause, and the date. That is also produced.

By Mr. Blain:

Q. In what year was the largest number deported?

A. In the fiscal year 1902-3, 67; in 1903-4, 85; in 1904-5, 86; in 1905-6, 137; in 1906-7, 201; in 1907-8, 826.

Q. Those are deportations from our ocean ports, are they?

A. No, from interior parts of Canada, those who had become a public charge within two years.

By Mr. Wilson (Lennox):

Q. Have you had to deport any who came from the United States, especially from our western provinces?

A. Yes. The number of Americans deported was 51.

By Mr. Sinclair:

Q. Can you give the number of the various countries?

A. The statements I have filed indicate the nationality. I think at the last meeting I gave them. English, 883; Scotch, 80; Bulgarian, 53; American, 51, and so on.

By Mr. Blain:

Q. After they have resided in Canada for over two years they cannot be deported?

A. No. These are some of the reports furnished us by the United States authorities. (Reports produced.) The ninth question was as to a list of deductions from the bonuses paid on those going to the United States. (List produced.)

By Mr. Wilson (Lennox):

Q. Did you make a statement at the last meeting that the final amounts had been paid to the North Atlantic Trading Company?

A. I said I thought the last cheque was for between \$37,000 and \$38,000.

Q. That would be after the cancellation of the contract?

A. I asked the accountant for this information and that is what he sent me.

By Mr. Monk:

Q. In answer to the request made to you at the last meeting to produce a statement of all bonuses and monies paid to Smart & Company, you have produced a

document to-day in which I see that James A Smart is shown to have received in 1906, £4 and in 1907, £95?

A. Yes.

Q. Then there are a list of names upon that statement?

A. These were his agents in the old country.

Q. Therefore, the sum of £2,928 practically represents the amount paid to Smart & Company?

A. That is what I should think.

Q. I want to ask you in regard to the productions made to-day?

Mr. SCOTT.—Will you let me put them all in first?

Mr. MONK.—Certainly.

Mr. SCOTT.—The ninth question was for a list of deductions for the last three years on those going to the United States, that is on whom these bonuses have been paid. (Reads):—

STATEMENT OF DEDUCTIONS ON BRITISH AND CONTINENTAL IMMIGRANTS ON ACCOUNT OF GOING TO THE U.S.A., FROM JANUARY, 1906, TO SEPTEMBER 30, 1907.

British..	355
German..	105
Norwegian..	106
Swede..	127
Finn..	19
Russian..	13
Russian-German..	74
Russian-Jew..	5
Polish..	7
Swiss..	2
Dane..	31
Galicians and Doukhobors..	22
Austrian..	4
Dutch..	21
Hungarian..	13
Total..	914

Of the British, bonus has already been deducted on 214 persons, leaving 151 yet to be deducted. The reasons deductions have not been made of the above number is because the department has not yet received bonus claims sufficient to cover them. Bonus on continental immigrants has been deducted to date.

By Mr. Wilson (Lennox):

Q. How do you finally decide?

A. If the man goes to the United States within a year, according to our arrangement we deduct it, although when he landed in Canada he declared his intention of settling here.

By Mr. Monk:

Q. How do you arrive at these deductions?

A. We get a list of those crossing into the United States each month, samples of which are produced here this morning. They take this list name by name with the manifest. On the face of the manifest it says whether we have paid bonus or not. If we have paid bonus we deduct it.

Q. You have to go through several manifests to find the names?

A. Yes. It is very tedious work.

APPENDIX No. 2

Q. In the list there is nothing to indicate what steamer he came by?

A. Yes. The name of the ship is given there.

Q. Do you refer to what you have produced?

A. Yes, it is there.

Q. Then the American officer tells you in his report by what steamer the immigrant came to Canada or the United States?

A. A great many are landed at the United States ports, come to Canada, work for a time and go back.

Q. Is a bonus paid on an immigrant who goes to the United States and then comes to Canada?

A. No, except when he lands in the winter time at Portland. But the great bulk of those, of course, we have never paid in bonuses. It is only on a very small number that we paid bonuses. The tenth question was as to the number of Doukhobors who originally came to Canada. The number is 7,363. (Statement produced.) Then I produce the monthly statements of bonuses paid to American agents and sub-agents and railway certificates serving to prove that the bonuses have been earned. Also a letter or letters from the assistant superintendent in London giving the names of duly selected agents on the continent. (File produced.) These were I think all the items asked for.

By Mr. Monk:

Q. You were asked to produce the letter by which you had been officially informed of the duly authorized continental booking agents?

A. I have produced copies of them.

Q. Received from whom?

A. The first letter is dated April 9, 1907. It says:—

'With the exception of the agents in France, I have now selected those agents who will participate in the new bonus arrangement on the continent. I beg to enclose for your information a list of the agents selected, and, of course, these agents will now be sending you bonus claims in accordance with the instructions contained in your circular. I expect to make the selection of the French agents very shortly, and will advise you of those selected.'

By Mr. Sinclair:

Q. Who writes that letter?

A. Mr. J. Bruce Walker.

By Mr. Wilson (Lennox):

Q. What is the date of that letter?

A. April 9, 1907.

By Mr. Monk:

Q. With regard to the documents produced by you as coming from the American offices, do you get those documents monthly?

A. Yes.

Q. From the American superintendent at Montreal?

A. Yes.

Q. I find, for instance, a document entitled, 'List of immigrants who applied for admission to the United States during the month of April, 1907.' It is a voluminous document. Does the government pay for these returns?

A. Yes, we pay for the compiling of it.

Q. What is the arrangement as regards payment with the American office in Montreal?

A. I think we pay for the typewriting. I think they cost us from \$10 to \$15 a month.

Q. I have just now seen for the first time, and they purport to be a list of those who originally booked for Canada and subsequently changed their minds and went to the United States under the three clauses that are referred to in the American Immigration Report.

Mr. SCOTT.—I have not read the American report.

Mr. MONK.—It appears to be a list of all those who at the border stations between Canada and the United States applied for leave to enter the United States.

Q. How can you by that list make it out that a man booked originally for Canada and then changed his mind and went to the United States?

A. They give the name there, the name of his ship he came out on, the date when each ship arrived, and his nationality. They take the manifest of the ship and trace the name up.

By Mr. Sinclair:

Q. And then you check that by looking up the manifest of the ship?

A. Yes.

By Mr. Monk:

Q. I would refer to the manifest of the *Virginian* that you produced at the last meeting of the committee. I suppose the manifest of the *Virginian* is a fair sample?

A. It is a fair sample of the manifests received.

Q. I have noticed in looking over that manifest that in the summary given at the end and signed by the purser, there is a certificate that on the *Virginian* there seems to have been a total under the Immigration Act of 791 passengers entering Canada by that steamer. That seems to be the final certificate on the manifest?

A. The total number of souls was 838 according to this certificate.

Q. He mentions the Immigration Act there. What does he mean?

A. Under the Immigration Act 791 is the actual number.

Q. I notice also another certificate attached to to the manifest for the signature of our agent at Halifax that the inspection of the second cabin passengers was begun by the medical examiner, Dr. Hawkins, at 1.25 p.m. and finished at 2.30 p.m.; that the civil examination of these same second cabin passengers began at 1.25 p.m. and was completed at 3 p.m.; that as regards the steerage inspection the examination began at 4.15 p.m. and was terminated at 5.40 p.m., and that the civil examination began at 4.15 p.m. and finished at 6 p.m. I suppose that in that limited time there could not be a very protracted examination of each passenger considering the number of passengers certified by the purser?

A. That is the inspection certificate.

Q. Did I understand you to state at our last meeting that there was only £61, or was it 61 passengers, on whom bonuses were paid on that steamer?

A. I put the whole statement in. I have not got it in my memory.

Mr. MONK.—I asked that question because from my perusal of the manifest I arrived at the conclusion that in bonuses that steamship load must have cost us over \$500. I counted up the British bonuses paid, then the continental bonuses, and it seems to me it was quite a large amount that we paid.

Mr. SCOTT.—I filed a statement before giving the exact figures of the bonuses we did pay. It is in my former evidence.

Mr. MONK.—In the papers filed by you I notice there is a list. It looks as though there were £61 paid, but I think the amount was more considerable than that.

Mr. SCOTT.—In any case that is in my former evidence.

APPENDIX No. 2

Q. Those that are marked in the manifest, 'British bonuses allowed' and those marked 'continental bonuses allowed'—in those cases the bonus was paid?

A. Yes.

Q. Who places that mark on the manifest?

A. The clerk who checks them.

Q. In the department here?

A. Yes, in the department here.

Q. With the documents you filed there is also this parcel which I now show you, marked, 'No. 1 A' These purport to be statements made up mostly in pencil, headed, 'Department of the Interior.' What are these that I now show you, and where are they made up and by whom?

A. These are the examinations of the immigrants at the ocean ports, made up by the agent or one of his clerks.

Q. As a matter of fact, these penciled statements are not made up, I suppose, in the short time which I indicated a moment ago during which the inspection takes place?

A. They are made up while they are being inspected.

Q. Do you conceive it possible in that time to make up such a statement as that for each passenger?

A. Yes.

Q. Are you able to say positively it is done in the presence of each immigrant?

A. Positively. I have done it myself.

Q. In the case of the *Virginian*, can you tell from the handwriting who made it up?

A. One of the clerks at the office.

Q. Down in Halifax?

A. Yes, the writing is familiar.

Q. Is the writing familiar?

A. Oh, quite familiar.

Q. You do not know who the writer would be?

A. It could only be done by one of three men, Mr. Annand, Mr. Barnstead or Mr. Blackadder. They are the only three who could do it.

Q. I notice that none of those documents made up as passenger lists is signed?

A. They are all rubber stamped with the rubber stamp of the agency.

Q. Do you mean the rubber stamp down there?

A. Yes.

Q. And that dispenses with the signature?

A. Certainly. You asked me a moment ago for the number of British bonuses paid on the *Virginian*. I find that at the last meeting I stated that bonuses were claimed on 55 men, 22 women and 23 children, and that according to the information collected at the ocean ports British bonuses were allowed and payable on 41 men, 14 women and 13 children, leaving 14 men, 8 women and 10 children on whom bonuses were disallowed. That is, those claims were not allowed on the evidence as taken at the ocean ports on those forms. The total British bonuses paid was £61 10 shillings, and the continental bonuses amounted to £36.

Q. Do you think that statement tallies with the bonuses allowed stamped on the manifest?

A. Oh, yes.

Q. As regards the claim of the agent on the steamer *Victorian*, produced by you at the last sitting and now shown you as exhibit 2A, I find those statements of claims are incomplete. None of them contain the Canadian Government agent's certificate. Why is that certificate placed at the foot of the claim if it is only filled in by the Canadian agent?

A. I explained to the committee either at the last sitting or the sitting before that British booking agents claimed they should have a bonus on first class passengers

who come out here to settle on the land, the same as second and third class passengers. But we stated we could not pay a bonus on first class passengers because they are not examined at Canadian ocean ports. They said: Can no arrangement be made whereby we could get the examination on the other side, and we put that certificate at the foot of the claim so that if they wished they could have the examination made in Great Britain. If they did that I said they will get the bonus.

