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EVIDENCE TAKEN

BEFORE THE

SELECT STANDING COMMITTEE ON AGRICULTURE AND COLONIZATION

DURING

SESSION OF 1919

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

J. DE LABROQUERIE TACHÉ,
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1919

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LIST OF MEMBERS, 1919.

Allan,	Gervais,	McIsaac,
Anderson,	Glass,	McLean (Royal),
Armstrong (York),	Halladay,	McLeod,
Armstrong (Lambton),	Hay,	Nicholson (Queens),
Argue,	Harold,	Nicholson (Algoma),
Arthurs,	Henders,	Paul,
Baldwin,	Hughes (Sir Sam),	Proulx,
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Boyce,	Lang,	Sifton,
Brien,	Leger,	Simpson,
Brouillard,	Long,	Sinclair (Antigonish),
Burrell,	Mackie (Edmonton),	Sinclair (P.E.I.),
Cahill,	Mackie (Renfrew),	Smith,
Casselman,	Maclean (York),	Spinney,
Chisholm,	Maharg,	Stacey,
Clark (Red Deer),	Marcile (Bagot),	Steele,
Clarke (Wellington),	Marshall,	Sutherland,
Cowan,	Mayrand,	Thompson (Hastings),
Crerar,	Merner,	Thompson (Weyburn),
Cruise,	Molloy,	Thompson (Yukon),
Davis,	Morphy,	Thomson (Qu'Appelle),
Delisle,	Myers,	Tolmie,
Denis,	MacNutt,	Tremain,
Desaulniers,	McCoig,	Truax,
Douglas (Strathcona),	McCrea,	Wallace,
Edwards,	McCurdy,	White (Victoria),
Finley,	McGibbon (Muskoka),	Wilson (Wentworth),
Fournier,	McGregor,	Wright.
Fulton,	McIntosh,	

REPORTS OF COMMITTEE.

The Select Standing Committee on Agriculture and Colonization, beg leave to present the following as their

FIRST REPORT.

Your Committee Report, for the information of the House, the following evidence, taken during the current session of Parliament.

The evidence of Dr. S. F. Tolmie, M.P., on "Control and eradication of Bovine Tuberculosis," and "How our live stock can best be improved and a solid and permanent industry built up."

The evidence of Mr. H. S. Arkell, Live Stock Commissioner, on "Prospects and markets for live stock in 1919."

The evidence of Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, on "Canada's transportation, refrigeration and cold storage requirements, in connection with the possible and necessary development of live stock," and an address by the Hon. Mr. Crerar, Minister of Agriculture, "On the general conditions and prospects for Agriculture in 1919."

Your Committee would recommend that 5,000 copies of the said evidence be printed in blue book form under one cover for distribution, and also as an appendix to the journals of 1919.

All which is respectfully submitted.

R. C. HENDERS,
Chairman.

The Select Standing Committee on Agriculture and Colonization beg leave to present the following as their

SECOND REPORT.

Your Committee recommend that they be given leave to sit while the House is in session.

All which is respectfully submitted.

R. C. HENDERS,
Chairman.

The Select Standing Committee on Agriculture and Colonization beg leave to present the following as their

THIRD REPORT.

Your Committee report for the information of the House, further evidence taken during the current session of Parliament.

The evidence relating to the "Standardization of parts of Vehicles, and Agricultural Machinery," of Mr. G. H. Clark, Seed Commissioner, on "The necessity for a

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Terminal Elevator in Province of Ontario," of Messrs. C. E. Saunders, J. Fixter, L. H. Newman, and E. D. Eddy, on "The benefits of good seed and best methods of crop production."

Your Committee would recommend that said Evidence and Address be printed along with the matter already recommended in your Committee's First Report, under one cover for distribution to Members of Parliament.

All which is respectfully submitted.

R. C. HENDERS,
Chairman.

CROPS AND MARKETS FOR 1919.

HOUSE OF COMMONS, COMMITTEE ROOM 318,
OTTAWA, THURSDAY, March 27, 1919.

The Committee on Agriculture and Colonization met at 11 a.m., Mr. Henders, Chairman, presiding.

The CHAIRMAN: We desire to deal this morning with preliminary matters relating to our programme for the session. If we are going to get results, we should organize this morning a special committee who would be responsible for bringing matters before the general committee at different times. I think, on the whole, our meetings last year were productive of some good. We had a number of very interesting discussions, and a certain amount of study was carried on that I think was of value to the members of the committee and through them perhaps had wider influence on national affairs. I have been casting about a little for some matters that I thought would be of interest to the committee this session and I have put myself in touch with the Minister of Agriculture and the Deputy Minister, who have furnished us with some of the topics that they considered of vital interest affecting agriculture; matters that they were dealing with, and that they would like the committee to discuss and make pronouncement upon. These will be submitted to the committee in due time. The object of calling the committee this morning was to hear an address from the Minister of Agriculture, in which he will deal with some general questions affecting agriculture. As Minister of Agriculture he is perhaps more thoroughly than any one else prepared to discuss market conditions for the handling of our crop for 1919, and will be able to give us some information to circulate among the farmers at this time, which will be of value to them. I take it that it is important that there be some pronouncement made on this question at the earliest possible date. Looking at the conditions as they present themselves to the casual observer, but who is personally interested in the matter, the outlook for a market for our grain for 1919 is not by any means bright. The indications are that a great deal of systematic and business effort will have to be put into the handling of our 1919 crop if we are going to get anything like adequate results out of that crop. We believe the markets of the world are the markets that should regulate the price of our grain, but we know that in endeavouring to reach the markets of the world at the present time we are surrounded by serious handicaps. Canada especially is going to suffer from this handicap, unless prompt action is taken providing for the financing of our crop. It would appear from all that we can gather that the governments of the different countries, where they have produce to sell, will have to be responsible to the allied governments who want to buy, by guaranteeing to the financiers of the allied governments the necessary money for the purchase of the crop. We are aware of the fact that the United States has already taken action along that line. They have given guarantees to the allies who want to buy that they will furnish to them the necessary security for the handling of their crops. Canada will have to do the same if we are going to be in a position in which we will have fair treatment with regard to the getting of our grain into the allied countries for consumption.

There is another important matter that will have to be considered, and that is transportation. I expect that during this year we will experience serious difficulty

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with regard to securing the bottoms necessary for the getting of our grain overseas.

As a rule transportation will go to the ports where they expect to have cargoes in and out, and the United States is furnishing cargoes of that kind at the present time, so that there is a tendency on the part of our transports to go to the American ports, and unless arrangements are made by which we are able to offer inducements along the line of freightage in and out, we are going to be handicapped in securing the bottoms necessary for the handling of our crops. This, I take it, is a very important matter, and I think this Committee ought to arrange a programme that will call the attention of the Government to the fact that the vessels that are being built, and over which they have any control, will be handled in such a way that our shipping ports will receive fair consideration from our own vessels at least. As I see it, the grain situation for this year is fraught with a great many difficulties as far as the handling of it is concerned. The United States have guaranteed the price of their grain for 1919, and there is a certain amount of clamour on the part of our people to have our Government treat our agricultural interests in the same light and along the same lines as the United States Government has treated the agricultural interests in that country. As I see it, there is a marked difference; the cases are not parallel, and therefore there is argument perhaps or a good reason why we should not take that position. We believe, however, that what we ought to do is to consider the whole question and to make the best outlet and facilities for the handling of our grain as easy as possible for the allies who want to buy, so that we may be in a position to compete fairly in those markets. I have said that it looked to me as if the picture, so far as the marketing of our crop this year is concerned, was rather dark. Why do I say that? The latest reports place conditions about as follows: We have a surplus of grain at the present time that is not out of the country. We believe it has been taken by the Government, but whether it is disposed of by our Government or not is a question. The United States has a large surplus of grain on hand at the present time. Argentina has a large surplus of grain there. A quantity of that grain has already been purchased by the peoples overseas, and will go out. Australia has a large amount of surplus grain stored, and a quantity of the Australian grain has already been purchased at a very low price. Looking at the situation at the present time, it seems, after meeting all requirements until next crop is harvested we have a surplus of about 200,000,000 bushels to carry over. The United States has made preparations for the largest crop possible, that is, they have the largest acreage ready, and part of it sown, that they have ever had. I believe that they have 15 per cent more fall wheat sown than they ever sowed before. There is an inducement on their part to sow every acre of wheat they possibly can for the reason that the farmer has been guaranteed \$2.26 per bushel. We are going up against a guaranteed crop amounting to a larger acreage than ever before. That puts us into this position, that unless we are able to secure an outlet for our grain in such a way that the merit of the article we have to sell, the conditions under which we were led to produce, the charges for the handling of our grain, and the question of easy access to the markets— unless we have all these conditions taken into consideration, we are going to be seriously handicapped in the producing of our grain. I take it that perhaps the most important question that will come before this Committee this year will be that of devising means for dealing with these questions. I am very glad that we have the Minister of Agriculture with us, and I would now ask him to address us.

Hon. Mr. CRERAR: Mr. Chairman and gentlemen, I understand that this is the first meeting of the Committee on Agriculture. Some time ago, in response to a suggestion from your chairman, I outlined a number of subjects that I thought the Agricultural Committee might, with profit to agriculture in Canada, consider. Before discussing these points, however, I may refer to the question to which the chairman has alluded, namely, the disposal of our wheat surplus, not only for the present year, but also for next year, and the conditions that will likely apply in the marketing of it. Mr. Maharg,

[Mr. Crerar.]

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the member for Maple Creek, was recently sent over to London by the farmers' organizations of Western Canada to get as much first hand information on this question as he could, and doubtless during the progress of your deliberations as a committee, he will have some information to place before you in relation to it.

In order perhaps to correctly get a bird's eye view of the situation at the moment, it is necessary to go back a little and traverse the history of the past eighteen months, or two years. A year ago last December, the food situation in Europe was undoubtedly in a very serious condition. That was due to causes of which every person is, I think, pretty well aware, every person who has followed with any degree of interest, or close study, the food situation in the world. That led to a stimulation of production, particularly on the North American continent. Owing to the lack of ocean shipping, tonnage was not available to carry wheat in any large quantities from Australia, New Zealand, India, and even in some degree from the Argentine. There was actually piled up on the wharves of Australia, more than two years' supply of wheat, which has to be liquidated as soon as tonnage is available to carry it to Europe where Australia's surplus, in previous years, has been marketed. That condition, and the possibility, in fact the likelihood at that time that the war would run into 1919 and possibly into 1920, led to the urgent necessity of every effort possible being put forth in Canada and the United States to produce foodstuffs to feed our allies in Europe. A year ago last December, there were times when France had not more than three or four days supplies of foodstuffs available. In Great Britain they were better off. All these countries were at that time seeking to accumulate reserves against the possibility of ocean shipping being destroyed by submarines, and the resulting difficulty that might arise in getting food because of the lack of transportation. In Canada the efforts put forth by our farmers were of the very best. I cannot speak in too high terms of praise of what they accomplished under the extremely difficult conditions they laboured under. Our efforts were to a certain degree lost, particularly in the Prairie Provinces, where our main supplies of wheat passed through very unfortunate weather conditions. In the southern areas of Saskatchewan and Alberta, and in western Saskatchewan the drought did very severe damage, and I am not exaggerating when I say that thousands of farmers there reaped nothing whatever from their expected wheat harvest. In the northern portions of the provinces damage of a severe character resulted from frost, and the net result was that our total wheat production in those provinces for the past year will not exceed, in my judgment, 55 per cent of what it should have been if we had average normal conditions.

I may say a word or two with respect to the matter of the control of price fixation on wheat. Over two years ago our allies in Europe agreed on what might be termed the joint purchasing of supplies, and there were created in Great Britain commissions upon which the various countries at war on the side of the allies had representatives. They undertook the purchase of all the cereals required by the allied countries in Europe. They perfected their organization, and organized in the United States a corporation known as the Wheat Export Company, and in Canada also a similar organization known as the Canadian Wheat Export Company. By prohibiting the importation of grain by private traders in those countries in Europe, they threw the control of business absolutely into the hands of the Government agencies. That made it necessary to establish in Canada, and also in the United States, some sort of an organization that could deal with the governmental agencies created on the other side. This was undertaken in the United States, through the instrumentality of their Food Administration by the creation of a grain corporation. In Canada a board of grain supervisors was created for the purpose mainly of exercising the necessary control over the trade, the formulation of regulations, and the fixing of a price, because, clearly, if the Canadian farmer individually was left to—shall I say the tender mercies of the governmental purchasing agencies in Europe?—he would be at a disadvantage. The principle underlying it was this: That the governmental agencies in America were

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necessary to deal with the governmental agencies that had been created in Europe; and so we had a price fixed in Canada for our Canadian wheat crop harvested in 1917 and also in 1918; a price fixed on the same basis as the price fixed in United States and after, I believe, consultation between the governmental agencies in both countries. The need of food production was very apparent, as I have already stated, at the commencement of the year 1918, and consequently the Congress of the United States having that fact in view, and believing, as almost every person in the country did believe at that time, that the war would run into 1919 and possibly into 1920, undertook to fix the price of American wheat by statute, not only for the crop produced in 1918, but also for the crop produced in 1919, and that price was fixed on the basis of \$2.26 per bushel. Now, under the stimulus of urgings from various agencies, the Government agencies and others, and of the pressing need for food, the American winter wheat farmers planted last July and August, 49,000,000 acres of winter wheat, against an acreage of 42,000,000 the year before. There is very little doubt that with the price fixed, the spring wheat farmers in the United States will this spring plant probably the largest acreage they have ever planted in their history. This of course brings up a rather difficult situation so far as Canada is concerned. The war is over and it terminated much more quickly than any one had anticipated. As far as can be gathered the food situation in Europe at the present time, outside of Great Britain, and possibly our other allies who have a certain amount of supplies on hand, is in a very desperate condition. The general opinion now among well-informed people on the other side is that Germany did not overstate the gravity of her food situation at the time the armistice terms were fixed, and to-day her situation, from the actual point of view of food supply, is undoubtedly very serious, if not desperate. The same can be said of the countries lying east. As far as Russia is concerned, my own view is that she has probably sufficient supplies of food within her enormous borders to feed her people, if the facilities for distribution were available, but her transportation has practically been destroyed owing to the state of anarchy which exists in the country, and we have the anomaly that, while certain districts may have considerable stocks of food, in other districts a few hundred miles away the people are dying of starvation because of the inability to get supplies. In respect of our situation in Canada, we are faced with the fact that the United States has fixed a price on wheat governing the winter wheat crop that is now growing, and the spring wheat crop that will be planted presently.

Mr. PROULX: What is the price fixed?

Mr. CRERAR: I think \$2.26 a bushel was the price guaranteed. The question naturally comes up, should there be a guaranteed price in Canada? I might say that in the United States the expectation is that their treasury may be called upon for a very considerable sum of money to make up the difference in price to the United States farmer, between what the people of Europe will pay for the wheat and what the Government has guaranteed, and if we in Canada fixed our price upon the same basis as the United States, we would face precisely the same situation. If Austria—or rather those portions of Austria that will remain—Germany, Ukraine, Bulgaria, Serbia and Poland could secure a stabilized form of government and could establish the credits that are necessary to pay for their foodstuffs, my opinion is that probably all the wheat surplus that we will produce this year could be absorbed, but so much depends on that point that it is impossible to form any estimate of what may be the condition even two months from now. If anarchy continues in those countries, if the virus of Bolshevism spreads from Russia into Germany, and into these other countries I have mentioned—and there is, judging from all appearances, a strong possibility that it may—then we will have a condition largely of anarchy on account of there being no stable form of government; and the means of establishing the credits whereby food can be supplied will be well nigh impossible. The whole situation in that respect is in such a chaotic condition at the present moment that it is impossible

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to make any forecast of what the conditions may be even two or three months from now. If this condition prevails in Central Europe there will likely be a considerable surplus of wheat in the world, judging from all present appearances. I may say, speaking of my own position in the matter, that I am opposed to fixation of the price of Canadian wheat for the coming crop and mainly for the reason that I do not think the grain growers of Canada should draw from the treasury of Canada possibly a very considerable sum of money in the way of bonus on their production. I appreciate fully the handicap that they have laboured under, and I can appreciate the sentiments of a farmer in Western Canada who has had one or two crop failures in succession, when he had employed labour at a high rate of wages, when he had paid high prices for his farm equipment, and seen the fruit of his labour disappear through drought or frost. I can quite appreciate his anxiety that the crop that he will presently plant will be productive, but on the other hand I think the principle is unsound, and it will be very difficult indeed, in my opinion, to justify any call on the Federal treasury at the present time to make up any deficiency in this regard. However, I am very hopeful that if we do get stable conditions in Europe such a course will not be necessary. I know that Mr. Hoover, the American food administrator, who has been given the position of chairman of the Inter-Allied Commission which is dealing with this question in Europe, is of the opinion that all our foodstuffs will be required, providing we can get stabilized conditions in Europe. I do not think I need discuss any further this situation. There will doubtless be opportunities from time to time, as your committee meets, to give further consideration to it, and possibly further information may then be available.

I stated a few moments ago that I had suggested to your Chairman some steps that I thought the committee might with profit give some attention to, and I will briefly enumerate them. Those subjects are the following:—

1. Control and eradication of bovine tuberculosis.
2. How our live stock industry can best be improved in quality and a solid and permanent industry built up.
3. Canada's transportation, refrigeration and cold storage requirements in connection with the possible and necessary development of her live stock, dairying, poultry products and fruit export industries.
4. Possibilities in poultry production.
5. Development and improvement of the fruit industry in Canada.
6. How can the benefits of using good seed, the best methods in crop production, and in breeding and feeding of live stock, be brought home to the average farmer.
7. How can crop returns be standardized and improved.
8. Inspection and control of feeds and fertilizers in Canada.
9. Farmers' credits. Is our banking system suited to our agricultural conditions.
10. Effect on the agricultural industry of farmers' co-operative buying and selling.
11. Inquiry into the influences affecting the flow of population from the country to the city.
12. Destruction of injurious insects and pests.

Those are all questions I think we can devote some attention to with considerable profit. Let me briefly run over them. (1) The control and eradication of bovine tuberculosis. But before discussing these may I offer the suggestion, as I have already done in a letter sent to the chairman with these proposals, that the committee would find it very interesting indeed, and I think very informative to have appear before them the officials of the department who are more directly connected with the administration of these various matters. Take, for instance, the control and eradication of bovine tuberculosis. It is a matter to which Dr. Torrance, the veterinary director general,

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has given a good deal of attention, and he could give you much information on the subject. The same all down the line, you will find the officials very willing to assist in every way they can, and there is also the possibility of getting information from outside the officials. My suggestion is that the committee should systematically take up at least several of these topics and get all the information possible, have your discussions upon them, and make whatever suggestions or recommendations you think fit to the department, for all the wisdom in the development of agriculture is not by any means concentrated in the department or in the present Minister of Agriculture. It is only by discussion and the exchange of views, that the soundest policies can be elaborated.

With respect to the control and eradication of bovine tuberculosis, this disease is very prevalent in Canada to-day. All the information that can be secured bears out this statement. It is interesting to know particularly what is being done in the United States in the way of taking steps looking to its eradication from their live stock herds. The Bureau of Animal Husbandry in the United States, which corresponds to the branch that is under the direction of the Veterinary Director General in Canada, although it has more subjects under its jurisdiction than the department here, has recently adopted a policy that seems to have in it a great deal of merit, the policy of establishing what are termed accredited pure stock herds in the United States. Last year they appropriated \$500,000 towards assisting in this work. This year, their appropriation reached a million dollars, but owing to the fact that Congress expired on the 4th of March, and that some legislation which is contemplated was not put through, the matter is temporarily held up. The principle upon which they work is this: A herd of pure-bred stock is examined and tested for tuberculosis. Re-actors are taken out, and at the end of a year the herd is examined and tested again, and if the test reveals a clean bill of health, a certificate is issued to the owner of the herd to that effect. Certain regulations, however, have to be complied with in respect to the admission of new animals to the herd, and in respect to the further supervision of it. They have been working on this for a few years, and they have several hundreds of accredited herds of pure-bred stock, in other words, herds free from the plague of tuberculosis, while they have thousands more that are under treatment with a view to getting clean bills of health.

That has a direct bearing on the livestock industry in Canada, because American purchasers of livestock who want to come over to Canada to get new blood into their herds will absolutely insist on the animals they purchase having a clean bill of health. That is done at the present time, I believe, under certain regulations, but the examination, I am advised, would likely be much more stringent than at the present time; and the very fact that Canadian herds were not subjected to this close supervision, and could not secure in the same sense clear bills of health as the American herds secure, would, I am afraid, create a prejudice unfavourable to our Canadian breeders. This matter has been under consideration, and I propose, if my colleagues agree, to insert in the supplementary estimates a sum of \$50,000 as a start in this direction. I would suggest that you have Dr. Torrance come here to give you all the information upon the subject; ask him all the questions you desire to ask, and arrive at the best judgment possible on the matter.

There is also the question of Canada's transportation, refrigeration and cold storage requirements. In that respect I have lately been gathering some information. It is interesting to know, taking Great Britain alone, how we stand in supplying her with foodstuffs that may be classed as of a more or less perishable nature. For instance, Great Britain imports annually 500,000,000 pounds of butter—these are approximate figures covering normal times. Canada supplied of this, during the year ending March 31, 1918, 4,000,000 pounds. Their consumption has been enormously reduced owing to war conditions, their butter ration being probably the most severe ration that has been imposed on the British household; but the figures I am

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giving you are the normal imports. Of beef, Great Britain imports 1,000,000,000 pounds approximately, a year, of which Canada supplied, in the year I have mentioned, 30,000,000 pounds. Of pork products, Great Britain imports 1,250,000,000 pounds, of which Canada supplied, in the year ending March 31, 1918, 130,000,000 pounds. Of cheese, Great Britain imports approximately 250,000,000 pounds, of which, in the period mentioned, Canada supplied 180,000,000 pounds. Great Britain imports annually, under normal conditions, 200,000,000 dozens of eggs. Canada supplied, up to very recently, practically none, but I believe that during the last few years she has supplied from 2,000,000 to 3,000,000 dozens of eggs per year. In order to develop this industry, to take advantage of this market, it is absolutely essential that we have the facilities for reaching it. In the matter of bacon, beef, eggs, butter, cheese or fruits, to traverse such distance as from Canada to Great Britain, it is absolutely vital that the conditions of shipment be as nearly perfect as possible. In the last few years tremendous advances have been made in refrigeration and cold storage development in transporting goods of a perishable character, such as I have mentioned, in good condition, and it is quite practicable now to send all the articles I have mentioned from Canada to Great Britain and to have them arrive there in almost as good condition as when they left the farm. Our cold storage development in Canada dates practically from about 1907, when the Government of the day inaugurated a system whereby assistance was given in the erection of cold storage plants. Since that time up to 1914, at the opening of the war, about \$684,000 had been paid by way of subventions for this purpose, and the total number of cold storage plants of all descriptions in Canada at the present time, from the Atlantic to the Pacific, is about 140. Many of these, however, are not up-to-date, and we have under consideration at the present time, under the provisions of an Act passed, I believe, two years ago, making regulations somewhat similar in principle to the regulations governing the handling of grain through grain elevators. These cold storage plants will probably be placed under license and under a form of inspection by Government officials to insure that the facilities exist for the maintenance of proper temperatures, and that proper temperatures are maintained so that the public, in storing goods in these houses, for which they pay their regular charges, will have a certain measure of protection. In addition to this, Government, after consideration of the matter, decided to include in the estimates for the present year a sum approximating \$1,000,000 for the erection of an up-to-date cold storage and refrigeration plant on the harbour front in the port of Montreal. It frequently, I am informed, happened last year that beef shipped from the west to Montreal for transportation overseas in a chilled condition had to be sent back from Montreal to Ontario points to be re-chilled before it could be allowed on the vessel. While there are a number of cold storage plants in the city of Montreal they are all removed from the harbour front. A company shipping butter or meat or other perishable products from its factory in any part of Canada to any of the existing cold storage plants in Montreal would have to transfer their shipment by cartage from the cold storage plant to the vessel's side at the time the vessel is ready to receive it. This almost certainly involves the exposure of the shipment for hours to the hot sun with the result that deterioration has set in before it reached the markets abroad. Refrigeration and cold storage provides for the maintenance of equitable temperatures from the time the product leaves the farm until it reaches the consumer's table. If facilities can be secured so that the shipper can be pretty sure that the commodity will reach the consumer in a good condition it is important that it be done, since the condition in which it arrives at destination, is a matter that effects it very closely. It has been said, and said with some truth that the Britisher possesses a very discriminating taste in respect to his food. If the British housewife buys some Canadian butter in her provision store to-day and when she takes it home and puts it on the table, finds that it has a bad taste, or that it has deteriorated in quality, Canadian butter is given a black eye as far as that household is concerned

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and its reputation injured. Consequently, the importance of our commodity reaching the consumer in the best possible shape is very great. I am absolutely convinced that the main thing to provide for is proper transportation facilities, and the erection of this cold storage plant in Montreal is intended to supply a link at the wharftside where these products of the Canadian farm can be stored in a proper temperature and placed on the vessel in a proper condition.

MR. SMITH: That plant can only be used during a portion of the year.

HON. MR. CRERAR: That is true, it can only be used during that period when the St. Lawrence is open for navigation, but that is the period when our perishable commodities are subjected to the greatest danger. My own view is that later on these facilities must be extended, and that we should carry things along to lay the foundation for a broad system of service in this respect. In making that observation, however, I would ask you to note that is only my personal observation, I am not making any declaration of Government policy. There has also been considerable assistance given in the way of securing refrigeration on ocean vessels and we had, prior to the war, some 40 vessels plying between Canadian and British ports that were equipped with cold storage facilities on the vessel and, I believe, there were four vessels plying between Canada and South Africa similarly equipped. For quite a number of years assistance was given to vessel owners in order to equip the vessels with cold storage appliances and, in that way, some 200,000 odd dollars was given by way of assistance. By the use of recording thermometers it is quite possible to put shipments of butter or bacon in the hold of a vessel, or in the compartment of the hold of the vessel, in Montreal, close it up, and when the vessel reaches Liverpool, perhaps 10 days or two weeks later to have a complete record of the temperature throughout the whole voyage. This equipment is already in existence in many ocean vessels, and I am advised by the Dairys Commissioner, who has made a close study of this subject, that the vessels plying between Canada and the United Kingdom prior to the war were as well equipped in that respect as any vessels throughout the world.

Then we have, of course, the transportation from the farm to the harbour front. We now have a number of refrigerator cars, and a very great deal of progress has been made in that respect. The war has brought out this fact very clearly that with a full service of this kind for the shipment of our goods it is possible to develop a fine chilled-meat trade with Great Britain. It should be possible for Canada to supply Great Britain with 50,000,000 dozen eggs annually, instead of 2,000,000 dozen, and we can increase practically all our exports of these perishable food commodities far beyond their present limits. We must bear this in mind, however, and it is a fact that our farmers do not appreciate as greatly as we could wish, that one of the prime factors of success is the quality of the product they offer for sale.

The next item I have here is "How our Live Stock Industry can be Best Improved and a Solid and Permanent Industry Built up." A great deal of assistance has been given out of the Federal Treasury by way of assisting farmers' clubs, under certain conditions, to secure high grade sires in cattle, sheep, swine and horses. This whole question is a very broad one, and I do not know that we have yet by any means reached perfection of method in the forms of assistance that we are giving. It is a fact that there are a good many farmers in Canada who do not appreciate the advantage of having good sires. They do not appreciate the fact that it costs as much or more to raise a scrub animal as it does to raise a good one, and that they get but little more than half as much out of it when they offer it for sale. A good deal of this is due perhaps, particularly in some parts of the country, to the scattered character of our population. People do not live closely together and have not the opportunity to learn by comparison with their neighbours. This problem is one, I think, the committee could devote considerable attention to. The question underlying this proposition is, in what form can the assistance be best given to get the results desired? When we are spending public

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money for the development of the agricultural industry, it is important at any time, and particularly important from this time on, that the greatest possible value be secured from the expenditure. We spend in Canada, Federal and provincial expenditures, about \$7,500,000 a year on agriculture, and I am not by any means satisfied that we are getting the best results that could come from this expenditure. I think improvements can be made, and suggestions from this committee as to how better results can be obtained will be valuable.

The next item is the possibilities in poultry production. I have already alluded to that in reference to the exports to the United Kingdom. It is very curious to note that in Prince Edward Island remarkable progress has been made in the last few years in the development of the poultry industry, and they have achieved that progress largely through the application of co-operative principles in marketing and in educating the poultry raisers to the importance of keeping their eggs in fresh condition, of having good types of poultry, and of having their market conditions as perfect as possible. The progress made in this regard has been wonderful in the last few years, and it might be interesting for the committee to have some of the officials from the department who could give you more detailed information upon it. There may be some members from that province on the committee, and if so they will probably be able to speak with certain knowledge of the returns from it.

I am convinced that we have for many of our perishable articles of food a splendid market opening up in the United States. The fact that two-thirds of the population in the United States lies east of a line drawn through Chicago, and the fact that a large portion of their food has to be taken from beyond that line, the proximity of the population to the provinces of Ontario and Quebec and also to the Maritime Provinces, I think will in the future open up an excellent market there for many of these commodities.

The next is the development and improvement of the fruit industry in Canada. There is a good market abroad for some of our fruits, particularly our apples, and, of course, their methods of culture, methods of packing, shipping and facilities in transportation play an important part in the results that can be obtained.

Then, I do not require to dwell upon the next item, which is the benefits of using good seed. The arguments that apply to the using of good sires apply with equal strength to the use of good seed in cereal productions. It might be of interest to the committee to know that the Department of Agriculture through the Experimental Farms Branch, has during the past two years done a very considerable amount of work in producing field and garden seed. Formerly the bulk of the field and garden seeds that were used in Canada came from Belgium, Holland and Denmark. Owing to war conditions that source of supply was almost entirely shut off, and in order not to be caught without seeds, the Federal Department of Agriculture over two years ago undertook the production of seed at the various Experimental Farms. Last year, if my memory serves me correctly, we produced over 50 tons of root and garden seeds at the various Experimental Farms in Canada, which seeds are now being distributed to the farmers of Canada. If that action had not been taken by the department there would undoubtedly have been a serious shortage of these seeds in Canada, and very much higher prices would have prevailed for them than are being paid now.

The next question is, how can crop returns be standardized and improved? This is not on the face of it a very important subject, and yet I think it is advisable to secure as complete and correct information as possible in the way of agricultural statistics. The Statistics Branch of the Government is under the Department of Trade and Commerce. It might be interesting to have Mr. Coats, the Dominion Statistician, attend one of your meetings to explain the system under which his agricultural statistics are compiled, and possibly you could offer him suggestions as to whether they could not be improved.

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The next subject suggested is the inspection and control of feeds and fertilizers in Canada. The administration of stock feeds and also of fertilizers now lies in the Department of Trade and Commerce, having been transferred from the Department of Inland Revenue when that department was incorporated with the Customs. I think there needs to be a strengthening of the law in regard to standard feeds. That matter is receiving the attention of the officials of the Department of Agriculture now, and some suggestions have already been made to the Department of Trade and Commerce as to where improvements can be made. For instance, there can be an improvement along the line of insuring that a bran sold by any dealer or miller must be bran and not weed seeds.

Mr. SUTHERLAND: Would it not be more satisfactory to have it under the control of the Department of Agriculture?

Hon. Mr. CRERAR: I think it would, and I may say that the matter has been discussed with that in view.

The next subject suggested is that of farmers' credits. That is a matter to which I need not refer at any length at present.

Then there is the question of the effect on the agricultural industry of farmers' co-operative buying and selling. I am an absolute believer in the principle of co-operation; I could not be anything else after my experience of the last ten years. My study of the subject has brought me to the conclusion that co-operation is highly desirable. I have not read in the records of the development of agriculture in any of the countries of the world a more interesting story than that of the development of the little country of Denmark, where fifty or sixty years ago there was an ignorant peasant population that could hardly supply itself with food, but where to-day it stands perhaps in the premier position in the world for the quality of its agricultural exports, the efficiency with which its business is done, and the economy with which the whole thing is run. It is a most interesting story, and the success which has attended Denmark is attributed to the application of sound principles of co-operation among the people engaged in the agricultural industry. I have always endeavoured to bring this idea home to farmers when I have addressed them, that success in their enterprise depends not alone on the high quality of production on their farms. That is of very great importance, but the conditions under which their produce is marketed should be of as much interest to them as the character of the sires they use, or the character of the seed they use on their farms, because if they simply drop interest in their stuff at the time it leaves the farm, the price they receive may be so affected from that point on, that their industry may be made a losing one instead of a profitable one. Consequently, the farmer has as much interest in a cold storage-warehouse, say in Montreal, or he should have as much interest, as any other person in Canada. The same thing applies to the conditions under which his stuff is marketed, and the development of the co-operative principle in that regard is absolutely sound. The world is moving forward in that respect, and it has been of intense interest to me to find out what they have done along that line in the little country of Denmark. It is a fact not generally recognized that in Russia, too, in that country that is to-day subjected to the worst form of anarchy, there are over twenty million peasants members of co-operative societies, that is, particularly in Asiatic Russia, and it is really wonderful what they have done. If there is any hope for Russia, in my opinion it comes from the fact that these co-operative societies exist, and also from the organization of zemstovs and municipal bureaus, which are largely based on the same principle. The application of the co-operative principle develops the individual. It increases his interest in his work, and consequently is of the very greatest importance.

The next subject suggested is inquiry into the influences affecting the flow of population from the country to the city. That is a very large question. I have been

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told that in Ontario many farms have been practically abandoned, and there is also involved in this—I do not know to what extent in the eastern provinces, but in Manitoba, for instance—the question of tenant farming. Tenant farming is on the increase. Now, tenant farming, in my judgment, is not a good thing for agriculture permanently, and it might be of interest to the committee to delve a little into some of the causes underlying this.

Then there is the question of the destruction of injurious insects and pests. That is a matter worth much more attention than is usually given to it, and I hope that before the work of the committee is completed you will have Dr. Hewitt, the Dominion Entomologist, come before you to tell you what he is doing and to answer any questions that you may care to ask, for instance, as to how rust on wheat can be eradicated, how the diseases and the insects that affect plants and trees can be dealt with, and the means whereby such pests can be combated. Just a few days ago, for instance, I recommended to the Council an order prohibiting the importation of certain fruit trees, currants and gooseberries, from certain parts of the United States to certain portions of Canada. These currant and gooseberry trees are subject to attack by the white pine blister rust, which has affected a large area of Ontario, a considerable area of Quebec, and some parts of the Maritime Provinces, and is doing an amount of damage that can scarcely be calculated to our pine forests. The means by which this can be combated and the study of the insects that destroy or prey upon our plants, come under the purview of the Entomological and Botanical Branches of the department, and, I think, would prove very interesting.

I have sketched out at greater length than I intended, and in a very fragmentary way, some of the subjects that appear to me to be of very considerable importance at this period in our agricultural developments. I am convinced of this, that there is a fine future ahead of agriculture in Canada; but, in the first place, so far as the individual farmer is concerned we must raise the average ability in farm management. The old idea that successful farming depended on getting up at ten in the morning and working like a horse until ten at night is giving way to the more practical conception that success depends as much upon intelligent planning, upon intelligent marketing, upon the use of good sires in stock, and of good seed, as it does upon long hours of work. But there are yet too many agriculturists who have not grasped this truth so completely or fully as they should. I am convinced that the agricultural industry in Canada is the great basic industry of the country.

Mr. BEST: In what proportion is the flow of the rural population to the cities? How does the rural population compare with the rural populations in European countries?

Hon. Mr. CRERAR: I cannot give you that information at present, but I can probably get it for you. I should say that more than 50 per cent of our population in Canada is living in the cities, and if you take the smaller towns and villages, it will probably be greater. That seems to me to be rather a lopsided arrangement at this period of our development in Canada. We are facing very serious burdens in a national way. I think, probably, that when we have our war business cleaned up, the debt of Canada will run to about \$1,800,000,000, and the fixed charges and the money necessary to run the business of the country will require a federal income annually of probably \$300,000,000 a year. When we consider that prior to the war our revenue was in the neighbourhood of \$135,000,000 or \$140,000,000 a year, we can see that there is going to be a very considerable burden upon the Canadian people. I believe absolutely in the elementary principle that the same laws apply to a nation as to an individual, and we can only meet this situation and overcome it by greater thrift, greater production, and more intelligent work. If a farmer has a heavy mortgage on his farm, and heavy financial obligations to meet, obligations spread over a period of years, it is the part of wisdom on his part to plan intelligently how he is going to meet them. So far as Canada is concerned, it seems to me that agricultural development can play a very

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great part in the solution of our problems. I want to emphasize the suggestion that some honourable members have made. The general impression among observant men in the United States is that their farmers are going to plant strongly in wheat this spring, which will probably result in a decreased acreage of oats and barley in that country; therefore I think it is a good suggestion that oats and barley might be profitable crops to be grown in Canada. I might also say that the decrease in the number of animals in eight countries in Europe, leaving out Britain, engaged in the war is over 50 millions, and if all the countries in Europe are taken into account, the decrease is probably over 100 millions. While the population of the United States has increased since 1900 by about twenty millions the increase in their cattle has been only slight. Canada, because of the character of its climate and the fertility of its soil, is well adapted, over the greater part of it, for stock raising, and it seems to me that the consequent demand for meat, hides, leather goods of all kinds will mean good prices for Canadian cattle and Canadian sheep for a good many years to come. I think all the facts warrant this assumption at the present moment. There is just one thing that I would like to add and it is that our beef does not enjoy the reputation in the old country market that the Argentine and the United States beef enjoys. I am informed that is due to the fact that our article is not as well finished as theirs; that our carcasses run several hundred pounds less than the carcasses from the other countries, with the result that the quality is not so good and our product does not enjoy the high reputation which it could and would enjoy if it were better finished and of a higher quality.

Committee adjourned.

BOVINE TUBERCULOSIS

HOUSE OF COMMONS,
COMMITTEE ROOM 318,
OTTAWA, THURSDAY, April 3, 1919.

The Committee on Agriculture and Colonization met at 10.30 a.m., Mr. Henders, Chairman, presiding.

The CHAIRMAN: Without any preliminaries, I will ask Dr. Tolmie to address us on "The Control and Eradication of Bovine Tuberculosis."

Dr. S. F. TOLMIE, M.P.: Mr. Chairman and gentlemen, it was first intended that Dr. Torrance should speak to you on the subject of bovine tuberculosis, but unfortunately it was necessary for him to go Washington in connection with certain western cattle matters, and the Chairman invited me to take his place. In saying a few words on this important subject I shall try to stick as closely as possible to the ordinary terms that will appeal to us as ordinary farmers and livestock breeders.