Q. Do you not think it would be an improvement if the agent claiming was obliged to make an affidavit or give some satisfactory proof that the facts alleged in the immigrant's application for a ticket are true?

A. He says so on the face of it that the statement made is true.

Q. I notice that many of those applications for a ticket seem to be contradictory, and you will notice that a large number of those you have filed do not indicate what was the occupation of the applicant?

A. I think they all show the occupation, everyone of them I think.

Mr. MONK.—I will give you an instance. Here is one, No. 784,941, the application of Gertrude Fisher does not indicate her occupation at all.

Mr. SCOTT.—It is there. (Reads):—

'What was your last occupation before sailing?—A. Domestic. How long were you engaged?—A. Three years. British subject, destination in Canada, Winnipeg; intended occupation in Canada, domestic.'

Mr. MONK.—Here is one, No. 811,371, where there are no answers to the questions, and the following one, 811,372, there is the same thing, and the following one, 811,369, the same thing.

Mr. SCOTT.—It is there:—

'Destination in Canada is Calgary. Intended occupation, farmer.'

It is quite true he does not give his occupation before sailing, but the steamboat inspection will give you the answer.

Q. Do we pay bonuses on steam laundrymen?

A. No.

Q. Well, in the case of No. 811,375 the continental bonus was allowed?

A. It was allowed for the reason that he states his intended occupation in Canada is that of a farmer. If I had the port inspection I could tell you the reasons. The last occupation before sailing was farmer, in which he had been engaged for two years.

Q. How was that statement arrived at?

A. By the examination at the ocean port.

Q. Who stated it?

A. He stated it.

Q. But there is no statement by the agent who sold the ticket?

A. He states that he is going to farm in Canada.

Q. He is indicated there as a steam laundryman and that his intended occupation in Canada is that of farmer?

A. At the ocean port he gives his age, name and last occupation that of farmer, in which he has been engaged for two years.

Mr. MONK.—And the statement of the agent was that he was a steam laundryman?

Mr. SCOTT.—That may be, but the man stated when he landed at the ocean port he had been engaged for two years as a farmer.

By Mr. Sinclair:

Q. He may have been a laundryman engaged for two years in farming.

APPENDIX No. 2

By Mr. Monk:

Q. If a man says two different things, both cannot be true?

A. He does not say that.

Q. On the face of the application he is stated to be a steam laundryman, and that his intended occupation in Canada is that of farmer?

A. And when he was examined at the ocean port he gave his last occupation as farming, in which he had been engaged for two years.

By Mr. Monk:

Q. I notice quite a number of those immigrant's applications for tickets are incomplete, particularly from the continental booking agents. Here is No. 811,378. You notice how incomplete the statement is, but they are all unanimous in declaring that they are coming to Canada to engage as farm hands?

A. Yes, not all of them. Those particular ones are.

Q. I notice in the case of this man, No. 811,378, the continental bonus was allowed.

A. Yes.

Q. Do you allow a bonus where the application is thus incomplete, and provided a man declares either at the ocean port or on the other side that he intends engaging in farming?

A. No, not exactly.

Q. Is it not the rule that a man who declares that he intends engaging in farming, that for the bonus to be paid it is sufficient that he alone should make that declaration?

A. It is not the fact.

Q. That seems to be the case from my examination of the papers of the *Victorian*.

A. I gave this morning the number who were claimed for and disallowed. You make the statement that we make an allowance on all passengers claimed for. I say no. As I have already said, on the *Virginian* bonuses were claimed for 55 men, 23 women and 23 children, and there were allowed bonuses on 31 men, 41 women and 13 children, leaving 14 men, 8 women and 10 children disallowed.

Q. I would like very much to test that in the case of No. 811,378 and others of a similar character, where the application does not disclose an answer to five or six questions that are placed in the application. But there is a statement by the agent in answer to the question, 'Intended occupation in Canada.'

Q. I asked you as a matter of fact that where there is that much evidence you pay the bonus?

A. If at the examination at the ocean port it is disclosed that he is of the farming class, and that he intends to follow farming in Canada.

Mr. MONK.—Let us take the case of No. 811,370, page 16, line 23, of the manifest. There is in that case, as in many others, no answers to the questions excepting to those as to the intended occupation in Canada.

Mr. SCOTT.—When he lands at the ocean port he gives his name, last occupation prior to sailing, as farming, that he had been engaged in that occupation for five years, that he had lived in Holland, that he was going to Calgary, that he intended to farm, and that he had \$500 in cash.

Mr. MONK.—But to the question:—

'How long engaged as farmer,' no answer; 'where,' no answer; 'when,' no answer; 'last occupation prior to sailing,' no answer.

Mr. SCOTT.—In his examination at the ocean port he gives that.

Q. In this particular case does the man speak English do you think?

A. I could not say. If he does not we have interpreters at the ocean port who speak the language he speaks. I would like to say that this particular lot of immigrants from Holland had in their possession cash varying from \$150 to \$8,000.

By Mr. Sinclair:

Q. Each man?

A. Yes, each man. Take the case of the man Prudholm, page 18, line 33, of the manifest. He had \$7,000. On page 20, line 17, a Hollander going to Calgary to farm had \$7,000. On page 20, line 20, another had \$2,000. This is the examination made at the ocean ports.

Q. Does the officer check his cash?

A. They have not time to count his cash. They simply take the amount. Here is one on page 20, line 27, who had \$8,000.

By Mr. Schell (Oxford):

Q. Do they ever overstate it?

A. Foreigners usually understate what they have.

By Mr. Kennedy (New Westminster):

Q. Is that examination at the port of arrival?

A. Yes.

By Mr. Sinclair:

Q. Taking those two examinations together they would answer all those questions?

A. Certainly. We do not pay on every claim, we get complaints that we are not free enough in paying, that we do not pay them readily enough.

Q. You do not throw money at these agents?

A. We get complaints that we are stingy.

By Mr. Monk:

Q. Would you refer to the case of Albertus Dionysius, page 17, line 6. What are the indications on the manifest for this gentleman?

A. He was from Holland, 31 years of age, a farmer, had been so all his life, was going to Calgary to farm, and had \$3,000 in cash.

Q. I see it is stated in an application that this man of 31 years of age had been 20 years a farmer?

A. When examined at the ocean port he said he had been a farmer all his life.

Q. Now, take the case of Van Akin, page 20, line 16.

A. That particular man had \$7,000 in cash.

Mr. MONK.—So he said.

Mr. SCOTT.—He had been a farmer for years. His age is 28, occupation prior to sailing gardener, and had been so engaged for ten years. He apparently worked some time in the U. S., for in reply to the question whether he had been gardening he says in Holland and the U. S. He had in his possession \$7,000.

Mr. MONK.—The case on page 20, line 20, also states 21 years a farmer?

A. That particular man gave his age as 31, his last occupation prior to sailing farmer, and had been such all his life, was a Hollander by birth, had never been in Canada before, and had \$2,000 in cash.

APPENDIX No. 2

By Mr Monk:

Q. I notice one was a steam fitter upon whom we paid a bonus. Here is one George S. Eden, manifest page 2, line 50, an engine fitter, upon whom the bonus was allowed. Is that correct?

A. His last occupation prior to sailing was that of navy. He was a British subject by birth and came out here as a railway labourer.

Q. You infer he came out as a railway labourer?

A. He says so.

Q. He was very positive in the application that he was an engine fitter.

A. He came out here and his intended occupation was railway labourer.

Q. As a matter of fact there is no means of ascertaining on the other side the truth of those allegations made by the applicant?

A. The inspection is made on this side.

Q. But the examination on the other side consists in the booking agents taking this statement of the applicant, as shown by the papers produced from the *Victorian*?

A. There is no statement outside of the medical inspection except where a man appears before one of our Canadian agents and has his examination made there.

Q. In England all the licensed booking agents are entitled to the bonus?

A. Provided they do not break any of our regulations. If they break any of our regulations we strike them off and give them the reasons why we do so.

Q. Is there one doctor in Halifax who makes the medical examination?

A. Yes.

Q. And in the space of time given in the documents relating to the *Victorian* do you think he has time to conduct the medical examination?

A. A reasonable examination.

Q. What does it amount to, as a matter of fact, in the space of an hour to pass 500?

A. They average about 300 an hour.

Q. What do you think the medical examination will amount to?

A. That is for the medical man to say. It is the same at the American ports.

Q. Does Dr. Bryce visit those ports?

A. He does.

Q. He never takes the examinations himself, does he?

A. I think so, when he is there.

Mr. KENNEDY (New Westminster).—I stood on a vessel at Glasgow last year where a lot of immigrants were going on and a physician, who I think was employed by the steamship company, the Allan Line, was examining passengers as they went on board. I timed them as they came up the ladders. The doctor looked them over as any sharp man would look at them to see if there might be any traces of disease. He seemed to me to be making a very fair examination. I timed him, and he passed from five to 12 a minute. He turned some of them back and stood them apart, until he got through the others, and then he looked them over again.

Mr. SCOTT.—There are two doctors at Glasgow, one is the Board of Trade's and the other the company's own doctor.

Mr. MONK.—It would be the same thing as the honourable member here has stated, that he must pass from five to 12 a minute.

Mr. SCOTT.—About 300 an hour. I filed with the committee at the last meeting the inspection of the medical officer. There were two kinds of examination. I think Dr. Barr saw them.

Mr. KENNEDY (New Westminster).—I know one doctor kept me for two hours examining me for insurance.

Mr. SCOTT.—They cannot examine immigrants that way.

By Mr. Monk:

Q. Are any efforts being made to obtain on the other side a civil and medical examination of immigrants from the continent coming direct to Canada?

A. No.

Q. Are you aware that the American authorities conduct such an examination?

A. At some ports they do. At the chief ports of Southern Europe they do, but not in the northern ports of Europe.

Q. Are you sure they have no such examination at Antwerp?

A. I cannot say as to Antwerp. It is a point to which a good many come from the south. They come in there from Turkey and Assyria.

Q. How do you make a distinction between southern and northern Europe?

A. The class of immigrants from northern Europe are not the same as those of southern Europe.

Q. Are they a better class?

A. Certainly, they are a better class.

Mr. BARR.—They have not so much wrong with their eyes.

Mr. SCOTT.—They have not trachoma to the same extent. We use every precaution to keep out undesirable immigrants, and I think we have been fairly successful. The only complaint we get now is that the examination is too severe.

By Mr. Barr:

Q. From whom?

A. You will see it in the newspapers.

By Mr. Monk:

Q. I think I understood you to say at the last meeting that once an immigrant has landed, bonused or otherwise, he is not traced?

A. Some of them are.

Q. Is there any system?

A. We have in Ontario and parts of Quebec a system of placing farm labourers with farmers. We have a number of employment agents to whom booking agents in the old country send the immigrant direct.

Q. Since when?

A. This is the second year of its operation.

Q. How many agents do you employ in Ontario?

A. Possibly 175 to 200.

Q. How many in Quebec?

A. Probably 8 or 10.

Q. Can you give us a list of those agents employed in Ontario, what has been paid to them and what men they have placed?

A. Yes, I can.

Q. And the same as regards Quebec?

A. Yes, I gave it to Dr. Sproule last night.

Mr. MONK.—I was asking the names of those placing agents in the provinces of Ontario and Quebec, what has been paid to them during the last year, and what immigrants have been placed.