The first question is, why are steps necessary to eradicate tuberculosis? This appeals to us under two heads.

(1) It is necessary on account of the effect which tuberculosis has on public health; and

(2) From an economic standpoint.

If you remember, Dr. Robert Koch, the well-known German Pathologist, in the early nineties expressed a doubt whether bovine tuberculosis was communicable to man. Certain investigations carried on since have changed this idea entirely, and I think the medical men of to-day no longer doubt that bovine tuberculosis is communicable to man.

We have had many demonstrations of the possibility of conveying tuberculosis to the human being through inoculation. There are endless cases of butchers cutting up tubercular carcasses, or dressing tubercular carcasses, with cut hands and becoming inoculated in that way. Similarly, a number of members of the veterinary profession have become infected through cutting their hands while carrying on post mortem examinations on infected cattle. We have on record the case of a girl who had a cut on her hand which was dressed by her mother with cream that came from a tuberculous cow, and she became infected in that way.

A British commission in 1895 made the statement that in their opinion most of the tuberculosis existing in the country was of bovine origin. That is a very sweeping statement, and whether it is correct, or generally accepted to-day, I am unable to say. Then it has been proven that the disease may be conveyed to the human being by ingestion, or the consumption of tubercular products of the cow. You can readily understand that experimental work in this particular direction has been very limited, for the reason that volunteers who would come forward and undergo the tests have been very few. However, we have the case of Gass, a very prominent physician of Geneva, whose little daughter became infected with tuberculosis. The family history was clear from tubercle, so far as they knew, and it was proved later that the cow from which they obtained their milk was badly infected. At a Paris academy twelve girls became infected, five of whom died, and on investigating the source of their milk supply they found it badly infected with tubercle. Many other similar cases can be cited.

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With regard to the economic relation of tuberculosis to the livestock industry, I may say that before the war it was estimated that there were one and a half million tubercular cattle in Great Britain. The United States estimates that their losses from tuberculosis have amounted to 14,000,000 head. Our Canadian meat inspection shows that tuberculosis is on the increase in this country and in the six years past it has increased from a little less than 3 per cent to 4.06. This increase is only in the establishments where animals are killed for export or interprovincial trade, as these are the only abattoirs which are under official inspection. They are the only places from which official figures can be obtained. The most remarkable increase, however, is in hogs. In the same period tuberculosis in hogs has increased from less than 9 per cent to 19.04. Between the years 1917 and 1918 4,630 beef animals were condemned in the abattoirs for tuberculosis and 36,478 portions. I may explain this point by stating that when an animal is only slightly infected, any of the organs affected are set aside, and the carcass is allowed to pass for food. However, if there is any inclination to a generalized condition of the disease, and several organs are affected, the whole carcass is condemned and tanked and made into fertilizer. During the same period, 4,355 carcasses of swine were inspected and destroyed, and 772,236 portions were condemned. We see, therefore, that the disease is on the increase in this country, and the longer we put off taking steps towards its control the greater the problem will be. I will give a few of the results of tests that have been made. The Dominion Department of Agriculture has a scheme under which they undertake the testing of cattle for tuberculosis for any city under certain conditions. This is done under the Tuberculosis Municipal Order which went into force in May, 1914. The following are some of the results in the municipalities which have taken advantage of that order. In Ottawa the number of cattle tested was approximately 2,000, and the number which reacted was 166, showing a percentage of 7.07. In Virden the number tested was 184, 9 reacted, the percentage being 4.89. In Regina 3,500 cattle were tested, 146 reacted, a percentage of 4.07. In Saskatoon 9,000 were tested, 292 reacted, being 3.01 per cent. In North Battleford 900 cattle were tested, 101 reacted, showing a percentage of 11.11. The reactors in all those herds very materially decreased after the first application of the tuberculin test. The testing for the Live Stock Branch in ten years, covers 14,584 animals, and 1,145 reacted. There were tested for export 9,787, of which 332 reacted, and for import 4,308, of whom 106 were reactors. Now, you will be perhaps a little interested in the ordinary symptoms of tuberculosis. I might say at the beginning that when the animal is only slightly affected, there are very few external symptoms shown, and, in some cases no symptoms whatever, and it may be at that time the animal is in fine condition. Later we notice an unthrifty appearance and a rather staring coat, and particularly when exposed to a slight cold. A cough, may be present, particularly on slight exertion. A shrinkage in flesh, enlargements of the glands. Occasionally they are subject to bloat, that is when the intestinal tract is affected; scouring may be noticed. There may be enlargements or lumps in the udder; we find that these lumps are not painful on pressure and these are usually safe grounds for suspicion. In cases of this kind the animal should be subjected to test without any delay. The disease is transferred to man most easily through the milk when the udder is infected. A tubercular herd is frequently subject to udder trouble.

With regard to the methods for eradication of tuberculosis, I may say that owing to the fact that as it is difficult to make a diagnosis by physical examination we use what is known as tuberculin. This tuberculin is made in Ottawa; the tuberculin that is used all over this country by the Government, is made in this city. Briefly it is produced in this way: some tubercle bacilli are cultivated in beef bouillon at a blood temperature. After they have made sufficient growth and the fluid in which they are contained becomes pretty well impregnated with the germs, they are exposed to a very high temperature. After that the mixture is carefully strained so that there is no

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possibility of any of the bacteria remaining in it. Then this material is reduced by slow heat to one-tenth of its volume and in that condition, with the addition of a little glycerine it will keep almost indefinitely. There is added a weak solution of carbolic acid and it is then ready for application.

We have two principal methods for testing animals. The sub-cutaneous test is one in which the temperature is taken every three hours, for twelve hours, or until we obtain the average normal temperature. The tuberculin is injected and eight or nine hours afterwards the temperature is taken again, and every three hours till the following night usually beginning at six o'clock in the morning and ending at 6 p.m. If a distinct rise in temperature is obtained of 104 degrees or more the animal is condemned as tubercular; if the reaction is only slight the animal is treated as a suspect and is retested again; if there is no reaction the animal is passed as sound. However, it does not do to rely on one test only, in herds where the disease is present the animal should be tested again.

The other test, the one used in British Columbia, is the intradermal test. The tuberculin instead of being injected under the skin is injected into the skin and the sites generally selected are the little folds under the tail, which are almost free from hair and where the reaction can be observed. Three or four drops of this tuberculin is injected into the skin. A reaction is shown by a little swelling at point of injection, and in the case of a healthy animal no disturbance will be produced. There is also an eye test which is not generally considered as reliable as the others, and is not in general use. Some men will inject in one way, and when there is no reaction, they will some time afterwards inject with the other as a "control" test. In a herd of high-class cattle it is not necessary to destroy every reactor. It is always safe to kill off those cattle which show physical symptoms of the disease, but with respect to others we can adopt what is known as the Bang system, a method which was recommended by a man named Bang in Denmark. By this system these tubercular animals are set apart by themselves and their milk is pasteurized to 140° F. for twenty minutes after which it is perfectly safe to feed this milk to calves. In that way the rest of the herd is safe from infection. This practice has been followed in British Columbia by a prominent breeder there in one of the very best Holstein herds in that province, and indeed in Canada, and, I am very glad to say, that for several years there has not been a single reactor found.

In the way of prevention only animals from herds that are known to be healthy should be introduced into the herd, and if there is any animal of doubtful origin it should not be introduced into a healthy herd until it has been thoroughly tested. Then again you should have a careful system of disinfection; it is not enough when you apply the tuberculin test to take those animals who have reacted and either kill them off or separate them for further test, but you should thoroughly disinfect your premises by scraping them and cleaning them to the best of your ability and after you have done that you should thoroughly spray the stables with a strong antiseptic solution taking care to see that the solution gets into every crack and crevice in the place.

With regard to the best method of handling tuberculosis and checking its spread I want to go on record as saying that I am not in favour of creating any undue alarm or causing widespread excitement nor do I advocate a sweeping measure for testing cattle throughout the country. That is too big a proposition to tackle in that way. Where the attempt has been made to control the outburst by such sweeping measures it has failed. I would rather follow a course of education, to induce the people who own pure bred herds to insist on having every animal tested. Our cities and towns should be assured of a clean milk supply which is free from tuberculosis, this can only be obtained from a tested herd. If a supply of milk free from tuberculosis cannot be assured then the milk should be pasteurized before it is placed on the market. The Government and the municipalities could very well work together in carrying out such a scheme as that.

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We should also purchase as far as possible meat bearing a little blue stamp, "Government Approved." When you buy meat bearing that brand you can at least rest assured that you are buying an article from animals which are free from disease because our Canadian inspection service is, I think, as honest and efficient as any in the world.

In British Columbia we learned long ago that it did not pay to keep tuberculous cattle. In the first place, if you have an infected herd, everything may be going along nicely, when suddenly a cow gets bloated or begins to scour, does not do well, and one quarter of her udder may show soreness and inflammation, and if you test her you will frequently find her tubercular. Other animals do not thrive as well as they might and when you count up your losses at the end of the year you will find they have been very considerable. So that we have applied the tuberculin test in British Columbia, particularly to our pure-bred and milking herd, and under the law there every herd sending milk to a city must also be tested, with the result that there is a large number of herds in British Columbia that have not shown any reactors for a number of years. The Dominion Department of Agriculture has for many years taken charge of herds for the purpose of eradicating tuberculosis, but beyond supervising the disposal of reacting cattle, no further action has been taken.

There are at the present time 55 of these herds under federal supervision, and 2,521 cattle have been tested, with 708 reactors.

The department supplies tuberculin to veterinary practitioners, free of charge, and earmarks all reactors.

During the last ten years the practitioners have tested 37,612 cattle with departmental tuberculin and 3,797 of these animals have reacted.

This is the Dominion system at the present time. Then, with regard to the United States, I will read the memorandum I have, as follows:—

"A joint meeting of representatives of the breeders' associations of the United States, as well as of the United States Live Stock Sanitary Association was held in Chicago in the month of December, 1917. At this meeting the best means for the eradication of tuberculosis from pure-bred herds in the United States was discussed.

"This meeting decided to adopt the Accredited Herd System for the United States. A joint committee was appointed of ten, consisting of five members representing the Breeders' Associations and five representing the United States Live Stock Sanitary Association. This committee drafted a set of rules for the establishment of accredited pure-bred herds.

"At subsequent meetings these rules were unanimously adopted by both associations, and were recommended to be put into force by the Bureau of Animal Industry.

"The Bureau of Animal Industry approved and adopted these rules on December 23, 1917.

"An accredited herd is one which has been tested officially without any reactors for two successive yearly tests or three successive bi-annual tests.

"Cattle from accredited herds can be shipped from one State to another and from the United States to Canada without test. All other cattle must comply with the individual State requirements.

"The United States authorities publish a list of accredited herds at systematic periods. The first list was published July 1, 1918, and showed 211 accredited herds.

"The Report for the fiscal year 1918 shows that there were 126,229 cattle tested, that 5,945 reacted, of which 4,005 were slaughtered, making a percentage of 3.91 reactors. There are now 404 accredited herds.

"The Agricultural Appropriation Bill for the fiscal year terminating June 30, 1919, in the United States, contains an appropriation of \$500,000 for tuberculosis eradication.

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"The expense of testing these herds is shared by the State and Federal authorities. The compensation is shared by the Federal and State governments. Each pay one-third of appraised value.

"The Federal grant is limited to fifty dollars for pure-bred animals and twenty-five dollars for grade animals, and must not exceed amount paid by state or municipality.

"The cattle are valued by a representative of the Bureau of Animal Industry and one from the interested State.

"If the owner is not satisfied with the award a new appraisal is made under the state law.

"The salvage is paid to the owner and the amount deducted from the appraised value."

I may explain by that word "salvage", when an animal is slightly affected and the carcass passes inspection, the owner is allowed what the animal brings for beef and the hide:—

"Compensation is paid jointly by the Federal State and municipal authorities for example:—

	Appraised Value		Salvage	Difference	
	\$	cts.		\$	cts.
Pure bred shorthorn cow	200	00	90	00	110 00
Federal aid (not to exceed one-third difference)	36	66			
State aid	36	66			
County or municipality aid	36	66			
Total					109 98
Owner's loss					02

The Dominion Government, as I understand, is undertaking to introduce a plan similar to the accredited herd system of the United States. It will in the first place result in having a large number of good, clean herds in the country, and I may point out that in some documents I received from British Columbia this morning, it was shown that there was a meeting of a committee of representatives from the farmers' institutes of that province, and a resolution passed to the effect that the importation of cattle into British Columbia from other than accredited herds should be prohibited.

Let us consider what will be the effect of leaving this thing alone, and what, on the other hand, will be the effect of establishing accredited herds in this country. You will remember, perhaps, that during the past summer several Canadian animals were shipped to the big Holstein sale at Milwaukee, and on that occasion one Canadian-bred calf, seven months old, bred by Mr. A. C. Hardy of Brockville, sold to the Carnation Milk Company, at Seattle, Washington, for \$106,000, and the females, topped by a Canadian heifer two years old which sold for over \$12,000 each. We have recently been able to arrange with the Holstein Association so that registrations in the Canadian Herd Book will be accepted in the United States, and we in Canada will accept United States registration, so that we can register, one country with the other, for an expenditure of one dollar. Under the old system it was sometimes necessary to register back pedigrees at a cost of \$80 or \$90, so that we expect a largely increased trade. The same plan has been adopted by other of our pure-bred livestock associations, and we anticipate a big trade between the two countries. With the progress that I have shown that is being made with accredited herds in the

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United States, it is only reasonable to expect that when a man has got his herd free from tuberculosis that he will want, if he wishes to add any fresh animals, to secure those animals from a herd free from disease. He would be a foolish man to take animals from a herd already tainted, the effect will be that if we do not start this accredited herd system in this country, we will be working at a disadvantage as far as export trade is concerned, and also in selling animals in this country.

The CHAIRMAN: We have had a very interesting and instructive address from Dr. Tolmie, and if members desire to ask any questions they can now do so.

Mr. SUTHERLAND: I would like to ask Dr. Tolmie if he has any suggestions to offer in regard to inspection of meat killed for home consumption? Meat for export is subject to a test, but have you any suggestion in regard to the inspection of meat sold in all the retail butcher shops of the country?

Dr. TOLMIE: The matter of municipal meat inspection is a very difficult one, and is interesting people all over Canada. The people of British Columbia are trying to have the provincial government put through a law with that end in view. But there are many difficulties. Take the case of a man who kills his animals in the outlying parts of the country. It is a very difficult thing to carry out a system of inspection at the point of slaughter. Any system of inspection of meat that does not include the inspection of viscera cannot be successful. You must see the various organs in order to form an opinion. In the case of those killing in the country, it is necessary that they should bring in the heads and certain sections of the viscera before a proper inspection can be made. That is practically the gist of this Bill, but I do not know whether the provincial government is going to adopt it or not at the present session. Another suggestion is to adopt the municipal abattoir, and have all animals shipped there for slaughter. It is most important. Those men who buy diseased cattle avoid slaughtering at the abattoir where animals are inspected. These animals are usually killed without inspection, and if you do not protect yourselves you are going to get this class of beef.

Mr. NESBITT: Have you any statistics showing where the disease is most prevalent, whether in Ontario, Quebec or the West?

Dr. TOLMIE: No, I have not any such statistics.

Mr. NESBITT: You read some figures showing the results of tests in various towns, and I noticed that except in one case, it seemed to be lower in the West than in the East.

Dr. TOLMIE: North Battleford 11.11 per cent; Ottawa 7.07 per cent; Virden 4.89 per cent; Regina 4.07 per cent, and Saskatoon 3.01 per cent.

Mr. SUTHERLAND: You pointed out the importance of safe guarding the disposal of those reactors. The most of these reactors find their way into the hands of the local butchers and are consumed by the people in this country. Would it be possible to identify those animals?

Dr. TOLMIE: Yes, it is possible. All reactors under Dominion Inspection are earmarked with a "T" punch. I think the tendency would be for unscrupulous men to market these animals through private slaughter houses rather than through the abattoir.

Mr. ANDERSON: There is a rejection of from one to two per cent. Is there any provision for protecting the abattoir people against these tubercular animals?

Dr. TOLMIE: There is an arrangement among the butchers. They deduct that and pay the full price to the shipper. That is supposed to cover their loss, instead of the abattoir people bearing it. For each animal that comes in and is slaughtered they make that charge, and it acts as a form of insurance against loss from diseased animals.

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The CHAIRMAN: It is taxed back on the farmers?

Dr. TOLLMIE: Yes.

The CHAIRMAN: That is the point.

Mr. MAHARG: You stated that pasteurized milk at a certain temperature, 145 degrees, or something like that, made the milk practically free of tuberculosis. Why is it that after cooking meat at, say a temperature of probably 300 degrees, the heat has not the same effect? Why is it that people are apt to get infection from eating meat that has been cooked at a very much higher temperature than applies to the milk?

Dr. TOLMIE: My explanation would be that the heat is applied all through the milk, whereas when you have a roast weighing eight or ten pounds the heat reaching the inside of the roast would not be sufficient to destroy the living bacteria.

Mr. NESBITT: It should be all right if cooked through.

Dr. TOLMIE: Yes, but in many of our hotels we get meat only half cooked.

Mr. MAHARG: According to that then it would be advisable to cook the meat thoroughly.

Dr. TOLMIE: If you heat the bacillus at 145 degrees for twenty minutes you will kill him, but if you leave him alive on the inside he is very apt to do damage.

Mr. MAHARG: In regard to raising calves, you say you can take the calf from the cow that is infected, pasteurize the milk, and the calf is not subject to infection. Is it necessary to isolate that calf completely from an infected cow?

Dr. TOLMIE: The best way is to have a man take care of those cattle alone. Perhaps I did not point out that the old belief was that cattle became infected by inhalation, but now-a-days it is very generally accepted that communication of the disease in most cases is due to indigestion or eating. Manure dropped about, or carried around may also be a source of infection. We have had some very interesting outbreaks on some of the ranges of the West. I have figured that this is perhaps due to their system of feeding on the ranges; that is, a man will select a good spot near a haystack, and will scatter his hay on that particular piece of ground until it becomes too dirty, and then he selects another piece of ground. When the sun is at its height in the middle of the day, and there is a little thawing, that hay might easily become infected by the manure lying around. We have had some very striking revelations in the abattoirs on the Pacific Coast where inspection is carried on.

Mr. STEELE: What is the arrangement when it is desired to export animals to the United States?

Dr. TOLMIE: We have an arrangement with the United States whereby they accept our certificates and we accept theirs. When you wish to export an animal, you apply to the Veterinary Director General, or to one of his representatives at the nearest point, and he will test the animal with the tuberculin test. If the animal passes the test, he furnishes a certificate to that effect and the animal goes forward with a certificate which is accepted on the other side of the line. That applies to all animals except those intended for immediate slaughter. It is not necessary to test them.

Mr. BOYCE: Is there any chance of an animal that is very badly infected getting cured?

Dr. TOLMIE: The chance is very remote. I would consider a generalized case a very poor property except for fertilizing purposes.

Mr. BOYCE: A man close to me had four cattle condemned and included in them was a four-year old heifer. The owner got strict orders to get rid of them, but he kept the four-year old until she was ten or eleven years old, and she did not get any worse; in fact, she got better. He sold her for beef, and gave the man who bought her very careful instructions to observe whether there was anything wrong with her. The butcher told him that she was one of the finest animals he had killed for many a day.

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Dr. **TOLMIE**: That is certainly an exception to the rule. An animal with well-marked tuberculosis usually becomes steadily worse.

Mr. **LEVI THOMPSON**: I understand that the test is not absolutely infallible.

Dr. **TOLMIE**: Nobody claims that the test is absolutely perfect. Where an animal is badly infected, there is little reaction to the test. We are usually able to pick those out by a physical examination. We do not claim that the tuberculin test is absolutely perfect, but it is the best possible agent that we have, and I do claim that we should take steps to carry out the testing of our herds with the best agent we have on hand.

Mr. **HAROLD**: Is it the intention of the committee to submit any recommendation on this matter? Dr. Tolmie has given us a splendid address, and he has suggested proceeding along certain lines.

The **CHAIRMAN**: As I understand it, the object of this discussion is this: The Minister of Agriculture has furnished us with certain topics which he would like to have the committee discuss with a view to presenting their findings for his guidance in connection with future legislation which he hopes to introduce and incorporate in our statutes. There will be a report of the proceedings of this meeting, but I am not sure whether we will be able to secure the publication of the report of our meetings in every instance. We may be able to bring sufficient pressure to bear so that there will be available a record of the subjects discussed. The committee feel that it would be desirable to have a report in permanent form, and if the members will make known their desire, the sub-committee will take action with the view of securing, if possible, publication of the reports in some form or other.

Mr. **DOUGLAS**: What is your experience doctor, has there been any particular breed of cattle in which tuberculosis is more prevalent than in another. I notice in the province of Alberta there is an impression that one breed is freer from tuberculosis than another, and our people are going in very strongly for dairying. It is the impression that the Hereford is a hardier breed and is more free from disease than others, is that your experience?

Dr. **TOLMIE**: As far as my experience is concerned, including fourteen years of Dominion Government work in British Columbia I have never noticed any difference. I am quite aware that the Hereford has the reputation of being hardier on our ranges, and they have a reputation of standing starvation or hunger longer, and going farther to get water and feed, but there is nothing on the records to show that the Hereford is any freer from disease than any other breed.

Mr. **DOUGLAS**: Would there be any more prevalence of tuberculosis among cattle of the dairying strain than among those of the beef strain?

Dr. **TOLMIE**: There is a greater prevalence of disease in the case of the dairying cattle simply because of the conditions under which they are kept. Ventilation is a matter which is not very carefully attended to by some farmers. You have, many times, seen in the country where a pane of glass has been broken in the stable and instead of getting it replaced you will see the hole plugged up with straw or a sack. When the farmer keeps out air from the stable he is producing the best possible conditions for the development and spread of tuberculosis from one animal to the other. In our part of the country we do not bother so much about ventilation, because we open up the windows and allow the air to circulate. Down at Port Townsend, on the American side, they keep their dairy cattle out in the open, they dehorn them and keep them running outside with a shed to go into in rainy weather, but in a country such as this it is very necessary to have a proper system of ventilation introduced. I might say for your information that the germ of tuberculosis will live for almost an indefinite period under dark, shady conditions but it will die in a warm sunshine in a few minutes.

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Mr. THOMSON (Qu'Appelle): I want to ask one question; as I understand it the provision for allowance in case of tubercular cattle being destroyed is confined to pure-bred herds; is it intended to have any compensational allowance for grades? Would not such an allowance be of great assistance in eradicating the disease?

Dr. TOLMIE: In connection with this testing of herds such as has been adopted at Ottawa, Virden, Regina, Saskatoon and North Battleford, it says here:—

“6. Compensation shall be paid to the owner of the herd for all cows slaughtered under these regulations upon the following basis:—

“(1) One-half of the appraised value of the cow if destroyed as a case of open tuberculosis.

“(2) Two-thirds of the appraised value of the cow if destroyed as a reactor at the request of the owner.

“(3) Valuation shall be made by the veterinary inspector, and shall not exceed the maximum valuation for cattle as specified in section 6 of the Act.

“7. The carcass of any animal slaughtered under these regulations shall belong to the owner and shall be disposed of as the veterinary inspector may direct.

“8. No compensation shall be paid to the owner unless, in the opinion of the minister, he assists as far as possible in the eradication of the disease by following the instructions of the inspector as to disinfection, etc.”

That is dated May, 1914.

Mr. THOMSON: That, as I understand it, is confined entirely to those cities you have named.

Dr. TOLMIE: Or any other city that wishes to adopt it.

Mr. THOMSON: That leaves out all the rest of the country where most of the cattle are.

An hon. MEMBER: Is meat for export inspected?

Dr. TOLMIE: Where they inspect meat for export they put a stamp on the carcasses that pass inspection. I think it is a question well worthy of consideration with regard to the expenditure of a certain amount of money for the benefit of the health of the people of the whole of Canada and, as the expenditure is for the benefit of all, it is only fair the country should pay. In British Columbia they are endeavouring to get the Government to bring forward some measure of insurance for dairy cattle.

[Mr. MAHARG: Can any municipality that desires to do so adopt that system to which you have referred?

Dr. TOLMIE: As far as I understand it this is confined to cities and towns.

Mr. KNOX: Could this committee not make some recommendation by which encouragement would be given to a man with diseased cattle to clean up his herd in the interests of those who do keep their herds clean.

Dr. TOLMIE: I admit that it is an injustice to the man who keeps his herd in a healthy condition that his neighbour's herd is not cleaned up in the same way. This matter has been discussed at meetings of the Live Stock Association, but we have never arrived at any definite conclusion regarding it so far as I am aware, but I think it is well worthy of the consideration of a sub-committee which might be formed to take it up. Under the present system the man who keeps his herd clean is punished just the same as the man who does not.

Mr. BOWMAN: I would like to ask this question; in the United States this thing has been in progress for some time. Can you tell me what progress has been made towards eliminating the disease in the grade herds of that country? Have the farmers generally taken advantage of it? It seems to me that if the people owning pure-bred

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herds have taken advantage of the opportunity and eliminated the disease from their herds and the owners of the grade herds have not that it is an injustice to the owners of the pure-bred herds because those herds which are clean might become infected thus producing a bad result. Will you let us know what advance has been made with regard to the elimination of the disease in the grade herds in the United States?

Dr. **TOLMIE**: This has only been adopted a short time. The first list of the accredited herds was published July 1, 1918, and showed 211 accredited herds, and there are at the present time 404. So that they are making rapid progress. If the bull is kept in and hand bred, I do not see that there is very much danger of him getting tuberculosis by coition with a tubercular cow.

Mr. **McGIBBON**: In view of the chairman's statement that the committee do not purpose spending any more than to-day on this subject, it might be well for this committee to name a sub-committee to go into this matter. This is a matter of very great importance, not only to the stock-breeders of Canada, but also to the people of Canada, and in view of Dr. Tolmie's statement that in spite of the remarkable remedies which have been adopted, this disease is still on the increase—a rather marked increase. With the treatment of tuberculosis in the human being, the disease is on the decrease, and it looks to me as though there would be a big field for what I might call investigation to devise methods by which this could be overcome, because it is going to continue on the increase, and as it is increasing it is going to have a remarkably bad effect on the stock-breeding industry of this country in a few years. It looks to me as a problem that could be solved, and it is for the committee to appoint some member to look after it.

Mr. **NESBITT**: I am very much interested in the subject. The only way that we will ever get rid of tuberculosis among the herds of this country will be for the Government to pay compensation, as they do for the slaughter of hogs, because, otherwise, the butchers will buy and the ordinary farmer will sell affected animals, and in our country there are certain buyers that go round through the country and buy up a stock and take them to the central points, the towns and villages, and have auction sales of cattle. They are generally the cattle that are rejected from a man's herd, and these cattle are taken off and sold to some unfortunate individual who comes there and buys them and takes them in among his herd. I do not know how you could stop that. In the first place, it is bad for the farmer who buys them, because they are generally affected animals or animals that are culled from the herd of a man who is selling them. One point Dr. Tolmie brought out was the reliability of tests. I remember having a cow tested, and she re-acted, and I killed her, and I had a veterinary, whether he was capable or not I do not know, but we killed the cow ourselves and buried her, but the veterinary could find no trace after she was slaughtered of tuberculosis in the beast, and whether that would indicate that the cow had tubercular trouble at the time I do not know, but I can only say that I took the precaution to have the veterinary there so as to guide me in the matter. No trace of tuberculosis was found in her system. However, I have no doubt that generally speaking the test is quite sufficient, and that those that re-act should be gotten rid of, and should not be kept on the place any longer than it is conveniently possible to get rid of them, and, of course, they should not be sold to the neighbours. I suggest that this committee should vigorously ask the Government to assist in getting rid of tuberculosis by paying the farmer a certain amount of indemnity for his slaughtered cattle.

Mr. **BOYCE**: We have such a law at the present time, if the municipalities take advantage of it.

Dr. **TOLMIE**: If your cow had been slaughtered under those conditions in British Columbia you would have received full valuation. They pay full compensation for cattle that re-act and are found free from disease, but this is very rarely necessary

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where a careful post-mortem is made. I have seen cases where it required the best part of three hours to examine cattle and locate the disease. You sometimes get tubercular nodules perhaps not larger than a pea. One of the troubles with the test is that while it selects those that are affected, it does not tell you how much they are affected. As a rule you generally find the lesions in the lungs or some of the glands of the abdominal cavity.

Mr. REID (Mackenzie): Have Short-horn breeders adopted the tubercular test? Three years ago they objected very strenuously here. They have adopted it now in the old country.

Dr. TOLMIE: It is necessary for them to examine all cattle for export both to this country and to the Argentine Republic. I do not know what they are doing locally in Great Britain. Dr. Rutherford can tell us about the tests they are carrying on there.

Mr. ANDERSON: In some of the small municipalities the people make an effort to protect themselves by having the animals and the meat inspected by a veterinary in the slaughter house. Is that really effective so far as preventing the sale of tubercular meat?

Dr. TOLMIE: The best way is to have your animal inspected by the Inspector on the ground. You cannot expect good results by an inspection of the carcass only. Inspection is carried on at the farms in some parts of Europe, with good results. I understand before the war the Germans were so strict about the inspection of meat that you could not kill a pig in that country without notifying the Government. The next best thing to do, where you have to kill in the country, is to bring in the head and the viscera, lungs, liver and so forth.

Mr. ANDERSON: If the veterinary were there before the animal was killed it would be better than an inspection of the dead meat. If the farmer were notified that the veterinary would be there and make an examination, would not that inspection be effective?

Dr. TOLMIE: An inspection of the carcass and viscera is necessary.

Mr. MORPHY: Is there any provision under the law for the testing of cattle on the farms.

Dr. TOLMIE: There is no Dominion law for general testing so far as I know. In British Columbia there is provision for inspection without any notification whatever.

Mr. MORPHY: Is it so in any other province?

Dr. TOLMIE: Not so far as I know.

Mr. MORPHY: Do you not think it should be so?

Dr. TOLMIE: I think British Columbia has shown an example which might well be followed.

Mr. MCGIBBON: The Ontario Government provides inspection by request.

Mr. MORPHY: They should not wait for a request; there should be a compulsory inspection at the country's expense of any herd suspected of having disease. I think the cattle should be inspected and watched and killed in any section where they show traces of the disease.

Dr. TOLMIE: That would be rather a dangerous thing to do. I spoke of that in the early part of my address. In my opinion, it would not be advisable to adopt any sweeping system. I would rather see the accredited herd system introduced.

Mr. ANDERSON: Do you not sometimes get a severe reaction from an animal which is perfectly healthy?

Dr. TOLMIE: That has never been my experience. I have had cases that required three hours and the most careful examination to locate the disease, and I have never had one in my practice which reacted without evidence of the disease. Of course,

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some cases may easily be passed, and in these you would require very careful investigation. But even if the tuberculin does make a mistake, it is the best agent we have at the present time. Further investigation may produce something better. From our experience in British Columbia the results are certainly very much better than they would be if the disease was allowed to prevail without restriction.

Mr. REID (Mackenzie): Can the test be applied by anybody?

Dr. TOLMIE: It is far better in the hands of a man who understands the business. There should be a careful examination of the animal.

Mr. SMITH: Is it not possible to defeat the test?

Dr. TOLMIE: Yes, you can carry on what is known as plugging a cow. For instance, if a man makes a sale of a nice animal to go to the United States, and he knows that the animal is going to be tested, it is quite easy to inject into that animal two or three doses of tuberculin. She is so impregnated with tuberculin that she ceases to react. You call in the inspector, he gets no reaction, and he passes her.

Mr. MACKIE: For how long are they immune?

Dr. TOLMIE: For a period of about 60 to 90 days.

Mr. MACKIE: Do you think it possible that we could ever have in this country a general outbreak of lung-trouble such as was experienced in South Africa? I have forgotten the name they gave it, but it was a lung plague. It was terrible, and hundreds of thousands of cattle were lost. It was so bad that the Government constructed fences extending for 300, 400 or 500 miles with openings here and there and put them under the care of a patrol. I myself saw a deposit of over ten thousand cattle in three dumps. I would like to know whether in your opinion it is possible for such a plague to break out in this country.

Dr. TOLMIE: We have not had any such outbreaks in this country, but I do not say that it would not be possible, except, of course, as regards tropical diseases. We have had the foot and mouth disease in the United States, and that was prevented from getting into this country by carefully guarding the boundary line. In that connection I have always emphasized the importance of maintaining a very high standard of veterinary education in this country. At the present time, we have Dr. McGillivray of Manitoba, a gold medallist, as the principal of the Ontario Veterinary College, and I look for a very marked improvement in veterinary education with a man of his stamp at the head of the college. You can imagine what would have happened in this country if we had allowed the foot and mouth disease to get a hold.

The CHAIRMAN: There is a point which we wish to settle before we go further. The secretary (Mr. Davis) has a recommendation which he wishes to make. This is a subject rather technical in its character, and it is considered desirable that a special recommendation should be placed before the House for discussion with the view of having legislation enacted upon it. If this is the desire of the committee, we should provide for having a report submitted to the House.

Mr. SUTHERLAND: I think we have all been impressed by the address given by Dr. Tolmie who seems to have given this matter a great deal of study and attention. He has emphasized the importance of having regulations, so far as pure-bred herds are concerned, and also the importance of having the herd isolated. To my mind the result would be that the reactors would pass out of the hands of the owners of pure-bred herds and eventually find their way into the hands of the retailers, the small butchers throughout the country. That being the case, I think it is very important that proper safeguards should be provided, and that a proper inspection be made of all meats for consumption. Compensation should be paid and steps taken to remove what is undoubtedly a great menace to the public health.

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Mr. MAHARG: To my mind, the trouble is largely due to the indifference of the people themselves. I will give the committee an illustration. In our province we have a health department which has endeavoured to cope with these things. Under the regulations of the province no person is supposed to sell meat within our city, or, I think, within any incorporated town or village, without first having secured a certificate from the clerk of the town or village. In other words, he has to notify the health authorities that he is going to slaughter certain animals for sale in the municipality, and then if the municipality wants to take advantage of it, it is up to it to inspect the animal. Now, I have never known of a municipality taking advantage of that regulation. I do not kill on my farm, but the butcher of the town kills probably 150 head every year, of beef, pork, and such like, and I do not know of any case where it was inspected before or even after slaughter. Therefore, it is a matter of education, as Dr. Tolmie has said of directing the attention of the people to the seriousness of the situation. There is no use in enacting laws if the people will not show sufficient interest in them to see that they are enforced. I think it is a matter largely of education among the people.

Committee adjourned.

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LIVE STOCK FOR PERMANENT INDUSTRY

HOUSE OF COMMONS,

COMMITTEE ROOM 318,

OTTAWA, April 9, 1919.

The Committee on Agriculture met at 10.30 a.m., the Chairman, Mr. Henders, presiding.

The CHAIRMAN: Gentlemen of the Committee, Doctor Tolmie, who addressed us so acceptably and so profitably at our last meeting, has kindly consented to give us an address this morning and I am sure we appreciate very much the fact that he has placed himself so willingly at our disposal.

Dr. S. F. TOLMIE, M.P.: Mr. Chairman and gentlemen, the subject for to-day is "How our live stock can best be improved in quality and a solid and permanent industry built up." I think you will all agree with me that while a man who is working our virgin soils, as a strictly grain proposition is doing some good, this method of farming cannot be of a permanent nature. If we look at other sections of the continent we will find that, beginning in the East, as the virgin lands were cultivated and grain farming carried on without any attempt to fertilize the soil that the land gradually became depleted in productive quality and the farmer, if he wished to maintain that line of work had to move west to new land until he reached the Pacific coast, and then a large number of them drifted up into Canada.

I do not know of any greater responsibility that the Federal and provincial Governments have on their hands than the encouragement of mixed farming throughout the whole of this Dominion of Canada. I feel quite sure also that no money can be spent to better advantage than along these lines. We have in our virgin soils an immense amount of pent up fertility which if properly utilized will increase the progress of this great country. Our experience here is similar to that of other countries. We find that Great Britain which has followed a system of mixed farming with live stock has for a great number of years averaged more grain per acre than has been produced in this country, we have a similar condition in Denmark, many portions of which have soil of a very poor nature, but the land has been brought to a high state of fertility by intelligent mixed farming.

We cannot hope to discuss the first part of our text, if I might be permitted to call it that, Mr. Chairman, by any sweeping statement, and it will be better to discuss the line stock industry in its various branches just briefly. However there are one or two things that apply to the whole live stock industry if we are really to make a success of it, if we are going to have a stable live stock industry. The first and the most important thing is to see that it is made profitable; as long as it is profitable it will be followed by the farmer, if it is not profitable he will soon go out of business. To make it profitable we must have an assured market for his product, we must have satisfactory distributing facilities with the distributors receiving the amount that belongs to them. We must have good transportation, and then there must be such financial arrangements as will enable him to carry on his business properly. I will not go into the details surrounding these points, because on looking at the programme as drawn up by the Hon. Mr. Crerar recently I find that many of these matters are to be discussed at a later date.

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Looking first at the horse business I think it is rather absurd to say that the tractors are going to drive the horse clean out of business at a very early date. While the tractors are rendering very excellent service we find that the horse is more profitable under many conditions, particularly in the western newly settled sections of the country. The market for horses I must admit is much more limited than it was a few years ago. Still when we look into the matter more closely we find that heavy and draft geldings and mares of a good quality are as scarce to-day as they ever were. I remember a few years ago on the Pacific coast at the horse shows several large firms were in competition in the purchase of horses to exhibit at these shows and in buying horses for four-horse teams they experienced the greatest difficulty in getting sufficient horses of soundness of weight and quality to compete in these classes. It was found necessary in some cases to go all the way to the Old Country to secure horses of the proper type. I think those who have been keeping in close touch with the horse business admit that the same conditions exist at the present time. Why are good horses so scarce? We have the most excellent grass and we produce first-class to grow good animals.