Mr. SCOTT.—I want to make a statement with reference to those employment agencies.

By Mr. Blain:

Q. Will you allow me one minute. The certificate that is signed by the immigrant in applying for a ticket is the only one signed by the immigrant. He does not sign other documents on this side?

A. No.

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Q. If in the immigrant's application for a ticket he fails to fill out that part of the form: 'Farmer, farm labourer, gardener, &c,' when he comes to Canada he allows the immigration agent to fill it in?

A. The immigration agent asks him questions as shown on that form.

Q. Now, if he fills in his intended occupation in Canada, would the bonus be paid for such a man?

A. If he had one year's experience as a farmer in the old country. He must have had experience as a farmer in the old country before any bonus is paid. It does not matter what he does in this country. There are dozens of men of all kinds of occupations from the old country who come out to farm in this country. Some of our best farmers in the west never saw a farm until they came here.

Q. That experience may be had at any time?

A. Oh, yes.

Q. I see for example a carpenter on whom the bonus was allowed?

A. It was not allowed because he was a carpenter.

Q. He styles himself a carpenter. He states that ten or fifteen years previous he was a farmer and that his intention was to locate on a farm?

A. Yes.

Q. What opportunity have you of comparing the immigrant's application for a ticket with the certificate of the immigration agent on this side? Are those all compared before the bonus is allowed?

A. Certainly, and all put in order so that they can be readily turned up.

Q. So an immigrant coming to Canada need not say he is a farmer, a farm laborer, gardener, or anything else if he gives an answer to the immigration agent here that he had worked twelve months on a farm?

A. Very often those forms are incomplete. I was making a statement with reference to the placing of labourers with the farmers in Ontario. Ninety per cent of the tickets sold in Great Britain are sold at least thirty days before the immigrant sails. As soon as the booking agent has sold a ticket to an immigrant he gives him a card of introduction to one of those employment agencies. We have 175 or 200 different men, and the booking agent immediately notifies the employment agent that he has sold such ticket, describing the man, telling him what kind of work he wants, what is his experience and so on. He mails that to the employment agent in Canada so that when the immigrant arrives at the particular station to which he is booked, our employment agent knows exactly where to send him and what farmer to send him to. We find the thing is working out very well. For instance, we occasionally hear that these immigrants are all thieves, and diseased, and undesirable immigrants. I have taken just one book of claims put into the office here on whom we have paid \$12 for locating them and there are some very good immigrants amongst them. We send out these forms in order to satisfy ourselves that the immigrant had been placed with a farmer and to ascertain what degree of satisfaction he was giving to the farmer. Here is one of the answers: (Reads.)

'Thomas Broad was placed with Daniel Frost at Frankford, Ontario, who replies:

'Your letter received this morning and in reply would say, that Thomas Broad is still with me and has given me fairly good satisfaction. I am giving him \$15 a month.'

Then, here is one about Adamson Bell, who is placed with Thomas G. Elliott, Wooller, Ontario, and Mr. Elliott replies:

'In regard to Adamson Bell, he worked for me for four months and a half. I hired him for \$20 per month and paid him \$110. He proved to be a real gentleman, and a humble servant. He proved to be a very satisfactory immigrant. He went home in December, as he has promised his parents he would on leaving England.'

Archibald Reid was placed with Mr. S. L. Perrill, of Wooller, who says:

'The above mentioned young man, Archibald Reid, was with me one month, at \$20, during which time he did his work well and satisfactorily. Then he left me for the Northwest, getting that craze like so many of the immigrants.'

Joseph Monkhouse was placed with George Runciman, Warkworth, Ontario, and Mr. Runciman writes:

'In reply to your favour of recent date, I would say that Joseph Monkhouse has been engaged with me for the last three months and has given good satisfaction. Was paying him \$20 a month and have now engaged him for the following six months for \$90.'

Johanna Montgomery was placed with Dr. Foley, Trenton, Ontario, who replied:

'Mrs. Foley is well pleased with Miss Montgomery. She is a splendid, fine girl and does her work thoroughly and well. She worked two weeks for \$2 per week, and Mrs. Foley was so well suited with her that she raised her wages to \$2.50 per week.'

Mrs. Christie McKenzie, wife of Wm. McKenzie, was placed with G. L. Walker, Norham, Ontario, and Mr. Walker replies:

'Some time ago I received a communication from you in regard to W. McKenzie, a farm hand from Scotland, to which I neglected to reply. Would say that he is employed by the year. I furnish him house and wood. Mrs. Christina McKenzie, his wife, is not working for me, but is living in a house on my place,' and so on.

There are hundreds, I may say thousands, of those letters showing that the bulk of the immigrants placed with farmers are doing well under the system we have adopted in placing them through employment agents.

MR. MONK.—I think that is a step in the right direction. I am impressed with the large number of those employment agents you have in the province of Ontario. I may state with reference to this list you have prepared for Dr. Sproule that I would like you to prepare a list for Quebec.

MR. SCOTT.—Yes.

By Mr. Monk:

Q. How do you arrive at the payment of the commission? Take, for instance, the case of Glengarry. G. McPherson, the agent there, got \$130 for placing 65?

A. Yes.

Q. How does he establish his claim?

A. When he places an immigrant with a farmer he sends us the certificate:—

'I have this day placed..... He landed at the port of.....on the.....day....., SS..... Is farm labourer, domestic, and so on.'

I take this certificate to signify that the agent has placed him with a farmer, or as a farm labourer or domestic. If we do not get the signed form, we write and find out.

Q. Would you for the next meeting take up that case of McPherson who was paid \$130 for 65 and show the document?

A. I could leave this with you.

By Mr. Sinclair:

Q. Have you any agents in the Maritime Provinces?

A. No. They only work satisfactorily where the bulk of the province is agricultural. On SS. *Montreal* there were only two immigrants on whom bonuses were claimed. The bulk of them were from countries where we do not pay bonuses. For instance, Austria-Hungary. There was one placed in the province of Quebec.

By Mr. Monk:

Q. Is not Austria-Hungary in the list of those countries?

A. It is, but we are not paying any bonuses at the present time.

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Q. How is that?

A. I do not know.

Q. Is not the amount of bonus the same in all countries?

A. Yes, now.

Q. You will remember McPherson?

A. I have it in my hand.

Mr. MONK.—I have no more questions to ask Mr. Scott to-day. I would like to have an opportunity of looking over the documents produced. I might have a few more questions about McPherson.

Mr. SCOTT.—In addition to what I have given you I was asked for a list of the deportations. I have brought over a few of the original files to show the process under which undesirable immigrants are handled.

Mr. MONK.—I think it would be to the advantage of the committee to hear Dr. Bryce. He could give us some evidence on the medical examinations at some future date.

Mr. SPROULE.—I notice in this list which purports to show the salaries and contingent expenses of agents for the fiscal year 1907—that, apparently, it only gives the names of the salaried agents and not the sub-agents.

Mr. SCOTT.—I gave you a separate list giving the list of sub-agents and the amounts paid for five years.

Mr. SPROULE.—That was among the papers you left with us?

Mr. SCOTT.—Yes, that was filed.

By Mr. Sproule:

Q. With regard to estimating the amount of cash and settler's effects, what means does the agent resort to to get as correct an estimate as possible?

A. When they issue a certificate—I also filed the certificates upon which the American bonuses have been paid—when the agent or sub-agent is issuing a certificate he asks the man what he is worth in cash and effects.

Q. Take one for instance, the number of cars at 148. As near as can be ascertained the value amounted to so much?

A. We can tell absolutely the number of cars.

Mr. SPROULE.—That is all right but I mean with regard to the values.

Mr. SCOTT.—We simply take a man's word for it.

I may say it is very difficult to get farmers to take a family. They either want single men or a single girl, or a man and wife, without children. That is why we pay the locating agent \$2 each for locating families. It is a very difficult thing to do and they are most desirable immigrants.

By Mr. Sinclair:

Q. Are you able to place a man on whom you have paid a bonus and find out how many have taken up homesteads?

A. Yes. I gave that to the committee at the last sitting. I filed a statement.

Mr. MONK.—Not the names, I think.

Mr. SCOTT.—We can give you the names, but it would be an awful job.

By Mr. Sinclair:

Q. Can you tell how many of those on whom you actually paid bonuses? Some of them of course are immigrants on which you do not pay?

A. When you get down to that it would be very hard to make statistics. When the immigrant is making his entry for a homestead he is asked his nationality. I filed

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a statement last week giving a number of homesteads entered from January 1, 1907, to January 1, 1908, of this year, showing the number of entries, English, Irish, Scotch and continental immigrants. Taking them for a period of 20 years they would average 2.5, or two and a half people, and taking that basis it would work out at 20 per cent Scotch, 23 per cent Irish, 43 per cent American, and 28 per cent continental.

Mr. MONK.—It would be very satisfactory to trace the immigrant right up to the Northwest and on to the farm.

Mr. SCOTT.—If you wish it for the purposes of demonstration, I would be only too pleased to trace say 50, but to trace them over a number of years would be an awful job.

Mr. MONK.—If it was done as a system you could be able to come before us and say: Here are the names of the parties on whom bonuses were paid.

Mr. SCOTT.—It would be an endless job.

Mr. SINCLAIR.—Could not the Mounted Police assist?

Mr. SCOTT.—Consider the size of the country.

Mr. SINCLAIR.—Could they not call on the settlers?

Mr. SCOTT.—They do in some of the newer districts.

Mr. MONK.—If the name of a man entering for a homestead was returned to you with sufficient information, such as the ship he came out on, could not you trace him more easily?

Mr. SCOTT.—That is the lands branch and they would have to amend their form. I had them amend their form as to nationality, but we never get the name of the ship. The committee adjourned.

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

W. D. SCOTT,

Superintendent of Immigration.

MEDICAL EXAMINATION AND HEALTH OF IMMIGRANTS.

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

WEDNESDAY, June 10, 1908.

The Select Standing Committee on Agriculture and Colonization met here this day at 10.10 o'clock a.m., Mr. McKenzie, chairman, presiding.

The CHAIRMAN.—The committee, as you are all aware, has met to-day to proceed with the examination of Dr. P. H. Bryce in regard to the quarantine regulations, the health of immigrants, and other matters connected therewith. It was Mr. Monk who requested that Dr. Bryce should appear before the committee but the honourable gentleman has not yet arrived. Dr. Bryce has no particular statement to make; he is here for examination to give all the information that is required of him, providing he can do so. If any honourable gentleman present desires to interrogate Dr. Bryce, pending Mr. Monk's arrival, it is, of course, open to him to do so.

SYSTEM OF EXAMINATION AT OCEAN PORTS.

By Mr. Schaffner:

Q. If the information has not been given already, I would like the doctor to explain briefly the system of examination in force with respect to immigrants upon arriving at Quebec or other Canadian ocean ports.

Dr. BRYCE.—I may say, Mr. Chairman and gentlemen, that the system has not been altered materially in the last three or four years except to make it more precise in its details than it was four years ago, when we instituted the work, and regarding which special information is to be found in the annual reports. I might say that this year, in view of the increasing stringency demanded or rather, I suppose, the restricted opportunities for work, the department has endeavoured to bring out the very best of all who have in any way been assisted; and in order to do it it has made it necessary for every such emigrant who presents himself at a ticket office, or a shipping office, in the old country, to have the certificate of a medical officer of some sort—in England sometimes it may be the medical officer of the parish, sometimes it may be the family doctor—that the emigrant is in perfect health.