I have judged for a number of years at our western fairs, and you will be perhaps surprised to learn that sound stallions of good quality are not in the majority and high quality mares of size are not very numerous. There is an old Scotch saying that you cannot make a silk purse out of a sow's ear. Neither can you expect that a sound horse will be produced by an unsound sire and dam. Then again we have failed to keep up-to-date in the breeding of our horses. A few years ago if the sire was nice and symmetrical in shape and travelled well his weight was overlooked. We have had horses come in from the United States with weight and they have created a very keen competition indeed. In the selection of a good horse for a sire we should get one that is decidedly masculine in appearance, one that possesses plenty of snap and vigour; we do not want a horse with a mare's head. You get a stallion with a feminine head and you will usually find that he is not impressive. We like to have one with a head that is mostly fitted to the neck, we like to have that head well formed with the neck fitting smoothly into nice sloping shoulders. His body should possess depth, giving plenty of room for the heart and lungs, chest well developed, but not too bull-doggy, as we find in some breeds, with the horse's legs stuck out on the corners. We want the legs well placed under the body. When you have a horse with a long sloping shoulder there is a certain amount of elasticity in his gait, which eases the the concussion and prevents foot and leg trouble. The legs should be broad, clean and flat, and with a fairly long sloping pastern. That sloping pastern is necessary, because it also adds elasticity to the gait. The foot should be well formed, with a well developed frog. We want the horse's body well set up, strong over the back, with plenty of length of rib, and the rib should be well sprung from the backbone. You ask why is that necessary. A short-ribbed horse is a bad seller, unless he is particularly heavily loaded with flesh. The muscles over the hindquarters should be well developed, with a good length of quarters, and well-muscled thighs, carrying his hocks close together. Now we come to a point to which enough attention has not been given by many of our farmers when selecting a sire. He should possess good action. A horse should travel straight, pick up his feet nicely, and carry his hocks fairly close together. There should be a certain amount of snap in his gait, indicating vigour and energy. He should also be a fast walker, because practically all his work is done at the walk, and if we have a slow walker there is a great waste of time taking the load away and coming back with the empty wagon. In ploughing if you have a clumsy horse a great deal of time is wasted at the end of the furrow. In selecting your dams see that they have plenty of size and not too closely knit. You can select the good mares and dispose of those which do not give you satisfaction as mothers. The horse I have described is not like many horses we find in the outlying districts.

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We often find a scrubby little horse 1,400 to 1,500 pounds, and the man who leads him swears he weighs 1,700 or 1,800 pounds. He usually has small feet, narrow heels, round legs, and a round little body, and occasionally a jack spavin, curb, or side bones just for ornamentation. That is the kind of horse to avoid. Breed to the very best. We find that in Scotland they do not hesitate to pay a big price for a good sire, and I may say in this connection, as an encouragement to the horse-breeders in this country, that a Clydesdale sale was held in Scotland a few weeks ago when splendid average prices were paid. They obtained some of the best prices ever paid in that country for Clydesdale stallions. Good geldings are also selling at from \$600 to \$800 each. In selling your horses it is most important to send them to market in good condition. When I was learning the veterinary business I served my apprenticeship with a veterinarian in Buffalo, N.Y., who had a large practice out at the stockyards. Most of the horses that came to the yards were raised on the western ranches or farms, and were sent down to the corn-belt to be corn-fed and fixed up before they were put up for sale. They claim that this made a very excellent profit to the men, who put them in good condition before selling them. Many of you perhaps will do your selling at the exhibitions. There is a good deal to be attended to in exhibiting a horse properly if you wish to make a good impression. There is no use producing a horse from a good sire and dam unless you are going to put him on the market in the best possible condition.

As far as hunters and saddlers are concerned, I think there is always going to be a limited market for all these horses of good quality. What I said before in regard to good qualities in the draught horses applies equally to the light horses. Good racehorses will always sell. These horses are still bringing excellent prices. A stallion in Argentina the other day sold for \$200,000.

In connection with the beef industry there are four things absolutely essential if we are going to produce our own steers and send them to market. The first point is that we should have a pure-bred sire of the right breed and type. Then it will be necessary to cull the females and cut out all those which are not of the right type, and those that do not produce good, strong, lusty calves. You should keep your dams in good condition in the interval between calves, so that at calving time they are in good shape, and will be able to raise calves in the best condition. If you wish to produce a first-class steer, it is important to see that the calf flesh is never lost and that he is kept growing continuously. In addition to that we must see that our animal is properly finished and sent to market in good condition. I might say in this connection that on one of our ranches in British Columbia, where several thousands of cattle are kept, the size and quality of their steers have been vastly improved, and they have been increased in weight on an average of 150 pounds per head, by the use of good sires and by intelligent handling. In selecting a good beef sire, we look for an animal that is as nearly shaped like a parallelogram as possible. His body should be straight on top and straight underneath. In addition he requires to be well covered with flesh of good quality, smoothly placed, and particularly strong in those points that give beef at the best price, for instance, along the loins, over the ribs, and the hind quarters. Avoid a sire with a cow's head. My remarks about masculinity are applicable here as in the case of a horse. The Argentine has been showing us how they appreciate good sires. They pay from \$5,000 to \$30,000 for a bull in the Old Country, and think nothing of it. It is necessary there to pay high to secure high-class animals. In the United States at the present time they are paying more for sires than we are in this country. I am sorry to say that many of our good bulls bred in Ontario, and other parts of Canada, find their way into American herds. I think the best way to remedy this is to make the breeding of steers a more profitable industry to the farmer. When he finds it is profitable, he will pay more for the proper sires to produce the steers required for the market. In the selection of a good sire a difference of

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\$200 or \$300 should not cut any figure, particularly to the man with a herd of forty or fifty cows. We should not be misled in buying a sire by any nice story about a fancy pedigree or a popular family unless there is a good bull attached to the pedigree. I noticed that at a spring sale in Scotland last year two certain families in the short-horn breed led the sale, but at the fall sales in the same country, these two families were at the bottom of the list, showing that the shrewd Scotchmen were not to be led away by pedigree alone, but that they paid attention to the individual animal in addition to the pedigree. Therefore, in buying a bull, while it is always desirable to get him from a good family, be careful always to see that you get a good bull individual.

Steer feeding has been made quite a profitable business by some of our feeders in this country. Dr. Rutherford, at the Strathmore farm in Alberta last year, turned out a number of steers at a profit of more than \$81 per head. In Chicago, in the month of February last, a feeder realized \$20.10 per hundred on two loads of Herefords weighing 1,373 pounds, and on the same date another man brought in two loads of Shorthorns weighing 1,430 pounds, and for these he secured \$20 per hundred.

Mr. BEST: Are there as many different types in England and Scotland as there are in Canada?

Dr. TOLMIE: As you know, all our beef types originated there.

Mr. BEST: Why is it that we cannot get any one to tell us in this country what is really the best type? Is it for fear of injuring some other man's animals, or what?

Dr. TOLMIE: I think there is no question as to the proper type. It is just the type which I have tried to describe this morning. If I had a living animal before me, I could make it plainer. You do not find any speaker wishing to favour a particular breed, because they do not want to start a bull fight.

Mr. BEST: Why is it that in Canada there is no attempt to tell us whether one breed is better than another. The Herefords and the Shorthorns and the Polled Angus are all good types, I suppose, but why is it not proven to us that there is one type better than the other?

Dr. TOLMIE: I do not think it is very important for the reason that it all comes down to the good individual of a particular breed. There are good ones and poor ones in all of those breeds. If you are a Scotchman and come from the land of the Angus "doddies" you would naturally favour these. Another might prefer Shorthorns. First-class animals can be produced from either of those breeds.

Mr. ALLAN: It seems to me that the balance of convenience would be to start a bull fight. I think the question raised by Mr. Best is a very important one. I quite understand Dr. Tolmie's point of view; none of us desire to engage in bull fights. But is the question not a very pertinent one as regards the characteristics of a particular part of the country in which a man is carrying on his activities, and which is differentiated, climatically and otherwise, from other parts? Take the various provinces of Canada; would certain types not be more suitable than others? It seems to me that a bull fight is something that has got to be fought out.

Dr. TOLMIE: It has never been fought out in Great Britain. There they have still a large number of breeds, and they are the people we try to follow. You get good and bad individuals in nearly every one of these breeds. It is a particular beef type that we are after rather than a special breed. On the other hand, the keen competition between various breeds is a very excellent factor in improving our cattle because they are competing one against the other to produce the best type of animal required by the feeder.

Mr. MCGIBBON: There is no difference in the quality of the beef?

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Dr. TOLMIE: We find that at Chicago in late years the Angus cattle have won more prizes in the dressed meat competition than the other breeds. They claim that the Angus breed has a more marbled quality of beef. On the other hand, they rather object to them on the ranges on account of their being polled. In British Columbia, and I think also on the Prairies they figure that the Herefords will range further for water and stand more starvation than any other breed. The principal breeders in British Columbia use Herefords and then Shorthorns to bring up the size.

It may be interesting to you to know what an Argentine man thought of Canadian cattle breeding after he had been here for a short time. He came to Canada to visit a cattle man in Toronto, and he told the latter that down in his country they had been rather afraid of the effect of the Canadian cattle growing business on the Argentine export business, once Canadian cattle breeding became developed. He said: I am going to travel through your country from here to Vancouver; from there I shall go to California, and will return to Toronto in about a couple of months. He took the trip, and on being asked on his return if he was still very much afraid of the competition in Canada, he shook his head and said, "You have some good cattle, but a tremendous number that are not much good. In our country it is possible to see 3,000 cattle in a field, all of one type and quality. We have raised our standard, whereas our abattoirs are right along the seacoast. It will be a good many years before we need fear your competition." A well known cattle man took over a large number of cattle to France in the year 1914-15, and he saw a great deal of Argentine beef on the British market at that time. He stated that in his opinion the Argentine average ran as good as our average Christmas beef in this country. That will give you an idea of what has to be done if we are to get into that export market. In 1918 there were 743,750 cattle slaughtered in our inspected abattoirs in Canada, and only from 5 to 10 per cent of these were fit for export, due to the fact that they were a poor quality to begin with and not finished. You can begin to realize from these figures what a tremendous loss there is to this country in marketing cattle only half fed. Take the cases I have cited at Chicago. One man got about \$280 per head for his finished steers, or \$20 per hundred pounds, and on the same day common steers in poor condition brought from 9 to 11 cents per pound, to say nothing of the difference in selling weight. There is a tremendous field for improvement in cattle production in this country. How improve the quality and increase the numbers? I consider it a most important thing and at no time is it more important than at present owing to the fact that everything points to cheaper fodder. The first thing to do is to use our best efforts to guarantee a satisfactory market. That includes transportation, cold storage, and so forth. I do not propose to go deeply into these phases of the question at present as I understand they will be taken up later. We should carry on a campaign of education for better breeding and better feeding, a campaign for the elimination of the scrub sire. It does not matter whether he is a sheep, or a horse, or a bull. Then we have the suggestion that liberal prizes be offered at our fat stock shows for (1) single steers fit for export, and (2) steers in carload lots. This system has given very excellent results at the Smithfield market in England, and also in Chicago. The largest fat stock show is the international, held at Chicago. At every one of our fat stock shows I would strongly urge that we have a novice class. For instance, if we were to offer prizes and have no special novice class, we would find that a few professional expert feeders would carry off the prizes every year. We should try to induce as many new men to get into the game as possible and by offering prizes for a novice class, that is a class in which the exhibitors had not won either a first or second prize at any of these shows, we would encourage the new men to compete. Money spent in that way, I consider, would be money well expended and would bring very good results

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Then we might have demonstrations at our Government farms in the production of first-class steers, and the exact weights of feeds, the increase of weight per day, and the cost per pound laid before the people. In addition a publicity campaign might be carried on with very great advantage.

So far as our range country is concerned, I think the ranges should be better regulated and care taken that the range is not eaten out. We have made mistakes in several parts of Western Canada, and also in British Columbia by cutting up sections of country that are not fitted for anything else but for range purposes. On these ranges the settlers have done no good. It has been a race between them and starvation. Only once in a while have they got a good crop. The range man was driven out of business without any good being accomplished.

Last year, Great Britain imported 1,077,154,000 pounds of beef, and of that quantity only 30,000,000 pounds were supplied by Canada. So far as the market is concerned, looking into the future a little, we must remember that owing to the lack of bottoms, Australia and the Argentine have not been able to get rid of their beef cattle; there are a large number of cattle on hand, the accumulation of three or four years; and these suddenly placed on the market might have the effect of causing a drop in the prices. Australia is selling chilled beef at twelve cents a pound, f.o.b. Australia, at the present time. As this situation clears up, things will assume their normal condition again, and I think there will be an excellent chance for Canada to secure her place in the British market.

With regard to the dairying industry, cheaper grains will have a very excellent effect. The dairyman has had a very hard time during the past three or four years in trying to profitably produce at present prices of feed. Canada has already shown that she can produce first-class dairy cattle, and she has also shown that her products are of first-class quality such as would command the attention of the large markets in Europe. Denmark, of course, has been one of our greatest competitors in this line. While there is a good deal of extra work in dairying, a good many hours to work every day, where you find the industry established in any district you will usually find that district in a prosperous condition. In Denmark, in the early years, after its war with Germany, they found that they could not market their farming products in that country. Consequently, they looked around for a new market. They sent representatives over to Great Britain to find if they could sell their butter there. They found that they could, provided it was up to a certain standard. They went about the business in a business-like way. They established a selling committee in Great Britain; they introduced co-operative packing houses, co-operative creameries, and so forth at home, and in a short time they were exporting over \$40,000,000 of products annually to Great Britain. Denmark imports her supply of concentrates for feeding in the dairying business. It has been impossible to secure these during the war, and her business is disorganized. So at present, there is a good opportunity for Canada to get into the British market while the Danes are regaining their normal condition. But we should be careful to see that our products are up to a high standard, so that the Britisher can be assured that when he buys a Canadian article it will be the same on every occasion, and not good this week and bad the next, and so on. It is just possible that Denmark will cultivate the German market when peace is settled. In Canada we have a great deal to do in the improvement of our dairy herds. The average production of milk throughout this country is less than 4,000 pounds per year, while at the same time we have single animals producing as high as 30,000 pounds a year. There are whole herds in this country averaging 10,000 pounds a year, and one man in Ohio has a herd that averages 16,000 pounds all round. In this country we have two-year-olds producing 16,000 pounds per year, showing what can be done by selection and culling out, and the use of first-class sires. Many of these sires will increase the yield of a dairy 50 to 100 per cent in the first crop of heifers. We have

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accomplished this by the encouragement of official testing. We have a system where official tests are carried on so that we are able to estimate what a cow produces in a year, and a cow with an official test behind her is very much more valuable than one without it, and in the purchase of a sire for dairy purposes, it is necessary to obtain one with as good backing as possible, in addition to a first-class animal.

Regarding the swine industry, in the first place I wish to congratulate the Co-operative Association on the prairie for the excellent work they are doing in assisting the farmer to market live stock at the lowest possible cost. There is great room for extension of this important work, and I think a great deal will be accomplished along these lines. Great Britain imported last year 1,261,000,000 pounds of pork products, and Canada supplied 130,000,000 pounds of that, showing that there is a tremendous opening in that country yet for the sale of our Canadian meats. That country, as I said a while ago, is very short of hogs. Some of us have the idea perhaps that we cannot produce hogs properly and of the best quality without an abundance of corn. This is an entire mistake. In Denmark they produce more high quality pork per acre than in any country in the world, and they did it largely on small grain and the by-products of the dairy. If a hog is fed entirely on corn, you will find he will produce a much softer class of pork than the animal produced by mixed feeding, barley, oats, shorts, etc., with an addition of skimmed milk. The hog produces foodstuffs cheaper than any other animal. A hog in good condition will dress at 75 to 80 per cent, while a steer will dress out at 55 to 65 per cent. We have the bacon type of hogs, and also the large type. I will not enter into an argument as to which is the better of these two, because under the varying condition of this country it would be hard to lay down any hard and fast rule. In some sections of the country you cannot keep a white hog on account of its inclination to blister, and in some markets where there is no discrimination between a good bacon hog and a good fat hog, there is no object at the present time to produce a hog of any particular type as long as he is a good one but as our market in England regains its normal condition I presume it will become rather more discriminating, and our leaders in the live-stock industry in the employ of the Government should be careful to advise our farmers along the proper lines when the time comes. In British Columbia we produce, as you do in Ontario, two crops of hogs per year. In the selection of a brood sow we try to get one of large frame, strong, possessing a first-class constitution, and at least fourteen teats if possible. We find a sow selected under those conditions will produce larger litters and larger revenue as well. She requires to be of a quiet disposition so that she will be a good mother. In the examination of our boars we select the type we require. We look for that masculine head and plenty of vigour, and strong bone. This is necessary in the case of large hogs where the feet are apt to break down where the weight increases. In the prairie I understand only one litter is produced per year, and I suppose as time progresses and you get better accommodation for hogs, it will be quite possible to produce more.

With regard to the sheep industry, I may say Canada does not hold a proud position. In Canada we have only two sheep for each hundred acres of land in our farms, and this compared to Great Britain, with 52, Argentina with 15, Holland 12, United States 56, and Australia 58 to the hundred acres. We have in Canada less than 3,000,000, while in Australia they run under normal conditions to about 110,000,000. So that there is a great opportunity for us here to increase our quantity of sheep and also to improve the quality. I think if a campaign could be started good results would be obtained. Many of our farmers would find that the keeping of small flocks of sheep would not only be profitable but a great convenience. The keeping of these sheep where they could be used for cleaning out weeds would be a great benefit. They have been found profitable in British Columbia—nothing more profitable than a small flock of sheep. They are profitable in keeping down weeds and keeping the farm cleaned up in that respect. We find that in British Columbia, as a rule, the

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most profitable breeds are the Black-face and the butcher will take a carcass that will weigh from 50 to 60 pounds, the idea being that when a man comes in for fifty cents worth of chops, he gets enough for his family, or pretty nearly enough. If he has a large family he will have to purchase more. The objection to the big sheep is that they are inclined to put on too much fat, and the cuts are too large. On the ranches we like to see a strain of Merino or Rambouillet in our flocks because they herd closer together. In a country infested with coyotes that is important. In the foothills in British Columbia one man is required to herd a thousand sheep. I understand he can handle from two to three thousand in the prairie country. This matter of herding close together is an important one in handling big bunches. Under our best farm conditions we produce a lamb and a half per ewe, and under less favourable conditions a lamb and a quarter. Under ranch conditions seventy-five to eighty per cent is about the rule. Here again we have a great opportunity to control our ranges and forest reserves so as to see that they are not entirely eaten out. You can quite easily understand that a sheep man who has a bunch of sheep, moving about from one part of the country to another, will in many cases allow the sheep to range on land too long and eat it down, and destroy the grass. In the United States, under range and forest reserve restrictions, the ranges are preserved and carry probably 50 per cent more sheep than they would otherwise. The standardizing and grading of our wools is also a very important matter. The wool situation to-day is rather hard to explain. I think we can figure at the present time on this continent we will have about 800,000,000 pounds of wool to last us until July, 1920. There are 35,000,000 pounds available in the United States now and 100,000,000 owned by mills. This spring clip can be estimated at 300,000,000 pounds. It is estimated that 650,000,000 pounds will be consumed by the end of the year, leaving 150,000,000 for the first half of 1920. The stocks will have to be made up by importation. There are supposed to be large stocks in South America, South Africa and Australia. I have not seen any definite reliable figures, but we can rest assured that there is a considerable quantity. There is one prominent feature of the sheep situation, and that is that there are fewer sheep in the world than there were previous to the war. The prospects, therefore, are not so bad after all. To stimulate the production of mutton, I do not know what we can do better than to carry on a publicity campaign as to the value of the sheep on the farm. My experience is that I find that the sheep pay me a better return than any of the other lines. In this country, the sheep industry is up against rather unfair competition from Australia. Perhaps Mr. Thomson may have something to say about this, seeing he is a free trader. We have considerable mutton coming from Australia, and it is put on the block as Canadian mutton in many cases, and thus enters into an unfair competition with our product. I think it would be well to have this mutton marked Australian mutton. That would help the local breeders.

Then we should have a campaign, I think, at the proper time to popularize the eating of mutton and lamb. This flesh is very much more popular in Great Britain than it is here. We should see that our mutton is put on the market in good condition. I think that that along with the publicity campaign, would have excellent results. Four years ago I would not have believed that it was possible to do many things that have been done during the war, and I think we might well apply many of the lessons learned during the war to agriculture.

If we are going to build up a first-class livestock industry, and one that will be permanent, we must be assured of having a first-class market. There is no use in trying to induce a farmer to farm uphill or against the tide. If he does not make money out of a certain line of business, he will naturally get out of it like any other business man. I believe that our Government might spend much more money than is spent at present in trying to better the livestock conditions in Canada; and in securing better marketing facilities, and a better control of the markets in many cases.

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I do not know of any way in which money could be better expended than along the lines I have suggested. We want to prevent any tendency to squeeze the producer. We know that squeezing has occurred on a few occasions. Anything that the Government can do to improve our markets, our transportation facilities and cold storage, and to place the livestock industry on a proper basis will, I feel sure, have the support of the people. We should make a careful study of what other countries are doing. Let us study carefully the British market. Let us have authentic figures showing what is necessary in the British market. It might be necessary to have an office there with officials to see that the products go on the market in the best condition. This is what the Danes did and did with great success as I have pointed out.

MARKET FOR LIVE STOCK IN 1919

HOUSE OF COMMONS,
COMMITTEE ROOM 318,
OTTAWA, THURSDAY, May 8, 1919.

Mr. H. S. ARKELL: Mr. Chairman and gentlemen, I consider it a special honour to be invited to speak to the Committee on Agriculture and Colonization, and a special privilege to address you upon this subject. It is one that seems of particular importance at the present time, and worthy of the attention and best consideration of such a committee as this. I believe that through the careful attention which you can give to it, and by the support that you can furnish to any programme that may be developed in connection with it, very great progress should be made. Without wasting time upon preliminaries, as the time is short, I should like as briefly and concisely as I can to indicate what in my judgment are the prospects for the development of an export trade in livestock. This, as is generally understood, is the reconstruction period for agriculture, as well as for other lines of industry, and in a very special sense the future development of agriculture depends upon the methods that are followed at the present moment and upon the steps that are taken to insure our present market connection and a permanent outlet for our products. Prior to the war, in the year 1913, we exported only \$50,000,000 worth of animal products. In 1917, that export had risen to one hundred and seventy odd million dollars worth, and in 1918 the total exports of animal products had reached what we think is a very worthy mark, three hundred and three odd million dollars worth. That means that during the period of about five years we had increased our exports of animal products by about six hundred per cent. That is as regards values, not perhaps as regards quantity. It must be remembered that the value of material has very greatly increased during that period. But during the period of the war, we so increased our production in Canada of the various items, bacon, beef, eggs and so on, and reduced our consumption to such an extent that we were able to export a product netting a revenue to Canada of over \$300,000,000. The point that remains with us who have to do with the continuance of the trade and the development of it in the future is this: That the outlet for our products may or may not be so certain, may or may not be so unquestioned as it has been during the past five years. Therefore, if Canadian farmers are to continue their increase of production and are to be justified in developing their farms and their live stock to the maximum possible, we must definitely determine what is the situation as regards our export outlet. Will it absorb during the next year, or two years, or five years, all we can produce? Is it possible to build upon the development that has taken place during the past five years; or are we now going to recede to the position in 1913, when the exports of animal products furnished a very small proportion indeed of our export revenue? And this may be combined with the thought that possibly the very greatest asset that we have at the present moment in connection with the discharge of our financial obligations lies in the development that can be secured from agriculture. I think it will be generally admitted—and the chairman, who is interested in grain production particularly is free to concede as I understand it—that one of the very important parts of the development of agriculture is the extension of our live stock industry and the development of our live stock trade. That being the case, what is our immediate position?

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It is a position of which the farmer should be advised, a position of which the country should know, respecting our opportunity to continue that trade, respecting the ability of the export market to absorb all we can produce at profitable prices, and respecting the question whether or not the export market and export prices will justify a confidence in our farmers to go on with the work, continuing from the point where they are at present, and to increase this production commensurate with the resources of the country. That seems to all of us who are engaged on the problem to be one of vital importance at the present moment, and that I think, amongst other things, induced the minister to send the Live Stock Commissioner to Europe to ascertain exactly what was the outlet and what were the prospects as regards the development of this business. I just returned three or four weeks ago, and I am speaking from the information gained during a two months' trip abroad. For convenience sake and to be concise, I am going to indicate very briefly the situation respecting the several points of trade in regard to which we should make development in the future. They attach themselves, or centre themselves, round the development of an egg and poultry trade, of a bacon trade, of a beef trade and of a trade in horses. We may also mention the development of a trade in wool and sheep. I shall have a word to say about that, although perhaps the returns from that at the present moment, owing to the small production in Canada, will not be so important as the other features to which I have alluded. Briefly, then, referring to the egg and poultry trade, here is the situation: We have exported during the period of the war a very material quantity of eggs and poultry and that export is continuing. It has become clear to our tradesmen and our producers that there was a profitable outlet during the war at least for the products of eggs and poultry. Now what is the situation abroad as regards our market for our products in the future? This is the position as I understand it: Prior to the war the United Kingdom imported forty per cent of its consumption in eggs and thirty per cent of its consumption in poultry, more than half of which came from the country of Russia. That is significant. Russia, Roumania, Galicia and the Balkan countries, all of which contributed to the supply of eggs and poultry to the United Kingdom prior to the war, are now swept bare of the product. France and Belgium are contributing at the present moment a very small proportion. It is expected that the imports from the countries first named, Russia and the Balkan countries, will be very small indeed for a considerable number of years, owing to the uncertain political conditions and owing to the fact that these countries are at the present moment swept bare of poultry. It is estimated that there are one hundred and eighty odd million fewer fowl on the continent of Europe at the present time than there were prior to the war. That fact has provided for the export of fresh eggs during the spring months at profitable prices, as against our usual custom of putting them into storage, an unheard of practice, so far as our industry has been concerned during past years. It is the consensus of opinion amongst poultry men overseas, and amongst those who are studying the trade here, that for a considerable period we shall be able to develop this industry and secure a financial return to Canada that will compare favourably with the return from the other lines of live stock. I believe from my interpretation of the situation abroad that we shall find for a number of years a very profitable outlet, and one that will justify increased production, and we will have a market for all the eggs and poultry that we can produce here. We will be able to export any surplus we may have.

Passing from that question to the production of bacon: This is an industry in regard to which one may speak with a very great deal of confidence. I doubt if there is any special live stock industry that at the present moment stands on more secure footing than this one. The prospects for the continuance of our export trade on profitable lines are good, and I will try to give you the reason for that briefly. Prior to the war Denmark had something over two million hogs. She has now reduced

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her hog population to something less than 700,000. In 1916 her exports to the United Kingdom were over two million hundredweight. Her exports in 1918 had been reduced to twenty-one thousand hundredweight. The same situation is true of Holland, and while prior to the war Danish bacon and to some extent Dutch bacon dominated the British market, it has now become an insignificant factor. The hog population of those countries has been reduced very materially, and whatever surplus exists is being sent forward to Germany, Austria, and to enemy countries, rather than to the United Kingdom. It may be suggested that in Europe hog production will very speedily be increased to normal conditions. It must be remembered, however, that feed and the supply of concentrates is a determining factor in the production of hogs, and feed is short on the continent of Europe, particularly concentrates, due to very many reasons, and amongst others to the fact that seed has not been available, and the harvest will be very short this coming autumn in very many European countries. It is scarcely likely that hog production will reach a normal condition for some time at least. As regards the supply of the United Kingdom, the hog population of the United Kingdom has also been reduced perhaps more materially than any other class of live stock. Irish killings which, before the war, represented 16,000 weekly, have been reduced to about a quarter of that amount. Considering the whole situation one comes to the conclusion that in respect of bacon, special Wiltshire bacon for which the United Kingdom finds a special market, there is practically no supply available from the continent of Europe and that it is much smaller than usual within the United Kingdom itself. It may be suggested that Canada should find an export for her product to the continent of Europe but I think it will be agreed that our export possibilities should be developed with the United Kingdom which requires special Wiltshire sides as compared with the fat product which is used in the European countries. There is another significant feature in connection with our bacon trade; during the period of the war the imports from the North American continent grew to very large proportions. It will be understood that our export became a very significant factor; it will be understood further that the export from the United States represented about ten times that of Canada, a trade which was practically nil prior to 1914. We have to bear in mind first that the Canadian product is especially adapted, specially desirable from the standpoint of the United Kingdom trade.

This Wiltshire side, brine-cured, has been marketed under a special process that has been developed in Canada for a considerable period. I am glad to say that that process and that trade and the quality of the product has been maintained during the past few years, under very difficult circumstances. On the other hand the American product has consisted to a considerable extent of thick, fat sides, grown in the corn belt and cured with the dry salt cure which makes a hard fat and a hard lean. Further for preserving purposes, a very large proportion of salt has been required. You have then with these two qualities of bacon exported from the North American continent; one the dry salt fat bacon from the United States, the other the special quality brine-cured Wiltshire sides from Canada. The consumers in the United Kingdom have been obliged to buy and eat these two classes of bacon without being able to select the kind they prefer, you will thus readily understand the reputation that has been developed by the salt American bacon as against the reputation that has been developed for the Canadian Wiltshire product. Canadian bacon has never met such a demand and been held in such high repute as at the present time and it may be understood that the export demand for Canadian bacon is one that will absorb all our supply for a considerable period of years. Perhaps that will require further argument if you are sceptical, on that point, but I give it to you for what it is worth and as being concurred in by the United Kingdom trade. I have spoken to many men in the United Kingdom who are engaged in that trade and I have been told that many of them desire to develop an export connection with Canada.

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I will now take up cattle. There are some difficult features in connection with the cattle trade; the first is that we are in competition with the Argentine and Australia, countries in which the production cost is considerably lower than in Canada and it gives one food for thought as to our ability to export dead beef on a basis that will justify increased production. I do not want to be misunderstood as regards the judgment that one will form but I want to make it clear that there is a problem and a question there that must be answered. While we were selling beef at 24, 25 and 26 cents a pound, beef was being purchased in the Argentine, since the Armistice was arranged, at 5 and 3 pence per pound, about one-half the price that was being paid for Canadian and American beef, and that price is based not only upon the accumulated stocks that may exist there at the present moment, but is based upon the production costs in the Argentine and in Australia so that we have to contemplate a situation in which we shall have to compete with these two countries. I am sanguine that there is an opportunity to develop a dead meat trade, perhaps a specialized beef trade with the United Kingdom but I am just as certain that it may take some little time for us to secure fair returns from that trade and it may require a considerable amount of ingenuity and aggressiveness on the part of the Canadian interests to secure a fair revenue if we are to develop it according to the opportunity that it presents. I believe that with a change in the labour and family conditions in the Mother Country, owing to the fact that higher wages are being paid to labour we may be able to send a lighter quality of beef provided it is properly finished at prices that will be profitable to Canada, it is to be expected the Argentine and Australia will continue to send the very heavy carcasses from which are obtained the heavy British cuts that have been the fashion for so many years. You know that our trade in Canada and in America has changed considerably so that we are now taking a lighter quality of beef from which lighter cuts are obtained and I believe that the same situation is likely to develop in the Mother Country. If therefore we give them the beef that is fitted for this special trade and pay particular attention to the finishing of the product we shall retain that trade in competition with the other countries named. That situation emphasizes however in my judgment the absolute importance of developing a live stock trade. I would like to go into that perhaps in more detail but it would take too long to do so. At the present time there is a demand in all European countries for a considerable quantity of cattle; in Belgium, in France, in Roumania, in Poland, in Italy. All of these countries will take cattle from Canada and I believe that that trade may be developed satisfactorily and profitably this year. They want breeding and store cattle for production purposes rather than for feeding purposes. The financial situation in these countries is such that the Government absolutely refuse to purchase anything other than is actually required for the barest necessities of life. They say that their people must live on cereals and fats that will sustain life and that they will purchase only that which enables them to get back to normal production conditions again. They are buying horses to cultivate the land, cows and dairy heifers to enable them to get back to the ordinary production of beef and milk. Turning now to the United Kingdom we are in a position to emphasize the need for Canada making the very best of the opportunity to ask for the removal of the British cattle embargo. You will observe that a question was answered in the House the other day to the effect that the President of the Board of Agriculture did not propose bringing in legislation to provide for the removal of the embargo upon Canadian cattle. That is the answer that one would have expected and yet I know from having met a large number of men interested in the trade in Scotland and England that there is the strongest support, politically and economically, among the farmers and labour industry there for the removal of the embargo. We also have the good-will, at least, of the President of the Board of Agriculture in England to continue our efforts in that direction and to secure whatever support we can to our request. As a matter of fact Ireland is not expected to provide the number of store cattle that has been the case.

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in the past. She is feeding more herself, which practice is affecting seriously the output of store cattle. The Scotch feeders want cattle and they say that if they cannot get them from Ireland they should get them from Canada. The labour people also say that they want Canadian cattle. They need hides because leather is dear in England. They say that they want the offal from fresh killed beef to provide the poorer classes with the quality of meat that they are able to purchase. They say they want the business developing from this. They say that they want all the profits of this industry centred within the Empire rather than that it should go through foreign channels. I am satisfied that, whether it is possible or not to secure a removal of the embargo, we can secure a support for it that is promising and worthy of all the efforts we can bring to bear on the subject.

I want to point out in conclusion, as regards the cattle situation, that this year, and perhaps next year, if I am not mistaken, it will be on the basis of our export of live cattle that increased production will be justified. I believe that the demand in Europe, in the United States, and possibly in the United Kingdom, is such that it will absorb all our surplus, and that it will justify the continuance of production on the lines that we have carried on during the period of the war.

Passing now to horses, the horse situation has been somewhat of a disappointment to Canadian farmers during the past five years. We had expected to sell a large number of horses for army purposes, but such has not been the case, at least not to the extent that the Canadian farmers expected and desired. What then is our opportunity to secure an export business at the present time? Two lines are opened up to us. First, a permanent trade in heavy horses with the Mother Country. I have never seen heavy horses in such poor condition, or in such few numbers in London, as I saw this year, due to the lack of feed to the demand for war purposes, and other causes. I talked with transport men, men who were using from 1,000 to 6,000 horses in their business and they said: We will be glad to purchase from Canada, we want horses from five to seven years, well mannered, weighing from 1,600 pounds up to a ton, clean legged, with good action, good middles and good feet, the best horses that you can produce. It is not worth while sending anything else. They say that they will pay from 150 to 170 guineas each. I talked with a man who had concluded a contract for twenty horses picked up under difficulties in Scotland, and he had paid for each of them 170 guineas. I have talked with the auctioneers in London who are selling army horses, and they advised me that they were prepared to take from 50 to 80 every two weeks and sell them to advantage, so far as our Canadian trade is concerned. I talked with people in Glasgow and I have come to the conclusion that if we can provide a horse of proper type and in reasonable numbers, we will secure a trade there that will permanently net a satisfactory revenue to this country.

With regard to the trade for our light horses, it is a very satisfactory thing to know that the situation in Europe is such as to demand a class of horse of which we have a considerable surplus in this country at the present time. I refer to horses weighing from 1,000 to 1,300 pounds. My information is that during the war period Germany actually commandeered a very considerable number of horses of Roumania, Serbia and the Balkan countries; so that these countries now are without the horse power, or the oxen power, if you like to put it that way, to cultivate their land. As I understand it, there is a deliberate move on foot as one of the first and most important factors to enable them to get back to normal production again, to secure a supply of horse that will enable them to resume and carry on business. The same is true of Italy, of France, and of Belgium. They will take the classes of horses of which in Western Canada apparently we have a very large surplus, and I believe they can be sold at profitable prices. I am told that in the Balkan countries at the present time horses are selling at from 4,000 to 5,000 marks each. Perhaps I should refer briefly to the fact that one of the difficulties is the matter of securing space. We have some

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information as regards that, and it is not very encouraging, but I am hopeful that by some move on the part of the Government we will be able to secure some concessions from the transportation companies, the ocean shipping companies, as regards space if this trade in horses and cattle can be developed.

My time is about up, and I desire to leave a few minutes for questions. I would just like to say this in conclusion: If one views the whole situation from an economic point of view, as regards the opportunities in Europe and the United Kingdom, I am satisfied that there is an outlet for all that Canada can produce in the way of eggs, poultry, bacon and beef, whether as dead meat or as live cattle, and that we can secure a profitable trade for light horses, temporarily in European countries. That trade may last this year and next year, but not longer, I think. There is room for a permanent trade in heavy horses in the United Kingdom; possibly also, if we can secure the removal of the embargo we may develop a trade in store sheep. I talked with a dealer in store sheep in Scotland who said that if 2,000 store sheep were at the docks, he would be first there to purchase them. I am satisfied that that trade can be continued on profitable lines. What then should be our attitude here? I think it can be summed up in one or two words. If our future, financial and economic, is to be assured, if we are to build up our industry, build up our commerce in a way commensurate with the resources of the country, it will largely be by the development of the agricultural industry, and as I said, by the development of our livestock trade. It is to be hoped that in some way or other the farmers of Canada may realize the obligations of this problem. Let me say this—not that I had intended to say it—to indicate the purpose behind this movement, I had an opportunity, through the courtesy of General Currie to go over the war area where the Canadians fought in 1917 and 1918. One comes back from that visit with something in his mind that was not there before, a determination to suggest to the people of Canada that they should do something towards the making of Canada that would exceed anything that had been undertaken before. If I may put it this way: The task of our soldiers was to save Canada, the task of our people now, as I understand it, is to make Canada for civilization. We believe in the destiny of this country; we believe in its future, and in the contribution that it can make to civilization. If then we are to make this country prosperous it will be on the basis of the development of the agricultural community. I believe that our farmers should organize themselves, as the Canadian Army did for its special task, with the idea of developing a trade that will make the country prosperous and enable us to take our place nationally and commercially among the nations of the world and on a basis worthy of the service and sacrifice that has been given during the past four years of the war. That is the stimulus which we should have behind us and before us in connection with the development of this movement, and I believe that message should go to the people of Canada, and I do not know in what other way it can be taken to better advantage than by the members of the House of Commons.

Mr. BOWMAN: Do you think it would be wise in the interests of Canada to encourage a policy for the selling of livestock to European countries for production purposes?

Mr. ARKELL: I think that is a very pertinent question. I will answer it in two ways. I do not think it will be possible to avoid the obligation of meeting, in some degree at least, the requirements of the devastated countries. That is one phase of the question that we cannot but consider, and I think it is in recognition of that fact that the Peace Conference has given its sanction, as it were, to the provision of credit facilities, in order to bring back those countries to normal conditions of production. On the other hand, from a strictly economic point of view, I would very greatly prefer to see our trade developed along the lines of the utilization and consumption of stocker, feeder, and butcher cattle rather than breeding cattle. There can be no question about that, and that is one of the reasons why I do absolutely

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insist on the value of the export business to the United Kingdom which will take that class of cattle. As regards the temporary situation on the European market, this, however, has also to be borne in mind: That a good market, a good outlet, increases production, and if we can combine with the export business a suggestion and recommendation to our farmers to adopt the policy of the conservation of the best breeding cattle, and the breeding of them to good bulls, I think we will safeguard our interests for the future.

Committee adjourned.

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TRANSPORTATION AND REFRIGERATION.

COMMITTEE ROOM 318, HOUSE OF COMMONS,
OTTAWA, Thursday, May 15, 1919.