Q. You say that is the custom now?

A. That is the practice now. That is called for by the regulations of the department.

By Mr. Barr:

Q. Where are those regulations kept? We have been unable to find any trace of them?

A. These certificates go to the London office or to the ticket office where the ticket is obtained.

By Mr. Sproule:

Q. When was that system introduced?

A. This last year. I will attach to my evidence a copy of the blank certificate form required to be filled out by all assisted emigrants in Great Britain.

By Mr. Barr:

Q. Just this year?

A. This last winter.

Q. We could not find any trace of those regulations?

A. There is a printed form required.

Q. We have not seen any?

A. I have no doubt we can supply copies. I have seen the form myself.

Q. We have been told that it is merely a matter of form?

A. The regulations are contained on a large printed form and deal with all steamship passengers that are in any way assisted. As regards others, any person who comes to a doctor at Liverpool with his ticket in his pocket, and is healthy looking, of course goes on board. The Board of Trade doctor of Liverpool, or it may be of London, and subsequently the ship's doctor, examines that person before he goes on board and becomes a passenger. Of course, you cannot apply the certificate requirement to people who are buying their passage independently of any assistance. We have not seen any way by which you can get at a person who goes down—for instance, this morning at 10 o'clock—on the dock at Liverpool and, with thousands of others, demands to come on board a steamer that sails at 2 p.m. Everything then is in confusion and we have seen no way by which you can make an examination at Liverpool the morning of sailing any more thoroughly than it is with the Board of Trade doctor at the port and the ship's doctor. The passenger goes on board and during 7, 8 or 9 days he under the supervision of the ship's doctor who has to make a signed declaration, which is left with the medical inspector of the port of arrival, stating that during the voyage no person has suffered from any disease other than the following: Then he has to give the name of the person suffering from the disease and the name of the disease, and that statement has to be signed by the doctor and by the ship's master. Really it is in the shape of an oath, and I don't know how you could make it any more binding. It is the word of honour of the ship's doctor that there are no more cases on board than he enumerates. Then when that passenger comes off the ship he is one of 1,000 or 1,500; there have been as many as 7,000 passengers landing at Quebec in a single day. Last year there were that number, the largest in any one day. The passengers have to be examined in detail and it is done simply in this way: On the large steamers of the Canadian Pacific Railway which lie at Quebec the company ask for, and the department sends down, a medical man to Rimouski, who carefully examines on the way up all the second class passengers. They are generally nice people, but here and there there may be a defective of some sort amongst them. Those detained are taken into the immigration building. When they come into the building they pass through a line of medical examination, which I think, is as reasonably strict as can be carried out anywhere in practice. We have two medical men on the line. One doctor's duty is to examine, as the immigrant comes along a narrow passage where there is nobody else, the general appearance of the man; whether there is anything defective in his appearance, such as epilepsy or it may be St. Vitus' Dance, or whether there is anything that would indicate that he is a defective. That is noted as he goes along the line. After that he is examined in detail. If there is a tendency shown towards trachoma, that is ascertained by turning back the lids of the eyes. That is done with us much more thoroughly than it is at New York, where they pride themselves upon the carefulness of their examination. I know our results are even more exact than theirs, and they think in New York they are pretty exact. In general terms that is what we do.

We have often wondered how we could examine 1,500 or 2,000 or 3,000 people, coming mostly from Britain, in any more thorough way. The experience has been that there are more persons of defective physical organization come from Great Britain, especially from the factory towns in England, than from any other country, notably more; and we have wondered what we could do with regard to stopping a line, for

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instance of 2,000 people, in a forenoon or in a day and going into what you might call a minute physical examination of each one. We have thought that in the first place it would mean three or four days' detention of a shipload; and when you remember that means the debarkation of about 1 person in every 100, you will see how serious the problem is. If you examined 99 persons and detained one person, it would mean the very unnecessary, in my judgment, detention of all the rest. We have to realize that these people have been on board ship for nine days or two weeks, that they are going far west, that they are not in good shape so far as their physical appearance goes, they are dirty looking; and if we started and examined into the condition of the lungs and heart of each passenger it would mean from half an hour to an hour's delay in each case. We do not think the number of detentions or deportations, at present at any rate, calls for such a severe discipline as that. It is not followed in New York, where they have been trying to keep out rather than admit people, and personally I do not think it is necessary here. What we have done has been to insist upon our medical officers opening their eyes wider, if possible, to see any mentally defective person. Now, only yesterday a person got to Winnipeg and shortly after getting there he became insane. Well, it looked as if that man ought to have been detected with certainty down at Quebec, say a week before. But medical men know that sometimes within a night a person becomes violently insane. I have been collecting statistics from our asylums and have noticed that you will find an insane person's name occurring in a list once, twice, three times and even four times; going into the hospital, coming out well, staying out a year or six months, then getting bad again and going back once more to the hospital. Well, if that man is well enough to be sent out by the doctors of the hospital and should happen to be coming through the port of Quebec, it is not to be expected that our doctors, who know nothing about the case—which is but one in 3,000—are likely to pick out that man. I do not think so, and while I think they have learned to be much more careful with regard to mental diseases and that sort of thing than they were at first when everybody talked about trachoma, I am quite certain that if you took the total number of insane that have been deported in two years and set it against the 50,000 or more people that have been inspected, you will see that the inspection is just about as reasonably exact and careful as the situation makes possible.

By Mr. Blain:

Q. What objection would there be to have a medical officer on each vessel with a very large number of immigrants on board?

A. Each steamship at present has its own doctor.

Q. But we will say a special medical man representing the government?

A. Well, we have talked about that and it has seemed better, if anything more is deemed necessary that the ship's officer be made our officer so to speak. We might say to him: 'Now you only get so much from the company, that is mostly for taking care of people who are seasick and one thing and another. You are not supposed, presumably, by the terms of your contract, to spend all your time down amongst the immigrants. Supposing you agree to make a daily individual inspection of every person downstairs during the seven or eight days of the voyage?' I am convinced that if we can get the officers of the company to do that, we will have adopted the extreme of methods to find out really the condition of health of every one on that vessel.

By Mr. Barr:

Do you understand that the government pays for this health officer?

A. What I am stating is only a supposition.

Q. But as a matter of fact they do now?

A. Oh, no, not on the steamships. The government does not pay the ship's doctor now.

Q. Then there is no safeguard?

A. Yes. We would add to his salary. They only get about \$50 a month, these young fellows.

By Mr. Black:

Q. In your opinion, is the average ship's surgeon a man of sufficient ability to be selected by the department for that kind of work? You have met many of them as well as myself?

A. I think they are. They are divided into two classes. I have known of young men a little anæmic or a little tubercular, who have gone on board as ship's surgeon, because they are delicate in health. Once in a while you will find an old soaker, but not many in recent years I am glad to say. Then there is a class of bright young fellows who want to get a little pocket money and experience of the world.

By Mr. Barr:

Q. It not infrequently happens that they are not graduates of a medical college?

A. I do not think so. I think the steamship companies can get all the graduates they want.

Q. I know cases where the young men have failed in their examination?

A. Certainly we would not grant our money until we knew our men.

By Mr. McIntyre (Strathcona):

Q. The ship's surgeon examines the passenger's at the point of embarkation for the purpose of protecting the interests of the company?

A. Yes.

Q. He makes a thorough examination because the immigrant, if he is an invalid, or is in a bad state of health, is going to prove an expense to the steamship company, provided he is detained in the government detention hospital? The company pays for that?

A. That is right.

Q. And if diseased immigrants are deported, the company pays the expense?

A. Yes.

Q. Therefore, it is necessary for the ship's surgeon to see that those men coming on board are in absolutely good health. Now, here is the fault I find in the suggestion made by you. To my mind Mr. Blain's suggestion is ahead of yours. Supposing the government pays the ship's doctor for investigating the health of the immigrants? It will be his duty, as it was before, to protect the ship or rather protect the company. Now if, after the vessel has sailed, it turns out that some of those people have seasickness which develops before obscured epilepsy, quite a common thing I believe under such conditions, it is the duty of that surgeon to his employers to protect that epileptic from being detected at the port of disembarkation. Is that not true?

A. It may or may not be true. He has got to sign a certificate.

Q. Yes, but whom is he working for?

A. Of course, there is that phase of it.

Q. Here is where I see the fault in your suggestion. Under your arrangement you would have the ship's doctor as a government officer to report on the people that are sick. But the moment he does so he entails additional expense on the company. Do I make myself clear?

A. Quite clear.

Mr. McINTYRE (Strathcona).—I cannot see that such a system would work.

By Mr. Barr:

Q. As I understand, the immigrants on disembarking here merely pass along a line?

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A. In front of our medical inspector and his assistant.

Q. But they pass along?

A. They pass along in front of two doctors.

Q. How rapidly do they pass along?

A. Well, supposing they are fine hearty looking English people, clean in wind and limb, I suppose, probably one a minute or probably one in two or three minutes. You take a thousand people and their examination would occupy several hours.

Q. As a matter of fact they pass at the rate of six a minute according to our information, I think?

A. No, hardly that.

Q. You could not raise the lids of the eyes of each person in that time?

A. We do not.

Q. You do not pretend to do that?

A. Not if the immigrants are English people.

Q. You could not raise even the man's head in that time?

A. I would put it that each person's examination would occupy not much more than one minute.

Q. But actually the immigrants pass at the rate of six a minute. That is proven beyond doubt by the figures presented to the committee by Mr. Scott. You see that is the actual fact?

A. It may have been in the case of a healthy ship. That might be in the case of a healthy lot of people.

Q. Yes, but that is the fact according to the list laid before us by Mr. Scott?

A. All the doctors can do, unless they examine each immigrant in detail, is when they see a delicate looking person, who may be consumptive, to tell him to stand aside and the line goes on.

Q. Many persons whose eyes are affected have passed the line instead of being asked to stand aside?

A. Oh, no.

Q. Yes.

A. You see we have not got trachoma among the English people. You cannot find any in our hospitals, not one in a thousand people.

By Mr. Monk:

Q. There are a great many people affected with eye disease in England now?

A. That is among the Jewish people, and they are examined there now.

By Mr. Barr:

Q. A great many cases come out here?

A. We have got all of them. I am convinced that we do not get trachoma from England except amongst cases that may have been in hospitals and treated. The disease is not amongst the English people.

Q. What about the continental people?

A. We examine all of them.

By Mr. McIntyre (Strathcona):

Q. Quite recently I had occasion to look into your method of inspection in the city of Quebec. I think it would be advisable for every medical man who is in the House of Commons to examine into your methods because, to my mind, the statement you made is absolutely true; that as a reasonable examination I do not see that it can be much improved. A very misleading statement has been made here that 300 will pass within a certain limit of time. Every person that passes the doctor is examined. He is stopped and asked three questions: generally where he came from, where he is going, and what condition of health his family is in. Those questions are

broad questions of that kind. One is to determine whether the man can answer a broad question of that kind. Generally speaking there is some pleasantry passed on the part of the doctor there. No person passes a doctor without being asked at least three or four questions.

A. That is right.

Q. At the examination I saw all the children's heads were uncovered, and so were the parents for that matter, and an examination made of the scalp as regards ringworm or any similar skin disease which might manifest itself. The point you make is an important one, that if the immigrant be anaemic he is sent to the detention room. Of the passengers that I saw examined fully fifty persons were detained?

A. That is right.

Q. For instance there was somebody that had a glass eye. That was noticed, and it was a very clever piece of work. That person was set aside and for various other reasons passengers were set aside and sent into the detention room; but the line was not stopped on account of the persons so detained. In the case of all continental people coming in their eyes are carefully examined.

MR. SCHAFFNER.—About how many a minute went through?

MR. McINTYRE (Strathcona).—I did not take note of the time so I could not answer that.

MR. BARR.—I saw the inspection several times and that was not my experience.

TRACHOMA.

DR. BRYCE.—Perhaps I might say this with regard to trachoma. I think it is worth noting. You know that in 1902 or 1903 there were loud complaints of people suffering from trachoma coming to the States via Canada. The regular work in connection with our department began in 1903 and became more exact with our own hospitals in 1904. In every year since that time we have, especially in the cities of Montreal and Toronto and last winter in Winnipeg, Calgary and Regina, made detailed examinations of the hospitals and the dispensaries with a view to finding if there were any trachoma cases in those institutions. Now speaking without notes I may say that the Winnipeg General Hospital, in its out-patient department, last year had 2,935 persons coming up daily for examination. I went through in detail every case in that list as to the cause of their coming there, and out of that number there were only 17 persons in the whole year who came up to the Winnipeg General Dispensary, which is a free dispensary, for treatment on account of trachoma.

I went to the Margaret Scott Nursing Home, which is down near the station in Winnipeg, within a couple of blocks of it, and the nurses from that institution visit the poor in their homes.

MR. JACKSON.—It is near the Immigration Home?

A. Yes, near the Immigration Home. They have some six or seven nurses going about attending the poor immigrants and other people who need their services, but there was in the register in the Margaret Scott Home, out of 230 or 240 cases in the 10 months previous, only one person as having been treated for the eyes. Within a block of the Margaret Scott Home, three or four doctors who were not on the hospital staff, started a little clinic on their own account, and they had asked the public in that neighbourhood to come there and be treated free. I said to one of the doctors who had been going to the clinic for about four months, 'Have you had any trachoma here?' and he replied, 'No, we have not had any trachoma patients.' At Regina there was quite a noise made, principally in Saskatchewan, by certain officers there that there were a good many trachoma patients cropping up in the rural parts of Saskatchewan. I went there, and got hold of the provincial health officer, Dr. Seymour, and said: 'Can you put me on the track of trachoma patients in this province?' And he said in reply, 'I really do not know of any specially. We have just started our record

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system requiring the compulsory reporting of contagious diseases; from the rural parts we get them once a month, and we get them from the cities also.' I said, 'Tell me what you have,' and he said, 'We have them over in the Department of Agriculture, whatever returns have been received they are kept over there.' I said, 'You have heard the report from the Department of Agriculture that there are a great many patients,' and he said, 'Yes.' I said, 'Do you know about them?' and he said, 'No. I think it is Dr. McLeod, a specialist over here who reports these.' I said, 'We will go and see Dr. McLeod,' which we did, and after a preliminary chat with Dr. McLeod, who is a good Nova Scotian doctor and tells the truth, I have no doubt about that, he was asked how many people he had seen in the last three months, being new cases of trachoma, and he replied, 'Well, I don't know, probably one or two per month.' I said, 'You are reported as having seen lots of cases, and there are a good many Germans in the suburbs of Regina, and I suppose you have seen them.' He said, 'I think they must go to other doctors, they do not come to me.' I said, 'Can you let me look through your books for the past three or four months?' But he did not offer to produce the books, and the most he could say was that he had one or two cases within the last month, or within two or three months, as new cases. I said, 'Who were they?' and he replied, 'One of them was a family that moved up here from Manitoba, an English family.' He could not give me others; that is the only case he cited as having trachoma.

By Mr. Lewis:

Q. Is he a private practitioner?

A. He is a private practitioner.

By Mr. Monk:

Q. You probably read an article by Dr. Gordon Byers, one of our best eye specialists in Montreal, which was published in the *Medical Journal* three or four years ago, in which he called particular attention to trachoma patients which they had treated in the Montreal General Hospital and in which—I am quoting from memory—I think he says, there has been a diminution in the number, still the percentage of trachoma in a city like Montreal constitutes a very grave danger. Then again what have you to say in regard to the Trachoma Hospital at Quebec where we treat patients, if I am correctly informed?

A. You mean the Government hospital?

Q. Yes.

A. Oh, certainly, but we do not allow them out until they are cured.

Q. As to that, I cannot speak with knowledge, although I have heard of a woman who was treated there and afterwards, although not cured, was sent down to Nova Scotia to join her husband's family; but this is mere hearsay. Does not that, in your estimation, constitute considerable danger in regard to trachoma?

A. No, if I understand you, the point is that trachoma cases which come in amongst the immigrants are stopped and treated; if that is what I understand Mr. Monk to say, that is quite true. This year Dr. Pagé, our Quebec officer, spent several days going among the Montreal hospitals to find out whether any of his old patients were being treated there, and the doctors who are in attendance as specialists simply tell us that the condition of five years ago does not exist at all to-day. I suppose not more than twenty or thirty cases are reported from the ordinary dispensaries as being treated for the year. Of course, one case may go for a month or up to two or three months, but whatever had existed five years ago does not exist to-day. We want to find out, because we wish to know whether the treatment in our Quebec hospital is effective and whether it is thorough, scientific piece of work. Dr. Pagé there is as scientific a man as there is anywhere, and to treat an eye and make a radical cure of it is just a

hobby with him. He wants to make a thorough job of it from a scientific standpoint, and we do not find so many cases because they do not exist, I am sure of it.

Q. Then there is a very great improvement?

A. A very great improvement.

Q. Because in the report three or four years ago United States officers refused at Sault Ste. Marie over 500 cases of trachoma immigrants passing from Canada to the United States?

A. Yes, exactly, but the point that the United States might seem to make is at variance with the facts as we interpret them. At Montreal they have a very large bureau, and I suppose three-fourths of the detentions that are made of people going to the States are made there, because it is a common thing for immigrants, from whatever reason I do not know, to be directed to buy their tickets to Montreal. If they are going to the United States they are, of course, examined on coming into Canada. Now in trachoma we have a situation like this. In a person who has trachoma the mucous membrane on the under side of the lid has been eaten away, if the disease is of some years' standing, and there is nothing left but scarred tissue. Dozens and dozens of these cases of cured trachoma are to be met with, but like a scar anywhere else it is still a scar and it will never be covered up. Now, if it is an unlikely looking immigrant, if he hasn't any money, or if he is of a certain nationality, the American examining officer merely makes a point of saying, 'He has trachoma, and we cannot admit him on that account.' I have said to him, 'Doctor, he has not trachoma, he is cured of trachoma, he has had trachoma, it is true'—you see the point, gentlemen?

By Mr. Monk:

Q. Once trachoma has reached the stage that you have indicated is it curable?

A. It is cured in the same sense that you may have a cut on the skin and cure it, but you do not get rid of the scar and it is exactly the same with the underside of the lid in trachoma.

By Mr. Black:

Q. The scar is not trachoma any more than the scar on your hand is the cut?

A. That is exactly the point I made with the American officer, I told him, 'That is not trachoma, but it is cured trachoma.' And he said 'We do not want the immigrant.' We can't say that.

Q. And he charges the trachoma up to Canada?

A. That is really the point, he has not trachoma, but cured trachoma.

By Mr. Monk:

Q. Have you any knowledge of trachoma existing in Sault Ste. Marie almost continuously?

A. No, except that there is a large colony of Italians there who have been there for nearly ten years; I have never heard of it within my term of office here.

Q. In your opinion, in view of what is stated regarding the existence of trachoma in eastern Europe, what Marcus Brown states in his report to the American authorities, in those countries it is impossible to eradicate trachoma totally; do you consider it is an advantage to us to receive immigrants of that kind even if they had trachoma which has been cured?

Mr. HUGHES (Victoria).—What countries do you refer to?

Mr. MONK.—I refer to the southern part of Austria and to Italy, the eastern parts of Europe where trachoma exists and where they can't get rid of it; they have to segregate the army completely from the rest of the population, because once it gets into the army there is no knowing where it will end, it is very contagious.

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A. If it gets into the houses of the poor it is no telling where it will go; in a family it is bad, and in its acute stage it is readily communicable, and you know in certain classes of the community where you get sore eyes it runs through the family.

By Mr. Hughes (Victoria):

Q. Does it result in total blindness?

A. In such countries as Finland it is said to have been the cause of 30 per cent, probably, of all the blind people. But as a matter of fact, we have searched everywhere during the last three years for cases which have been treated, to ascertain the extent of the cases in Canada. I found in St. Boniface Hospital, Winnipeg, as many or more cases—and there are not more than a dozen or so in the whole—had been among the halfbreeds and Indians who came into the dispensary there, as there are among the immigrants, and we know how many immigrants have gone in there during that period.

Q. You mean among the half-breeds and Indians who come into the country?

A. Who are in the country. I mean to say that, speaking generally, more than one-half the trachoma cases in the St. Boniface hospital last year were in natives of Canada. Whether the others got it here, or whether they had been in the country for years, I do not know, but there were probably not more than ten or fifteen immigrant cases in all in the year in St. Boniface hospital. We pay a certain amount of money to the hospitals at Winnipeg and St. Boniface for the treatment of immigrants, and there is no reason in the world why the authorities there would not see trachoma if it existed. I went to Dr. Good, a most famous eye specialist, and said, 'Have you seen trachoma there?' 'Lots of it,' he replied. 'Recently?' 'Not recently.' 'Amongst whom did you see it?' 'It was among the Mennonites. I do not see many of them now. I do not see the class of people who have it.' Then I asked him, 'Will you have your clerk go through the books and give me a list of the trachoma patients you have seen here?' 'Well, if she has the time,' was the reply.

Q. That is referring to one little city, Winnipeg. Have you any means of ascertaining how many of these people who never saw a hospital or are sent to one, have the disease?

A. I tried the specialists.

Q. What information have you with regard to the disease among the settlements?

A. We have the benefit of the experience in the hospitals in the Northwest, say 15 hospitals.

Q. The immigrants never see the inside of a hospital, they go on for years suffering from the disease before seeing the inside of a hospital?

A. We have asked them in Saskatchewan. They have a compulsory law there requiring that notification be given to the provincial authorities of all contagious diseases.

Q. Of which not more than 2 per cent of the people ever heard?

A. I do not see how we can get any more information. I have gone to the hospitals, to the free dispensaries, to the provincial boards of health, and I have asked in every case for information, but nobody could give me any positive figures. I would be very glad to have them if I could obtain them, but I cannot, I have tried every possible source. I have tried everywhere, and in Montreal, where there are so many Jewish people, we have searched the dispensaries and hospitals and have got reports, and I suppose that last year in that city of half a million people it has not amounted to more than fifty individual cases in the hospitals.