The Committee on Agriculture and Colonization met at 10 a.m., Mr. Henders the Chairman, presiding.

The CHAIRMAN: We have with us this morning Mr. J. A. Ruddick, and also the Deputy Minister of Agriculture. Without taking up the time of the committee, I will introduce Mr. Ruddick, who is to address us on "Canada's transportation, refrigeration and cold storage requirements, in connection with the possible and necessary development of live stock."

Mr. J. A. RUDDICK: Mr. Chairman and gentlemen, I think perhaps I should explain to the committee that I received rather short notice of this meeting, as it was only about 24 hours ago that I received the official intimation of the title of the address, although I had known for some days that I was to speak on the general question of cold storage. I have plenty of material here, but I am afraid that the time at my disposal will not permit me to deal with the matter so comprehensively as I would have liked. I presume that the topic which has been assigned to me refers to the provisions that have been made, and that should be made, for the proper handling of meats and dairy products, so far as the live stock industry is concerned. I may begin by making a hasty survey of the requirements. We require that there should be for the handling of dairy produce and meats ample storage facilities in the localities where these articles are produced. I need not dwell very long on that point because I think that on the whole the matter has been pretty well taken care of at that end. All the abattoirs provide their own facilities for the handling and freezing of meats as the animals are slaughtered, and the largest cheese factories and creameries are also fairly well equipped in this respect. We have not very much to complain of along that line. While I would not say that there is ample accommodation as regards cold storage, throughout the country, there is a pretty general provision of cold storage facilities in different parts of the country where these articles are produced.

In the next place, we require a good refrigerator car service, a sufficient number of cars to meet all demands, and cars of the right type to carry the products in proper condition. I will have something to say of the refrigerator cars later on.

Then we want, especially for the export meat trade, good terminal warehouses, where the refrigerator cars may discharge their freight alongside the ocean terminals. We are not so well equipped in that respect, but provision is being made, as most of you are aware, for an up-to-date terminal warehouse at Montreal which, I think, will meet the situation very well indeed. Then we require refrigerator space on the steamers.

Briefly, these are the requirements in the way of refrigerator transport and storage for the development of the fresh meat and dairy produce trade on which the live stock industry depends. Now let us see where we are in regard to these different requirements. At the present time, there are some 190 cold storage warehouses in Canada. It is a little hard to classify these warehouses. We are just now making a general survey of the whole country, trying to get a list of places that are equipped

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with mechanical refrigeration, or with ice and salt refrigeration, from one end of the country to the other. We have covered Ontario, Quebec and the Maritime provinces pretty well, but we are not quite through with the Western portion of the country. But taking everything except the smaller private places used by the lake fishermen, and in connection with retail shops, and that sort of thing, we have about 190 cold storage warehouses providing 26,958,411 cubic feet of space. In addition to these, there are a number of small private mechanical plants in connection with jobbing establishments and fishing establishments, running from 2,000 cubic feet to as high as 20,000 cubic feet. There are quite a large number of these smaller establishments. In the Maritime provinces there are 26, in Ontario and Quebec 12, and these do not include the refrigerators used by the Lake Erie Fishing Association, of which there are quite a number. Altogether, we have about 758,000 cubic feet of that kind of space, making a total of 27,717,211 cubic feet available for the storage of meat, fish and dairy products. I have a complete list of these warehouses and if any one cares to have the details I shall be glad to furnish them.

In regard to the refrigerator car system, there has been a considerable improvement in recent years in the cars supplied by the railway companies, and a large addition in the number of brine tank cars necessary for the shipment of meats. The figures at present are: Canadian Pacific railway 504 ordinary refrigerator cars and 1,931 brine tank cars, making a total of 2,335. In addition they have 100 cars equipped for use on express trains. The Grand Trunk railway has 965 ordinary cars and 200 brine tank cars, a total of 1,165. The Grand Trunk Pacific has 39 ordinary cars and 195 brine tank cars, a total of 234. The Canadian National railways have 625 refrigerator cars. The number of brine cars are not specified. This gives a total of 4,459 refrigerator cars. In 1911 the Canadian Pacific and the Grand Trunk had only 2,273 cars of all types, whereas they have now 3,600. As you can see, there has been a considerable increase in that respect.

In regard to the terminal warehouses, as I have stated, we are not very well equipped to meet the requirements of the export meat trade. The warehouses in Montreal, Quebec and other places serve the purpose to some extent. They met the requirements of the dairy produce trade fairly well, except in the matter of economical handling. We have sufficient space in Montreal to handle all the cheese and butter that goes overseas, unless there happens to be some extraordinary condition in regard to the shipping, and it is handled under fairly satisfactory conditions except that these warehouses are so located that the cartage and handling are very expensive. The erection of a large cold storage warehouse is now under way by the Harbour Commissioners at Montreal. It will be situated on the docks, and it will have at least one steamer berth where goods can be loaded direct. I have the plan of the harbour here and as you will see the warehouse is located right opposite the C.P.R. freight terminals at Place Viger. It will be very central because it is located in the heart of the present produce district. It will also have good trackage facilities for all goods entering Montreal. Produce or meats can be unloaded directly from the cars into the warehouse. Let me give you an idea of what this will mean as to the cartage on cheese alone. At present all cheese must be carted from the railway terminals to warehouses and from thence to the steamers. One cartage at least will be eliminated when all the cheese is handled through this new warehouse. That will mean a saving of over \$80,000 on the basis of the charges in 1918. No one knows where the cost of cartage is going to end; it is going up every day. There is so much uncertainty that the master carters will not make a contract at any price, and you simply have to accept the rate they give from time to time. This warehouse will have a total capacity of about 2,000,000 cubic feet. I understand that they are not intending to refrigerate the whole of it at present. It will probably cost in the neighbourhood of \$1,500,000.

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Then there is ocean refrigeration. I am afraid we are not going to be in a very good position in regard to refrigerated steamship accommodation this year. I have been making inquiries into that during the last two or three days. I was in Montreal this week and got from the Steamship Companies a list of the refrigerated ships that will be in the St. Lawrence trade this season. Before the war there were forty-five steamers with refrigerated space sailing from Canadian ports to the United Kingdom and four to South Africa with a total refrigerated capacity of 1,072,476 cubic feet. There were also eighteen steamers equipped with 800,000 cubic feet of cooled air space suitable for cheese, bacon and apples. For the current season the indications are that there will be only twenty steamers as against forty-five and one to South Africa as against four, having a total refrigerated capacity of 375,212 cubic feet of space,—less than one-half of what was available before the war,—and ten steamers with cooled air compartments, with a total of 159,800 cubic feet. That to my mind is the most serious aspect of the tonnage situation just now and I do not know how it is to be met. So many refrigerated steamers were sunk by submarines during the war that there is a great shortage of that class of carriers at present and I am rather under the impression that some of these refrigerated boats are being used just now for the purpose of getting out the large accumulations of meats and dairy produce in Australia and New Zealand. On the 15th of February there were over 300,000,000 pounds of frozen mutton in New Zealand awaiting shipment, about a year's usual freight. They also had nearly a million boxes of cheese and a considerable quantity of butter in New Zealand alone. I understand that yesterday notice was received in Montreal that for the month of June all the refrigerated space was practically required for the carriage of meats and that there was to be no free refrigerated space. I think that is a matter to which this Committee might give some thought—that is in regard to the refrigerated space during the coming summer, because it is going to be a considerable handicap to our dairy produce trade if we cannot have sufficient refrigerated space during the hot weather. There may not be much butter for export but there will be the usual quantity of cheese and it is necessary that that shall be carried in ships with a temperature under 60 degrees.

Mr. Chairman, I should like to refer briefly to the services which are carried out by the Department of Agriculture in connection with these different schemes of cold storage. For some years under the Cold Storage Act subsidies equal to 30 per cent of the approved cost of the warehouse have been paid, installments covering a period of four years. Altogether some thirty-four warehouses, with a total refrigerated space of 4,928,304 cubic feet, have been given subsidies under this Act, the total cost of these warehouses being \$2,408,354.85 and the subsidies actually paid amounting to \$690,640. There are some instalments, amounting to \$14,024, which have been withheld for fulfilment of contracts and there is some \$17,000 due but not yet paid, making of total of \$722,506.41.

There is also a plan of paying bonuses of \$100 to creameries that erect suitable cold storage in connection with the creamery plant. This is paid only once to any creamery.

For many years the Department of Agriculture has made arrangements with the railway companies to put on an iced-car service for the carriage of butter and also for the carriage of cheese. The arrangement for the butter cars is that they are run over certain routes at stated times on stated days to pick up small lots of butter at every station, the Department guaranteeing two-thirds of the earnings of a minimum carload from the starting point to destination, plus \$6 per car for icing. The shipper pays ordinary less than carload rates on his butter. When the earnings amount to more than the guarantee there is no charge and it works out that on a great many of the cars there is nothing paid at all. With regard to the iced cheese car service the arrangement is that the Department will pay an icing charge of \$6 per car for

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shipments of cheese in car lots, the shipper ordering the car wherever he wants it and the Department accepts bills from the railways covering a limited number of cars per week during a certain period, that is during the hot weather. These services have been in operation for a long time and this year we will have cars on different routes leading to Montreal, Toronto and other centres. I do not know that I had better take up your time any longer on these points because I understand the Committee is to adjourn at 11 o'clock and we have to get through.

There is one other matter I want to refer to in connection with refrigeration on ocean steamships. Since 1900 the department has maintained a cargo inspection service, that is, we have a number of men at Montreal watching ships being loaded with perishable products, especially with the kind of products which are carried in refrigerated space. I have a typical report of one steamer in this service. There is a record of the thermograph, which is put in a box locked up and placed with the cargo. One of these instruments is placed in the different parts of the ship where perishable products are carried. The report has columns showing the part of the ship in which the butter is placed, the names of the shippers, quantities, the conditions of the packages, the temperature of the butter when put in and all that sort of thing. A similar report is made with regard to cheese, eggs, bacon, and apples when they are being shipped. When the ship arrives at a United Kingdom port another inspector is on the job and he makes a report of the condition of the goods coming out of the ship. This inspector takes the charts of the thermographs and sends them back to Ottawa. From the chart blue prints are made and we send copies to any person who is interested in the shipments, to the steamship companies and one copy is posted in the Board of Trade at Montreal. There is the line (exhibiting chart) showing the temperature all the way across the ocean—that record was with butter and the temperature ran from 20 degrees at the start down to 14 degrees by the time it reached the other side. We have records covering practically every shipment that has been made for the last 20 years. To illustrate I might mention that a few weeks ago I had a request from a firm in Vancouver who wanted to know the temperature at which a certain shipment of apples had been carried to New Zealand in 1916. I was able to turn up the records and give him a blue print of the chart showing the temperature all the way from Vancouver to New Zealand, because we have been putting these thermographs in the ships carrying fruit in refrigerated space from Vancouver to New Zealand and Australia.

I had perhaps better have started with the statement that the refrigerator car inspectors at Montreal and Toronto make reports of every car that comes in; they watch around the terminals and look into the ice bunkers to see what ice there is in each and if there is no ice in the bunker then the department is not liable for any deficit which may be on that car. We have the reports of the inspectors as a check against the railway companies' accounts when they come in. The conditions of the car, whether the drain pipes are in working order, and whether there is any water on the floor, are reported, and it has a good effect in toning up the service. We have a fairly complete record of a shipment of butter for export from the time it leaves the creamery until it is landed on the quay in the old country.

Before the Session closes, I hope there will be an opportunity of saying something about the dairy situation, in which I am really more interested than in cold storage.

Mr. REID, (Mackenzie): Would the Government retain any control of the prices which may be charged for supplies in cold storage plants that are bonused or subsidized?

Mr. RUDDICK: No, but the rates charged for storage are not legal unless they are approved by Order in Council. The chairman has suggested that something might be said with regard to the effect of cold storage on the cost to the consumer. That, of course, is a very big and difficult subject. Generally speaking, my idea is that the result of putting goods of seasonal production in cold storage is to equalize prices. It does increase the price during the period of production, and thus increases production,

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but keeps down the price during the period of non-production. I can remember the egg business before there was any cold storage. They were often sold at ten cents a dozen in the flush of production. Farmers will not produce eggs at that price. If it were not for the better market price which cold storage affords, the production would decrease, and we would pay more in winter than we do now. That would happen in all lines of produce which is of seasonal production. Without the market which the cold storage warehouse affords, the price would be so low as to discourage production, and it is the total quantity produced that is going to regulate the market more than anything else. We have very high prices for butter at the present time, and there is only one cure for that and that is more butter, and the only way to get it is to encourage farmers to produce it. On the continent of Europe, among the countries that exported butter before the war, there is a shortage that will amount to 500,000,000 pounds per year, and most of these countries are trying to buy butter. Butter has been shipped from Montreal to Denmark, and from Winnipeg to Sweden within the last three or four weeks. No butter is being shipped to the United Kingdom, because there the price is relatively lower and is controlled. The World's market is in continental Europe. This demand makes the market.

Mr. DENNIS: What price are the creameries getting for their butter now?

Mr. RUDDICK: I do not know exactly. The price changes every day. The latest quotation I saw was somewhere about 54 cents.

Mr. DENNIS: Do you expect this price is going to be maintained all through the summer?

Mr. RUDDICK: I cannot say. If I could tell you that I would not be here talking to you. I would be speculating in butter. I do not think anyone can tell you what is going to happen, but we know there is a great scarcity. That scarcity will be relieved to some extent during the coming summer. Denmark, under normal conditions, exported 200,000,000 pounds in a year, but is now buying butter. That is because they are not producing as much. The number of cows has decreased, and those that remain are not milking so well because they cannot get concentrates to feed them. Another reason is that people are not eating margarine in Denmark, and they have to eat butter.

Mr. REID (Mackenzie): Why not?

Mr. RUDDICK: They cannot get the raw material to make it.

The CHAIRMAN: It is currently reported that a great deal of cold storage is taken hold of by parties who want to corner the market. They go on the market when eggs are at their highest point of production, gather up all they can possibly get hold of, paying a good price for them then. When the time comes that no eggs are coming forward, they have control of the market and are able to ask any price they like. Is anything being done by the Government to make provision that these people shall not be allowed to do that?

Mr. RUDDICK: I do not think there is. I do not see how it is possible. I think there is a great deal of misconception and wrong thinking over this whole question. A good deal was said about the price of butter a few weeks ago and about cold storage. The question of cold storage should be kept entirely separate from this. There is constant confusion of mind in regard to this matter. The newspapers refer to cold storage companies when they are only talking of the trading in butter. In one of the recent reports there was said to be a little under 2,000,000 pounds of butter in store. That would be less than two weeks consumption in Canada, but that does not represent the stock of butter in Canada. There are at any time millions of pounds in the hands of traders, grocers and consumers, which has not been in cold storage. I do not suppose that 15 per cent of all the butter we produce goes into cold storage. The great bulk of the butter consumed in this country passes from the producer to the

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consumer through the retailer's hands. We make about 87,000,000 pounds of creamery butter, but we make far more dairy butter, and yet this is not controlled in any way by any operation of cold storage warehouse. I do not see how the storage of a few million pounds of butter during the period of excess production controls the market. It does not. Every pound of that butter is for sale at any time. Nobody is holding it back. Some have suggested that this butter should be forced out. Well, if you force it out, it would deteriorate and spoil. People do not need it, and we must carry a surplus for the period when consumption exceeds production.

Mr. DENNIS: What about fixing a maximum price for butter?

Mr. RUDDICK: We have to be guided by the world's market, or else there is no export trade. We can fix the local price, but if the local price were lower than the export price, how would you get your butter? If I were a butter merchant I would export my butter if the export price were high.

Mr. REID (Mackenzie): There was a time when butter was selling at 75 cents a pound, and good dairy butter was being traded in Saskatchewan at the rate of 40 cents a pound.

Mr. RUDDICK: There was never any justification for that price of 75 cents. It was fool headlines in the newspapers that put the price up to that figure. Everybody got excited and would go and grab the first butter they could see. The market is extremely sensitive at the present time, with a small quantity in reserve, and everybody wondering what is going to happen. Foolish scare headlines in the papers, and more or less talk and agitation by a very well-intentioned but misguided people, influence the price.

Mr. GLASS: My attention was drawn to this question some time ago, and I think I had some correspondence in reference to the practice of cold storage holding butter, even in the producing season, to a point where it deteriorates so much in value that it is not fit for table use. This butter is sold through the retailer to the consumer on the reputation of the brand which it bears. It is not fair to the producer of that butter that it should be held and put on the market in such a condition that it is not fit for use, and the reputation of the producer would be condemned by that proceeding. Is there any way to overcome that?

Mr. RUDDICK: There is no difficulty whatever about making butter which can be put in storage and kept a year without any deterioration whatever. With proper pasteurization you can make butter which, if it is good two weeks after it is made, will be just as good six months after. That is a very important point in connection with the storage of butter. Some butter does deteriorate. I had a box of butter which I received last fall, made in Alberta during the summer and kept in cold storage. It was put in the shed in my place in the country last fall, and was warmed up several times. We finished the last of it about a month ago, and I couldn't detect the slightest deterioration. That butter was properly made and pasteurized. This is forcing the creameries to adopt up-to-date methods.

Mr. THOMPSON (Qu'Appelle): Good butter will not deteriorate but inferior butter may?

Mr. RUDDICK: Yes. This is rather an unusual and exceptional time in regard to the butter market. Things are all at sixes and sevens. There is great variation in the price paid for butter in the country and in the towns and villages, but that matter should regulate itself under normal conditions, because it would be a very simple matter to ship the butter to the places where the high prices are charged. These differences which have occurred are purely due to local influences. The price which butter reached in Ottawa was never justified by market conditions.

Mr. BEST: Why should the Government not be able to do something to regulate the price so that the consumer could get his butter at a fair price? Butter was selling

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in Shelburne at twenty cents a pound when we had to pay 65 cents for it in other places in the country. I think this condition prevails nearly all the time.

Mr. RUDDICK: It is rather extraordinary if there was a discrepancy like that for a large quantity of butter, because if it were shipped from one centre to the other there would be good money in it. The retail price in England is 56 cents, and that price usually governs our price, but that, being the fixed price, is not the world's price at all. The world's price is fixed in continental Europe, and they are paying a good deal more than in England. England is getting 20,000 tons a year from Argentina at 34 cents per pound f.o.b. They have also bought the New Zealand output up to August, 1920, at a price which works out at about 38 cents.

The CHAIRMAN: You spoke of iced butter cars and car service. Could you give us an idea of the areas in which you were operating the iced butter cars?

Mr. RUDDICK: It was inaugurated first for the export trade, and the routes all centred at Montreal. During the years 1903 and 1904, when our butter exports were at the maximum, Montreal was the great market. When we began consuming more butter, owing to increased population, the exports fell off. Toronto became of more importance and the service was extended to that city. We had two services in Nova Scotia, one for butter and one for cheese. Nothing has been done out West, the situation is rather different there as regards the shipping of butter to market, because you do not require the pick up service to the same extent. Butter is accumulated in carloads and shipped to different points, and they do not require the special service as they do where small quantities of butter are shipped at different stations.

An hon. MEMBER: What are the future prospects that induce the wholesale cheese dealer to pay high prices in the country? What is the condition that induces people to pay extreme prices?