By Mr. Monk:

Q. You know we have in Montreal exactly the same law for the reporting of contagious diseases as they have in Winnipeg, but our experience is that people of a

certain class, and particularly foreigners, will only see the doctors as a very last resort?

A. Well, where are you going to find them if they do not go to the free dispensaries.

Q. If they do go it is accidentally, because they would rather stay at home than see a doctor, for the reason that if they see the doctor it means isolation?

A. We have tried the specialists and we have tried everywhere to get full information. I do not know where else we could go.

By Mr. Sproule:

Q. Were there not a number of cases reported from Toronto some years ago?

A. Yes, but it has all been changed. I wish we could prevent other diseases as easily as we have been able to stamp out trachoma. You see they are examined at their villages in Germany; these eastern immigrants cannot get through Germany without examination.

By Mr. Monk:

Q. I do not know about Germany, but in Italy and Austria they are glad to get rid of them.

A. In the last 'Outlook' they have an article on the examination in Germany. They have detention houses on the border of Austria and Germany. On the German border the examination is much more thorough than anywhere else because they do not want them to come into Germany or to get off the train. At Hamburg there is a large building and they are more exacting than anywhere here or in the United States.

Q. Have you examined into the possibilities of our having medical officers on the other side of the ocean to examine immigrants coming here? We have only two or three lines of steamers, at the most four, coming here, particularly from the eastern ports. Would it not be possible for us to have such a system as they have in the United States to examine all immigrants before they leave the other side, because the examination conducted here when a steamer arrives with a large number of immigrants is necessarily a very short one?

A. It is a short one.

Q. I wanted to ask you that question particularly because it would save us a great deal of cost for the care of immigrants who arrive here afflicted with trachoma, or other contagious diseases; it would save us considerable expenses in connection with the deportation, much more than we would expend in making the examination on the other side?

A. I might say that we have thought of that phase of the question, and having looked into all the circumstances personally, I have not yet been convinced that anything more effective than is being done at present on the other side, can be done practically. I mean this, that every person that becomes officially an immigrant, you might say, on the other side, has to bring a medical certificate that he has not been insane within five years, that he has never been an epileptic, that he has not consumption; in other words, that he is a healthy person. He has to bring that to the ticket agent before he can purchase a ticket, which will be accepted at the seaboard; that deals with, I believe, the larger number of intending immigrants. There is another large number of the better class of people who are coming to Canada to better themselves; they ask nobody's opinion, they go to the local agent and say I want to go to Toronto, or Edmonton, or Calgary or wherever it is, and they buy their ticket as you or I would buy it, and they probably come second class. They do not come down to Liverpool until the morning of sailing. What proportion they bear to the whole number it is hard to say. There are about 2,000 people who sell tickets in England, in different parts of the country, and I do not see how an independent person, such as I have referred to, could be brought down to Liverpool to be examined before sailing,

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unless it was made an order to every agent. We would have to have them come down and spend two or three days in Liverpool, be out of pocket that amount waiting around the Liverpool boarding houses in order to be medically examined. Some days, with several steamers sailing on the same day, as many as 6,000 or 7,000 people would be in Liverpool on the same morning. It would be a hardship to bring them to that port two or three days before sailing in order to be examined; it could not be done on the morning of sailing any more fully than we do it on this side when they land, and I think the only possibility is of having the ships' officers employed for that purpose. I have suggested, from the idea of economy, that the ship's medical officer, belonging to the steamer, be asked, 'Will you become the officer of the government for a certain additional salary to be paid by the government and make a daily examination of the immigrants while on the way across?' I believe that can be done, and I believe that is an economical way. We would not be interfering with the authority of the steamers by putting our own men on board, which might be a cause for discussion, but by adding a little to the salary of the ship's officer and requiring him to make a daily inspection of the immigrant, he would be able on arrival to give us a list of those he thinks we should look after. It would save time on this side, because if he has an epileptic on board he certainly would detect such on the road over, and if necessary we could require him to make an affidavit as to the accuracy of his report.

Q. I would like to ask Dr. Bryce if he has heard that at the hospital in Quebec they have a habit of using the hospital premises for the purpose of raising and fattening chickens, and doing other side businesses of that kind, of a private nature, at the expense of the country. I have been informed that the last time you went there, doctor, I think it was, these coops and other paraphernalia connected with the business had been temporarily removed, and during the period of your visit they were kept on an adjoining premises. Have you heard of such an abuse as that?

A. I might say that is absolutely untrue in every detail. The only thing that has ever been done there was that the doctor there, who has lived in the Eastern Townships and has kept a cow and some chickens all his life, had some chickens at the hospital last year and attempted to incubate eggs; he failed in his experimental chicken farming. I think there was one chicken left out of the whole lot, and as far as I know there are not a dozen chickens on the whole hospital premises.

Q. I heard that the incubator and other coops were removed to a neighbouring farm when you were coming?

A. Dr. Paget is charged with the fullest responsibility and is not that kind of a man. His experiments in the chicken raising business were extremely unfortunate.

By Mr. Sinclair:

Q. Was there anything in the story that they were utilizing the refuse of the hospital?

A. They were not utilizing the refuse, because the chickens never got to the stage of eating it.

Q. The only thing was they used the barn for housing them?

A. There was an empty stable there which was utilized for that purpose.

Q. Did anybody object to that?

A. I do not know, I certainly did not. I saw the chickens there and I saw the incubator. The doctor was unfortunate in his first attempt because the chickens did not grow.

By Mr. Barr:

Q. But he was raising chickens for his own profit?

A. For his own pleasure, but he was not successful.

Q. But if they had been successful it would have been to his profit?

A. It is certainly a case of a man who was used to keeping chickens and liked to see chickens there, and he got a dozen to start with, and an incubator, and he put the eggs into the incubator and utilized the stalls of the empty stable.

Mr. MONK.—I think if the committee desire to hear any further evidence in regard to trachoma we should ask Dr. Byers of Montreal to appear before the committee. He is an eye specialist of great distinction.

WITNESS.—I may say that I would be delighted, if the committee desire further information, for Dr. Byers to be called. He would only say, I am satisfied, what we have said to-day in regard to the disappearance of the disease.

By Mr. McIntyre (Strathcona):

Q. As regards your examination on this side, you also retained the right to report unfortunates for how long?

A. Two years.

Q. For insanity or epilepsy?

A. For insanity, or epilepsy, or anything else. I might say that we have hunted the hospitals and asylums since the new Act went into force, and we have carried on correspondence with the friends of the unfortunates in foreign countries, we have gone through the hospitals and asylums and last year we succeeded, out of the accumulation in the hospitals and asylums for years, in sending out of this country 122 insane persons.

Q. Supposing a development of trachoma should occur. Take as an example that trachoma develops in Winnipeg, what procedure will you take within the two years?

A. The Act provides particularly that any person who becomes an inmate of a public institution, either hospital, jail or asylum, may be deported within two years. Now, a trachoma patient that will go to a dispensary will not become an inmate, I suppose, unless one wishes to push the meaning of the word 'inmate' to extremes; he is probably a patient who is making his own living, and he turns to the dispensary just as any person from the town does, because it is there to be used; he would not be deported. And if he happened to be a contagious case, and was really sick, he would go into a hospital—likely in this case he would into the General Hospital in Winnipeg. I think there were on the register of the Winnipeg General Hospital some eight or ten entries during the year of cases that had been in there; such a person would go in and be treated there. But we have never deported a man who is otherwise healthy and earning his livelihood, on account of trachoma. If he becomes a pauper patient, and is incurable, that is different.

By Mr. Sproule:

Q. What authority has the province to deport?

A. None?

By Mr. McIntyre (Strathcona):

Q. In the case of trachoma, I am asking your opinion, do you think that trachoma is commonly contagious to a healthy class of people?

A. I would answer that question by saying: 'Is consumption contagious?' We have to discriminate in this. What takes place in the house of a settler or in a small tenement in a city community where people are not too well supplied with water, and sometimes do not use water too generously, or if the case is like that of country hotels everywhere where they use a common towel, such a disease may be disseminated by common towels. I know that even our well advanced Canadians use common towels in some of the large hotels, but in houses if there is a common towel and there has been an acute case of contagion in the family others are going to have it.

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Trachoma is a disease that develops out of ophthalmia from all of three distinct microbes. The most recent investigations show that ordinary sore eyes end in trachoma and it is especially severe according to the constitution of the individual, but varies especially in severity according as it is the ordinary pus germ, or the septic germ, or one or two other germs that are recognized as the Weeke or Moxon Bacillies. In England you have the ordinary ophthalmia, which becomes chronic, and which may be compared equally to catching a cold in the nose, which lights up a chronic catarrh there.

By Mr. Sproule:

Q. Do I understand you to say there were no cases found amongst English immigrants?

A. Almost none, except a few Jews from the east end of London.

Q. I know that a few years ago I saw one family come to our country, all of whom had it, and we got them back to the city. It seemed to me clearly a case of trachoma.

A. Were they from the east end of London?

Q. I do not know.

A. Occasionally we see it now among the Jewish people, but there is no reason why they should not get it on ship board, even while they are coming out, from towels and inadequate water supply.

Q. They get it on the steamers?

A. On shipboard. I wonder they do not often get it coming out.

By Mr. Lewis:

Q. You say there were 120 people deported last year. What was the cause?

A. That was last year, on account of insanity alone.

Q. For the one cause?

A. Yes, it would mean there were that many out of say 300,000 immigrants; because when we started a correspondence about the insane patients it has sometimes taken us over a year to find out the friends to whom we could send them. We will not send them until we find who to send them to, because it would be cruel to send them to Liverpool and drop them there unless we have some person to take charge of them.

By Mr. Sproule:

Q. I think the suggestion to employ the ship's doctor to examine the immigrants coming over would be a very objectionable one, because I cannot imagine that the ship owners would employ the doctor, or they would not keep them very long, if they found that they were reporting all cases that would impose upon the shipping companies the expense of taking them back again.

A. I can say this, that while the shipping people have in the past, in the early days, been rather crusty about it, we have now found them very very willing to fit into our regulations, and if the young man who is the ship's doctor does not always hunt up all the cases that he should, it is, I think, because he does not think he is expected to. I would go farther than having a daily examination, and I would have him make an affidavit if necessary. I did not feel that way about it until after I had met them. I did not feel that way about the steamship companies either, but I have found that most of the young fellows who are doctors on these ships are men of honour, and if they knew that they were expected to make a daily visit to the immigrants and to make a report of those they want us to look over again, they would do so. They know very well if there is an epileptic on board we will get him at some place sooner or later and put the steamship company to the expense of taking him back. We will find him probably in the course of a few weeks and the SS. com-

panies have to take him back and pay the expense anyway. There is no object gained in hiding it. While it is only a tentative suggestion, I think it is less objectionable than any other method, because these men are already appointed. I think it will be expensive to put our own men on board the steamers, supposing we take say fifty medical men and appoint them to make the examination on board the steamer. Then there is the further difficulty that we would have to put them on the steamers belonging to someone else, and I do not know how that would work.

By Mr. McIntyre (Strathcona):

Q. I know it entails a lot of expense, but I think with a view of examining all the immigrants carefully it would be better done by our own medical officers. You can possibly answer this question, 'Are your medical officers at the port complaining that they are not always in accord with the ship's surgeon?'

A. That might be quite true.

Q. Do the ships' surgeons even now report fully notwithstanding your requests that they should do so?

A. I do not intend to say they do, but I think they report fully according to their knowledge and the extent of their examinations.

Q. I am not making any reflections on the ships' surgeons, but there are two points must be borne in mind; he has given his judgment of the immigrant once, when he allowed him to come aboard, and we all know that men having once given a judgment are apt to stand by it. When the surgeon gave his judgment on the entrance of these people to the ship, that they were healthy, he took the responsibility then of practically certifying to their condition, and of keeping them healthy while on board. Practically the ship's examination of immigrants coming to this country is at the port of embarkation, and he tries to make his examination in accord with your examination, but if by accident it does not accord, a man's duty to his employer would be to see that that employer was not put to too great expense. He is in no sense your employee.

A. But he would be under my proposal.

Q. The suggestion made by Dr. Sproule and others is that if we are going to do anything like that let us put \$50,000 more to it and have the inspection upon a proper basis.

By Mr. Sproule:

Q. If you are eight days in crossing, and you have 1,000 people on board, it will give you a reasonable time not only to inspect them from day to day, but to select and examine those showing any evidences of disease. Take, for instance, the incipient stages of consumption, which require examination from time to time, and there are other cases of that nature which you cannot determine by one inspection. The ship's surgeon, I take it, is only concerned in keeping his crew healthy while on board the ship; he is not going to concern himself with his passengers' ailments so long as they are able to get about. But if his duty was during the trip to ascertain from time to time whether these people are healthy, or whether there is any evidence of incipient disease, I take it as soon as he saw any evidence whatever of that he would be apt to keep a closer trace of these people and examine them from time to time. At least he ought to do it if he desires to get at the facts.

A. I think if he made a daily examination that was really effective he would obtain such information and would prepare a return for our officers so that if there were 50 or 60 people on the ship requiring it they would again examine those people in detail. I can see a great many objections to making appointments of our own men on the steamers of the companies. I do not know how it would work out. If you have to train, say 50 men, we would have the same amount of responsibility, or lack of responsibility, according to the individual character of your men, and I am in-

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clined to think that if we added to the ship's doctor a portion of his salary, on the understanding that he gives us a report, that he has made a daily examination and the results of that examination we could do it for a minimum amount of money, and without any friction, especially if he made the affidavit, we would get pretty nearly all that there is in it, that is my feeling.

By Mr. McIntyre (Strathcona):

Q. Can you not see that a contingency such as this might arise; you are partially employing this man and the ship is partially employing him. He is satisfactory in every way, the more he protects the interests of the shipping company the more satisfactory he will be to them. But when you find a shipload comes over on which he makes a satisfactory report and you find there are a number of epileptic cases afterwards develop among those passengers, that he should have detected, you would say, that man ought to be discharged, but what is the probability of your having that done, you see the problem you are up against?

A. We would cut off his salary at once, and the company would cut it right off on top of that, we may be sure.

Q. There might be a point where your interest and the ship's interest would clash?

A. Well, I think we have a guarantee for the good behaviour of the doctor in the extra salary we would pay him. He is to make a daily examination and he has to make an affidavit at the end of it showing that certain people have been sick or that there are indications that they require further observation. I do not believe, if we can make this scheme work out that we can get nearer to what we all desire through any other method. I would rather try that first anyway.

Q. I am not taking objection to your system, but at the present time I will say this, that I don't think your proposal, in view of the rather excellent results you are attaining at the present time, is worth the extra money.

A. That may be so, I do not know how much more we will get out of it, because we think we are getting nearly all there is now.

By Mr. Sproule:

Q. Supposing you had 100 men on that inspection, I would prefer to call it inspection, not examination, and you have this guarantee that these were morally healthy people and the captain finds that the doctor has reported against a dozen of these; would not the ship's captain be likely to say: 'You inspected these people at the start and put them on board as healthy people, and now you turn around and report against them. There was something wrong with you in the first instance, otherwise, you would not have allowed them on board and put us to the trouble and expense of bringing them back; why do you report against them now, when you reported favourably on them in the first instance.'

A. Do you not think that the steamship company would say, as I say, that the doctor has too large a number to inspect in say two hours' time, that he can only make a casual inspection, and that he is not infallible. I am convinced of this, that if we could keep these people at the port two or three days after they have landed and make a detailed inspection we would find more than we do find. Of course we have the means of turning them back finally, and we turned them back last year, over 800; but it is a matter of practical detail, and I would not abuse the young doctor who didn't discover, as the immigrants were coming aboard at Liverpool, a case of epilepsy for instance.

Q. You would not, as a medical man, blame him? But where you have a Board who look at every dollar or expense, they would not look at it as you or I would because they do not know the difficulties attending the inspection. Wouldn't they be liable to say: 'We had better dismiss this man and get another.'

A. Do you not think that if they know they have to take them back again anyway, for we are sure to catch them and deport them, they would not abuse the young fellow for not having had his eyes very wide open at Liverpool. You see we have another problem and that is the problem of examining at the United States boundary. Last year there were over 50,000 came in across the western boundary alone, and I do not know how many came in to Canada by the eastern boundary, and it is a problem how to get at these which are all included in the total number entering the country. We deport a certain number to the States each year on account of epilepsy, insanity and L. P. C. This is a problem that the department is endeavouring to get light upon, how we can, along 4,000 miles of boundary, make a medical inspection which will repay you for the amount of money spent.

By Mr. McIntyre (Strathcona):

Q. My idea is that in all your inspection the most valuable thing you can have is the provision that you can deport them within two years after they come into the country?

A. I think so.

Q. I do not think there is any other part of your inspection that compares with that in point of effectiveness. I think that is the greatest safeguard that we have against the entrance of undesirable immigrants.

PROCEDURE IN DEPORTATION OF UNDESIRABLE IMMIGRANTS.

By Mr. Sproule:

Q. Here is another thing, supposing a man comes into the locality which I am in, and he gets troublesome and becomes insane. There is a lot of trouble about it. The first thing you have to do is to lodge a complaint before the magistrate in order to have him committed to the jail or sent to the asylum, and if he is sent to the asylum as an insane person, that necessitates the examination by two medical men, and the filling out of depositions and certificates, and these examinations cost, I think, \$5 apiece. If he is sent even to the jail, I am not sure but what they require an examination by two doctors even to commit him there. That all necessitates expense and who pays that expense, or where does it come from?

Mr. MCINTYRE (Strathcona).—You are speaking now of an immigrant, are you?

Mr. SPROULE.—Yes.

Mr. MCINTYRE (Strathcona).—I do not think it is necessary to go through all that detail.

A. The clerk of a municipality makes the application to the Minister of the Interior.

By Mr. Lewis:

Q. Why do you settle on the two year period?

A. It has been settled on as the most satisfactory period, and I think it is a very complete protection. If an epileptic is going to have epilepsy he is going to develop it long before the two years have expired. If he is insane, he is a very healthy man if it does not develop within two years, especially during the first two years he is in a new country. The curious thing is that these cases are occurring in only two or three of the large centres. I have gone over every one of the large asylums, starting at Montreal and going west through Ontario. I just got through yesterday, and I have found out, except in two centres, Montreal and Toronto, the asylum population has not increased from immigrants to any notable extent. During the last three years there has been no increase that you can measure statistically over what there was five years ago.

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By Mr. Sproule:

Q. It is in Toronto. I have looked it up.

Mr. LEWIS.—I am speaking more of degenerates.

A. Such are sure to crop up somewhere. If you take the assumption that during the last two years there were 350,000 people came onto Canada, and undoubtedly there were that number, I have found that taking the deportations on account of insanity last year and the year before that there were 151 persons who were deported out of the asylums, some of whom had been there for four or five years. That was 151 in 350,000. Now the last census returns show that there were in Canada, in the two old provinces, a little more than three insane persons in every 1,000 of population. If you put down three insane persons in every 1,000 immigrants, you would have 1,050 insane immigrants among that number; as a matter of fact we had 150, so that we had something like one-seventh of that proportion.

Q. One for every 2,000?

A. Yes, something like one-seventh of the number there might have been in the total number of immigrants. It must be remembered that we ought to be fair with the immigrants, that when an immigrant who has left his home gets out here, and arrives full of hope, if he hasn't any money soon and is not able to get a job at once, he gets homesick and depressed, and if he has any little weakness of any kind under those circumstances it is bound to develop.

By Mr. Sproule:

Q. You did not finish up that matter of how you were going to take steps to deport insane persons, and what the expense would be. It is a matter we are frequently consulted about.

A. I say there are two ways by which a patient gets into an asylum, the one is what they call a warrant case, the case of a person who has gone insane on the street and had to be locked up in jail.

Q. And is supposed to be dangerous?

A. Yes, and is supposed to be dangerous, and he is sent by the jail officials to the asylum.

A. Don't they commit him first to the jail?

A. There is a jail surgeon who is paid by the municipality or county, whichever it is, for doing jail work.

Q. Yes, but he does not go out of the jail?

A. He can send the case to the asylum on the order of the magistrate.

Q. But what authority has the magistrate to commit, he must commit on something?

A. The certificate of a jail doctor plus another doctor; there are two doctors required in Ontario. With a man on the street, on two doctors' certificates he is sent by the magistrate to the asylum.

Q. That is to the asylum. But supposing he is in the jail?

A. He is arrested on the street and goes to jail and is kept at some place, jail or prison, until he is transferred to the asylum. Then the municipality or the county, whichever it may be, will make enquiries, and if he has only been a short time in the country the provincial authorities will notify our department—this is a case that from time to time occurs—and then our department looks up the ships' lists and finds out which ship he came on. If he came on the C. P. R. or the Allan Line, the very moment we know the facts, the C.P.R. or whatever line it is, is communicated with, and in the case of an insane person, if we can find out—we cannot always find out where he came from, because he is sometimes stupid and cannot give the information—then his people in Scotland, or England, or Ireland, as the case may be, are communicated with, and inside of a month that man goes back, and the total

first cost to the municipality will be one or two weeks' maintenance in the asylum or in the jail, and as you see that we deported 151 last year—this year I suppose there will not be one half as many cases to deal with.

By Mr. Lewis:

Q. That is in reference to the insane, but now with regard to other persons who are to be deported, what is the procedure to be followed? I think it will be a good thing for the municipalities throughout the country to have this information published?

A. The procedure is this, that a person must become officially recognized as an inmate somewhere either of a charitable institution, or of a prison, or an asylum.

Q. Isn't it the municipality?

A. Or the municipality. He must be officially recognized, and the very moment he is recognized as coming under a deportation clause, the clerk of the municipality is required under the Act to notify the Minister of the Interior of that fact. Then the law requires that he shall inquire into the facts of the case, and if the facts of the case are such that the person is deportable he is deported forthwith at the expense of the steamship company or the railway who brought him across the boundary.

Q. In other words, any person in this country notifies the clerk of the municipality, and the clerk of the municipality notifies the Minister?

A. The Minister of the Interior, or Mr. Scott, here, and then the machinery goes into motion. With regard to the insane we will not send them from this country until we first find somebody to send them to. It is not in keeping with our ideas of what is decent and proper to send an insane person out of the country, and dump them on the border or on the Liverpool dock, until we know there is someone there to take care of them.

By Mr. McIntyre (Strathcona):

Q. I have seen your medical officers detain men who were intoxicated, who admit having frequently restored to spirits; are they entitled, if a man has a considerable quantity of funds, is that man subject to prevention, we would not call it deportation?

MR. SCOTT—It is rejection.

Q. Is he subject to rejection for being intoxicated?

A. It just depends upon the opinion of the medical officer. The idea is, is that man going to be of use in Canada? Is it a temporary spree that all persons coming across might indulge in, or might not; but if he looks like the kind of fellow that will be no good the doctor is in a position to send him back and does so.

Q. Supposing a person is admitted and is found to be constantly and habitually intoxicated, is not that a subject for deportation?

A. If he comes within any of the three clauses of the law, and if he has been admitted to the country, he must have been one of three things, he must have become an inmate of a charitable institution, that is he must have passed a night in a free lodging house or house of industry or he may have put in a night in the cooler on account of being drunk, which he is pretty likely to be, then he is deportable, or if he is insane or an epileptic undoubtedly he will go back. Then the other thing, is if he is an L. P. C. case, if we find him a vagrant in the town, that is if he is taken to a city shelter on account of not having any place to sleep he is deportable.

By Mr. Lewis:

Q. Take the case of a man found begging around town?

A. Yes, if our relief officer for instance in Ottawa comes in touch with him, if he has to be dealt with that way he can be deported.

APPENDIX No. 2

By Mr. McIntyre (Strathcona):

Q. But in the case of a man who has sufficient money, he must be arrested before he can be deported?

A. Before he can be deported.

BLANK CERTIFICATE FORM AS USED IN GREAT BRITAIN BY ALL ASSISTED EMIGRATION.

DEPARTMENT OF THE INTERIOR, GOVERNMENT OF CANADA, EMIGRATION BRANCH.

Report and Medical Certificate.

In respect of (the undersigned assisted by to the following extent.
 Age Nationality Religion
 Address in full
 Present occupation How long in such occupation?
 Has applicant ever worked on farm?
 If so, for how long and where
 Can applicant drive horses? Plough? Milk?
 Is applicant suitable for:—Farm work? Railway construction work? Domestic service?
 Intended occupation in Canada? At what place?
 Is applicant willing to accept farm work on arrival in Canada?
 Name and address of agent or person in Canada to whom going for employment
 General appearance of applicant:—Strong? Vigorous?
 Delicate? Ruddy? Pale?
 Approximate height Approximate weight
 Has applicant any obvious physical defect or malformation? Give details
 Is he feeble-minded? Idiotic? Epileptic? Insane?
 or had an attack of insanity within five years?
 Is he deaf and dumb? Deaf? Dumb? Blind Infirm
 If so, give details and state if applicant is going with family or to family already in Canada
 Address of such family in Canada?
 What security is proposed in such case under section 26 of the Immigration Act?
 Is applicant afflicted with a loathsome disease, or with a disease which is contagious?
 Is he a pauper, destitute, professional beggar, vagrant, or likely to become a public charge in Canada?
 Has applicant been a charge on the public in Great Britain or Ireland?
 If so, for how long and where?
 Has applicant been convicted of a crime or been in }
 prison? Give details? }
 Is applicant honest? Sober? Industrious?
 Thrifty? Of good morals?
 What amount of money or money's worth will applicant }
 have on arriving in Canada? }
 Is applicant married or single? If married give age and name of wife

Is wife good housekeeper and tidy?

Give children's names, age, trade, and earnings. }
 Have the girls been in service or prepared for }
 service, and if so, how? }

Is family accompanying him? If so, what provision }
 is being made for family in Canada? }

If family not accompanying applicant what provis- }
 ion is being made for family here? }

Has applicant any relations or friends in Canada, }
 and at what address? }

Relationship

Are such relations or friends willing to assist and }
 house applicant temporarily, or does the assisting }
 Society undertake to do so? }

What reason has applicant for desiring to go to }
 Canada? }

Has applicant applied to any other society, if so, give particulars

Give name and address of parents or nearest living relatives in England

Signature of applicant certifying correctness of above statement

Dated at this day of 19

*

* Signature and designation of responsible officer of society assisting.

NOTE.—In addition to above report the original records must be submitted for inspection with this form.

Having read over the preceding transcript of my evidence, I certify the same to be correct.

DR. P. H. BRYCE,
Dominion Medical Superintendent of Immigration.

APPENDIX

TO THE

PRECEDING REPORT

APPENDIX No. 2

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—ELECTION OF A CHAIRMAN.

The Select Standing Committee on Agriculture and Colonization having met this day for organization, on motion of Mr. Calvert, P. H. McKenzie, Esq., was unanimously elected Chairman.

Friday, December 13, 1907.

No. 2—EVIDENCE ON RAISING AND MANUFACTURE OF NATIVE TOBACCO LEAF.

Moved by Mr. Clements,—That F. X. Charlan, of the Department of Agriculture; Jerry O'Brien, Chatham, Ont.; Lewis Wigle, Leamington, Ont., and Darius Wigle, Kingsville, Ont., be summoned before the Committee to give evidence on the raising and manufacture of native tobacco leaf—Motion adopted.

Wednesday, February 26, 1908.

No. 3—THE PRINTING OF EVIDENCE.

Moved by Mr. Wright (Renfrew), seconded by Mr. Gordon,—That this Committee report to the House, and recommend that 20,000 copies of each of the following evidence taken by the Committee in the current Session of Parliament, be printed forthwith, in separate pamphlet forms, in the usual numerical proportions of English and French, that is to say:—

1. Of the evidence heard on the inquiry into the cultivation, curing and manufacture of Tobacco in Canada;
2. Of the evidence of Mr. William McInnes, Geologist;
3. Of the evidence of Mr. R. E. Young, Dominion Land Surveyor; and
4. Of the evidence of Mr. G. H. Clark, Seed Commissioner, Department of Agriculture—Motion adopted.

Friday, April 10, 1908.

No. 4—TO SUMMON MR. W. D. SCOTT TO GIVE EVIDENCE.

Moved by Mr. Monk, seconded by Mr. Elson,—That Mr. W. D. Scott, Superintendent of Immigration, be summoned to appear before the Committee, at its next sitting, for the purpose of giving evidence concerning the conduct of the Immigration Branch of the Service.—Motion adopted.

Thursday, April 23, 1908.

No. 5—THE PRINTING OF EVIDENCE.

Moved by Mr. McIntyre (Perth), seconded by Mr. Smith (Oxford),—That the Committee recommend to the House that the following evidence taken by them in the current Session of Parliament be printed forthwith, in pamphlet form, in the usual numerical proportions of English and French, severally, in number and manner of distribution as follows:—

(1st) Forty thousand (40,000) copies of the evidence of Dr J. W. Robertson, Principal of the Macdonald College, Ste. Anne de Bellevue, 2,000 copies thereof to be allotted to the witness for personal distribution, 2,000 copies to the Department of Agriculture, 2,000 copies to the use of the Honourable Members of the Senate, 400 copies to the use of the Committee, and 33,600 to the Members of the House of Commons for distribution.

(2nd) Twenty thousand (20,000) of the evidence of each of the following members of the official staff at the Central Experimental Farm, that is to say, of the evidence of Dr. William Saunders, Director; Frank T. Shutt, Chemist; A. G. Gilbert, Poultry Manager; W. T. Macoun, Horticulturist; and that the distribution thereof be made as follows: that is to say, 800 copies of his personal evidence be allotted to each of the said witnesses for distribution; 2,000 copies to the Honourable the Members of the Senate; 1,500 copies to the Department of Agriculture; 100 copies to the use of the Committee, and 15,600 copies to the Members of the House of Commons.

(3rd) That twenty thousand (20,000) copies of the evidence of J. A. Ruddick, Commissioner of Dairying and Cold Storage, be printed in the usual proportions of English and French; that 2,000 copies thereof be allotted to the Honourable the Members of the Senate; 3,000 copies to the Department of Agriculture; 200 to the use of the Committee; and 14,800 to the Members of the House of Commons for distribution.—Motion adopted.

Wednesday, July 8, 1908.

INTERIM REPORTS.

FIRST REPORT.

The Select Standing Committee on Agriculture and Colonization present their First Report, as follows:—

The Committee recommend that twenty thousand (20,000) copies of each of the following evidence, taken by the Committee in the current Session of Parliament, be printed forthwith in separate pamphlet forms, in the usual numerical proportions of English and French, as advance sheets of the Committee's Final Report, to wit:—

1. The evidence heard on the inquiry into the cultivation, curing and manufacture of Tobacco in Canada.
2. The evidence of Mr. William McInnes, Geologist.
3. The evidence of Mr. R. E. Young, Dominion Land Surveyor.
4. The evidence of Mr. G. H. Clark, Seed Commissioner, Department of Agriculture; and that the distribution of each of the above-named evidence be as follows:—
2,100 copies to the Hon. the Members of the Senate;
15,800 copies to the Members of the House of Commons;
1,000 copies to the Department of the Interior;
1,000 copies to the Department of Agriculture; and
100 copies to the Committee.

P. H. MCKENZIE,
Chairman.

House of Commons, April 10, 1908.

Concurred in by the House, April 13.

SECOND REPORT.

The Select Standing Committee on Agriculture and Colonization present their Second Report, as follows:—

The Committee recommend that the following evidence, taken by the Committee in the current Session of Parliament, be printed forthwith, in separate pamphlet forms, in the usual numerical proportions of English and French, as advance sheets of the Committee's Final Report, to wit:—

(1st) Forty thousand (40,000) copies of the evidence of Dr. J. W. Robertson, Principal of the Macdonald College, Ste. Anne de Bellevue, 2,000 copies to be allotted to the witness for personal distribution; 2,000 copies to the Department of Agriculture; 2,000 copies to the use of Honourable the Members of the Senate; 400 copies to the use of the Committee; and 33,600 to the Members of the House of Commons for distribution.

(2nd) Twenty thousand (20,000) copies of the evidence of each of the following named members of the official staff at the Central Experimental Farm, that is to say:—

Of the evidence of Dr. William Saunders, Director; Frank T. Shutt, Chemist; J. H. Grisdale, Agriculturist; A. G. Gilbert, Poultry Manager; W. T. Macoun, Horticulturist; and that distribution thereof be made as follows, that is to say: 800 copies of his personal evidence be allotted to each of the said witnesses for distribution; 2,000 copies to the Honourable the Members of the Senate; 1,500 copies to the Department of Agriculture; 100 copies to the use of the Committee, and 15,600 copies to the Members of the House of Commons.

8 EDWARD VII., A. 1908

(3rd) That twenty thousand (20,000) copies of the evidence of Mr. J. A. Ruddick, Commissioner of Dairying and Cold Storage, be printed in the usual proportions of English and French; that 2,000 copies thereof be allotted to the Honourable the Members of the Senate; 3,000 to the Department of Agriculture; 200 to the use of the Committee; and 14,800 to the Members of the House of Commons for distribution.

P. H. McKENZIE,

Chairman.

House of Commons, July 9, 1908.

Concurred in by the House, July 15.

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