Mr. RUDDICK: There is not any likelihood of the fixed price being changed in England, because the Government have all the New Zealand cheese coming in, which they paid for at a certain price. There are two things operating at the present time. The control of cheese in Canada at a fixed price is removed, and the control in regard to importation in the United Kingdom is removed. Any importer in the Old Country can buy cheese anywhere, but has to sell it at a fixed price. Big firms over there who have not had enough cheese, have had to tell their customers that they could not supply it. Now that there is a chance of buying it they are not going to be placed in such a position. They must have it to keep up their reputations as purveyors who handle everything. The exporters in this country have been practically out of business for the last two years, but things are coming back to normal, and they are all jockeying for position. They think if they get a connection with the factories now they may be able to keep them throughout the season. We fully expected that this would happen. This is what goes on in the trade. It seems to me that the most serious aspect of the dairy market outlook is the lack of shipping. You cannot get space to-day.

An hon. MEMBER: What is the reason for banning the oleomargarine market? Is it to protect the butter market?

Mr. RUDDICK: I did not ban it. I do not know what Parliament had in mind when they passed the Act.

Mr. BOYCE: What is it made of?

Mr. RUDDICK: A great variety of oils and fats. You know what butter is made of, but when you come to oleomargarine you do not know what it is composed of. There are a great many different grades. The tendency at the present time is to use a larger proportion of what is known as vegetable oils, i.e., oils from nuts and seeds, and there is a considerable percentage of the margarine put on the market, not only

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on this continent but in England, which is made entirely from vegetable oils and butter. One of the chief objections to margarine is the unfair way in which the thing is put forward. In that connection I will show you an advertisement taken from one of the big London papers. I have heard complaints that the price of margarine is higher in Canada than in the old country. The reason is that there is just now a price-cutting war on over there. Here is an advertisement, stating that the margarine is made from "delicious milk, direct from the farm," Craig-Miller Diamond Brand, "Craig-Miller Creamery Company." They are masquerading under the description of good butter.

Mr. BOWMAN: That is not done in Canada.

Mr. RUDDICK: No. They are not as well posted here as the people in the old country. I do not say it has interfered with the price of butter, nor will it so long as we have a surplus for export. If we eat margarine we leave that much more butter to export. The increased quantity we will export in the near future will not affect the world's market, but it may some day. There is a large number of people in Canada who are just on the border of the dairy business. They are undecided as to whether they will engage in dairying or not. They are indifferent. The least thing will decide them one way or the other and this thing comes along. They hear it said it is opposed to dairying, and so they conclude they will not keep any cows. That is particularly true in the West. I am sure the introduction of oleomargarine will discourage the development of the dairying industry, and the introduction of margarine has not increased the total available supply of fats. If anything, it has decreased it. Then there is the difference in food value between margarine and butter. People tell you that oleomargarine has all the food values of butter. It has not. There is a fundamental difference, namely that butter contains an element which is absolutely necessary for the growth of young people and also for the optimum well-being of adults. That principle which is found in butter fat, and is not found in vegetable fats, is found in some other foods, so that we are not deprived of it altogether if we do not eat butter, but it is a very important consideration for the health of our young people, and even of adults. Those are the two considerations which seem to me worth while considering. It is said that oleomargarine did not interfere with dairy production in Denmark and other countries. The cases are not parallel. Denmark had fully developed her dairying before margarine was introduced. So had England. So had Holland. The dairying industry in Canada is not anything like fully developed. It is only beginning, and it is important that the dairying industry of this country should be developed. I think we should give consideration to these matters. There is no oleomargarine used in New Zealand, nor is there any used in Australia except for cooking purposes.

Mr. BOWMAN: Do you think it is possible to develop the dairying industry with oleomargarine as a competitor?

Mr. RUDDICK: I think it will stand in the way of development because it is felt to be a handicap.

Committee adjourned.

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GOVERNMENT TERMINAL ELEVATORS IN ONTARIO.

COMMITTEE ROOM No. 318,

HOUSE OF COMMONS,

OTTAWA, Wednesday, June 4, 1919.

The Select Standing Committee on Agriculture and Colonization met at 11 o'clock a.m., the Chairman, Mr. R. C. Henders, presiding.

The CHAIRMAN: The committee having disposed of its routine business is now prepared to take up the subject for consideration this morning "The necessity for Government Terminal Elevators in Ontario." I am very pleased that we have Mr. Clark, Seed Commissioner of the Department of Agriculture here to address us upon the subject and in this connection, I wish to express my appreciation of the fact that we have found that the officials of that department in connection with our work have extended their co-operation so freely and so heartily to this committee. The Department of Agriculture in all its branches has given us very great satisfaction in the way they have responded to any request we have made to them this year. I have great pleasure in introducing Mr. Clark who will speak to us upon the subject I mentioned in my opening remarks. I would like further to refer to the fact that Mr. Clark was able to secure the attendance of Mr. Hay, a grain dealer from Ontario, who has had a great deal of experience in handling grain from Ontario, and who will be able to show to the committee some of the practical advantages that may arise out of having a terminal elevator located at some central place in Ontario. We will be glad to call on Mr. Hay when Mr. Clark has finished his address. I have a request to make, you will I am sure, see the advisability of it, it is that Mr. Clarke be allowed to proceed with his address and if any question suggests itself to any member of the committee, that he will make a note of it and Mr. Clark will be glad to answer it afterwards. In that way the record will be much more intelligible and the story of what has been done, and what is proposed, will be told in more succinct form.

Mr. GEORGE H. CLARK (Seed Commissioner, Department of Agriculture): Mr. Chairman and gentlemen,—I have been requested to make a statement and be examined respecting the needs of this service for central and western Ontario.

I have been very closely associated with the agricultural activities in the west of Canada during the last six or seven years, especially in relation to problems of seed and feed supply which could not have been handled nearly so successfully without the services of these interior terminal elevators located at Calgary, Moosejaw, and Saskatoon. During the last three years the Seed Purchasing Commission, which is in the nature of a division of the Seed Branch, has merchandized more than twelve million dollars' worth of seed and feed grain, largely through these interior terminal elevators. This work has given me some opportunity to study their value as a service to agriculture.

First, I would like to differentiate between what I consider to be the function of the interior terminal elevators as compared with that of the country elevators and the other large terminal elevators that are used principally for the storage of grain in transit. The principle of government ownership and government operation of elevators does not differ materially from the principle involved in the government ownership and operation of railways. The system of the service differs somewhat. Canadian Government elevators have been constructed and are in operation at Vancouver,

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Calgary, Saskatoon, Moosejaw, Transcona, Port Arthur, Port Colborne, Montreal and Quebec. Of these the interior terminal elevators at Calgary, Moosejaw, and Saskatoon are smaller in capacity and are equipped for giving a service differing somewhat from the service commonly provided in the larger elevators on the lake front and at ocean ports. The interior terminal elevators at the three points I have just named are well able to do what is commonly known as hospital work. That is necessary if a carload of grain arrives tough, damp, or wet, they are liable by a process of mechanical drying to put it in first-class condition for commerce. These elevators are fitted with efficient cleaning machinery for seed grain, and the one at Calgary is supplied with machines for cleaning timothy seed. They are equal to anything used in any seed cleaning plant in North America. Another matter which is of very great importance to the livestock industry is that they are fitted with large high power simplex grinders, so that it is possible now, and has been at any time during recent years, for a livestock feeder or livestock organization to buy feed grain or screenings of any kind which are stored in these elevators.

1. FOR ELEVATION, not otherwise specified, receiving, elevating, cleaning, spouting, insurance against fire, and storage for the first fifteen days,—one-half of one cent ($\frac{1}{2}$ c.) per bushel.
2. STORAGE, not otherwise specified, including insurance against fire for each succeeding day or part thereof, after the first fifteen (15),—one-thirtieth of one cent ($\frac{1}{30}$ c.) per bushel per day, or one-half of one cent ($\frac{1}{2}$ c.) per bushel for thirty days.
3. ON GRAIN carrying a return of other grain of commercial value, for first separation, computed on gross weight of car, an additional charge of one-half of one cent ($\frac{1}{2}$ c.) per bushel. For each subsequent separation, computed on balance for separation, a further charge of one-half of one cent ($\frac{1}{2}$ c.) per bushel. Special rates will be given for cleaning and sacking seed grain.
4. ON MIXED GRAINS handled as mixtures; receiving, elevating, spouting, insurance against fire and storage for the first fifteen days,—one-half of one cent ($\frac{1}{2}$ c.) per bushel.
5. ON MIXED GRAINS handled as mixtures; storage, including insurance against fire, for each succeeding day or part thereof, after the first fifteen days,—one-thirtieth of one cent ($\frac{1}{30}$ c.) per bushel per day, or one-half of one cent ($\frac{1}{2}$ c.) per bushel for thirty days.
6. ON WHEAT carrying a return of screenings, an additional cleaning charge of one-half of one cent ($\frac{1}{2}$ c.) per bushel.
7. ON TOUGH GRAIN, drying,—one and one-half cents ($1\frac{1}{2}$ c.) per bushel.
8. ON DAMP OR WET GRAIN, drying,—two and one-half cents ($2\frac{1}{2}$ c.) per bushel.
9. ON SCREENINGS: elevating, spouting, insurance against fire and storage for the first fifteen (15) days,—two cents (2c.) per hundred (100) pounds.
10. ON SCREENINGS, storage, including insurance against fire for each succeeding day or part thereof, after the first fifteen days,—one-tenth of one cent ($\frac{1}{10}$ c.) per hundred (100) pounds.
11. ON BULKHEADS, for their removal and other additional expense in handling and unloading car,—two dollars (\$2), for each bulkhead.
12. FOR PREPARING cars for flax shipment when paper is required,—one dollar (\$1) for each car.

This schedule was issued before the simplex grinders were established and I am not able to give you the charge for the grinding of grain. In the interior terminal elevators no one in connection with the elevator is allowed to be financially interested in any grain handled in that elevator. Any person therefore can have a reasonable assurance in sending his grain to an interior elevator owned and operated in this way, that his grain will not be mixed with some person else's grain, so that he may have a lower standard of grain delivered to him ultimately than the standard of the grain that he put in the elevator. That point is looked upon as being one of very great importance to the farmers and others who are using the interior terminal elevators. I might add that the interior terminal elevators are used mainly by farmers and small grain dealers who do not themselves own and operate elevators.

Although it may be said that except in times of very unusual trade conditions merchandising is not a proper function of a government, the establishment of these elevators and the service they have provided to agriculture and to commerce have shown that it is a proper function of the government to regulate trade, to provide facilities for the assembling, conditioning, grading as to quality, and also, through the Canadian

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National Railways, to transport farm produce for whoever may own it, all on the basis of service at cost, including interest on the capital invested in warehouses and equipment.

Produce that is prepared and graded for commerce by a staff who are operating under the direction of competent government officers rather than under the direction of persons who may stand to gain by depreciating the quality of any grade of grain or other commodity, commands the confidence of the public and therefore adds to the selling value of the produce. This has been observed in the handling of grain, particularly of seed grain through the Canadian Government elevators in the west of Canada. I believe the same principle and system would be practicable and equally effective as applied to most staple farm produce, including potatoes, apples and dairy products.

It is highly advisable, if not really necessary, to provide facilities so that the producers, either individually or collectively, may, if they believe they are not getting fair treatment from the middleman, continue to own their produce until it is conditioned and classified ready for sale, either in the domestic or the export market. With these facilities available to them the producers, either directly or through their co-operative organizations, soon become expert in determining whether it is to their advantage to sell to the local merchants or consign their produce to the central warehouse, or elevator, and sell the warehouse receipt therefore in the "call" market on the exchange.

CANADIAN GOVERNMENT ELEVATORS.

The Canadian Government interior terminal elevators in the west of Canada have handled a comparatively small proportion of the grain and seed produced in the areas they serve, but they have proven to be an effective regulator of trade conditions, and have been a reasonably profitable investment for the Government.

As soon as these elevators were built and in operation, grades for each of wheat, oats and barley, suitable for seed, were established, and seed inspectors were placed at each elevator. Any carload of grain arriving at any of these elevators between the time of harvest and the next seeding, if found sufficiently clean and otherwise suitable for seed, is given an intake seed certificate attached to the official grain inspection certificate, and the car is binned together with others of the same grade of seed. The person who owns the grain, whether farmer or merchant, has the advantage of whatever extra price he may be able to get because of the seed certificate. Ex-elevator seed certificates will, however, not be issued unless the seed grain for which the intake seed certificates are issued is recleaned to conform with the standards defined by Order in Council under the Seed Control Act. During the past four years this service at the Canadian Government interior terminal elevators has been provided free of charge both to the Seed Purchasing Commission, and to private seed grain merchants.

In these Canadian Government elevators our seed inspectors may secure the adjustment of a cleaning machine so that it will do work to meet their requirements, and then leave it for hours to proceed with other work, and be reasonably certain that it will not be altered in their absence, because the elevator superintendent and his staff would not obtain any financial gain from changing the machine so that the wastage in recleaning would be reduced. We have had occasion to place experienced seed inspectors at a few well equipped private elevators, with the result that I consider it not altogether reasonable to expect any seed inspector to assume responsibility for maintaining a high standard of quality in the cleaning of seed in machines that are operated under the direction of the man who owns the grain. The Seed Purchasing Commission alone has merchandised more than ten million dollars' worth of seed grain through these interior terminal elevators during the last three years, and we have no serious complaints about the quality of the seed supplied from them.

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Northern-grown seeds of all kinds of crops are very much in favour in the states to the south. The Seed Purchasing Commission during the last few years, acting in co-operation with the Seed Stocks Committee of the United States, supplied large quantities of our Marquis seed wheat and Alberta white oats for planting in the northern states. This market for northern-grown seed is well worth further developing. Merchandising seed supplies through these interior terminal elevators is a very simple matter and highly satisfactory both to the seller and buyer, inasmuch as the seeds are prepared, graded and weighed out by non-interested officers of the Government. When delivery consists of bill of lading, official weight certificate, official inspection certificate, and sight draft for payment, the only "come back" is for more of the same goods.

TIMOTHY SEED AT CALGARY ELEVATOR.

Now I want (this morning) to say something of what we have been doing (at Calgary) respecting the production of timothy seed in Alberta, and in endeavouring gradually to build up a substantial new industry in Western Canada. Before the war Canada was importing from the United States about two-thirds of our requirements of timothy seed, amounting to about 250,000 bushels per year. The Chicago market is the largest in the world for timothy seed. I understand from the statistics that Iowa alone produces more than 1,000,000 to 2,000,000 bushels of timothy seed in the average year. We have learned from our own observation over a period of years that the province of Alberta could grow a much better quality of seed than they could grow in the states to the south. At the commencement of the war it was difficult to know as a result of import and export embargoes, we would be able to import the timothy seed we might require. So we started to encourage the farmers of Alberta to increase their acreage in order to produce a larger part of our supplies. Alberta had previously imported her timothy seed from the middle western states, where it is grown on land having a selling value ranging from seventy-five to one hundred and fifty dollars per acre.

From the crop of 1915 Alberta had sufficient timothy seed for her own use, and nine carloads to spare. The growers received from four to six cents a pound for seed that required not more than seven per cent wastage in cleaning. That seed was ultimately sold to the farmers of Ontario at from 16 to 20 cents per pound in the spring of 1916. The growers then asked for the service of the Canadian Government elevator at Calgary where the seed is received in sacks, several farmers' lots being in the same car. The seed is emptied from the sacks, and the sacks returned to the owner. The seed is then weighed, cleaned, graded and reweighed, and a warehouse receipt is sent to the owner showing the net weight and grade of his recleaned seed in store in the elevator. For this service the farmers are charged ten cents per hundred pounds. The farmers turn in their warehouse receipts to the selling agent of their co-operative organizations, who sold, from the 1916 crop, forty-three carloads of timothy seed at a price ranging from fifteen to twenty-five cents per hundred pounds, on track at Calgary, more than the price of the same grade of seed on track at Chicago, which is the largest timothy seed market of the world.

That was due in large part to the superior quality of the seed, (the additional cost of the freight was neutralized by the duty). I may add here that while the freight on flax seed or on flour in sacks from Calgary to Montreal or Toronto was 44 cents per hundredweight, the railways maintained a class rate on timothy seed of \$1.26 per hundredweight. I felt that was a little bit hard on the timothy seed growers but the argument was advanced that they could carry it inasmuch as the 17½ per cent duty protected them.

Mr. ARMSTRONG (Lambton): May I ask if that was all rail?

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Mr. CLARK: All rail through to Montreal or Toronto.

Mr. ARMSTRONG: Could it not be carried as well by rail and water?

Mr. CLARK: Yes, it would come in sacks and would be just about the same as the freighting of flour in sacks.

Present advices are that Alberta may this year have a surplus of 75 carloads of timothy seed, and I anticipate in the near future we will be producing for export a half million bushels of the best quality timothy seed to be found in the world. I mention this development in Alberta to illustrate that with proper facilities made available for the assembling, preparing for market, and officially grading produce as to quality, a basis has been laid for merchandising and avenues opened up for development in many lines that will beget confidence and courage among the farmers, and without causing undue hardship to the middleman. It is rather a benefit to middlemen because it helps to make them more efficient.

SERVICE TO LIVESTOCK FEEDERS.

The livestock feeders of Eastern Canada are dependent to a large extent on feed manufacturers, and have no little difficulty in getting concentrated feeding stuffs of a quality to meet their requirements, and at prices that are as reasonable as they should be. The interior terminal elevators in the west of Canada are equipped with large high-power Simplex grinders, and livestock feeders, either directly or through their co-operative associations, are able to buy warehouse receipts for various kinds of feed grains and screenings, have them re-cleaned if they so desire, and then blended, ground and sacked as they may direct, and without any occasion for suspecting that they may not get precisely what they pay for in point of both feed grain and service. If the livestock feeders of Ontario were in a position to secure a similar service from a centrally located terminal elevator in their own province, it would materially reduce their cost of production of milk and meat.

AGRICULTURE IN ONTARIO.

Let us consider briefly some of the conditions of agriculture in central and western Ontario, and then endeavour to come to some conclusion as to whether one of these interior terminal elevators might be of service in the improvement of those conditions.

It is common knowledge to all that during the last twenty years there has been a pronounced movement of the people from the farms of Ontario to the cities. That movement has never been more pronounced than during the past five years, and, until the recent industrial disturbance at least, the inclination of the people to leave the farms and take employment in cities continued. There are throughout central and western Ontario thousands of farms that may be purchased at actually less than the present cost of constructing the buildings and other improvements on them. From a great deal of data available, some of which may not be considered as quite accurate, I have reason to believe that prior to the commencement of the war, capital invested in agriculture in the province of Ontario was yielding less than three per cent in addition to a very modest living for a farmer and his family, all of whom might be employed in productive work on the farm. There is now more reliable evidence obtained by the Provincial Department of Agriculture through their farm surveys in a few of the best farming districts in the province of Ontario, which show that even in these war times with bonanza prices, the Ontario farmers on the average are not able to get much beyond five per cent on their capital invested. There are perhaps very few people living in cities and not understanding agriculture, who will believe this

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condition to be possible. Nevertheless, those who know agriculture must admit that the results of those farm surveys fairly accurately represent the actual economic condition of agriculture.

There can be nothing of greater importance to Canada in her present condition of unrest than to make agriculture in point of economics more attractive to the people who are contemplating leaving the farms, and also to those who have left the farm and are employed in cities. Ways and means ought to be found to raise the interest to be derived from capital invested in farming to seven per cent, so that young men, well experienced in agriculture but with limited capital, may not turn away from a farm with a heavy mortgage.

The prices received by farmers from practically all staple farm products are based in the main on the "call" market for export demand. Although there may be a surplus of not more than ten per cent for export, the prices for all the farmer has to sell are determined by the export demand, and against the full sweep of international competition. It has been somewhat unfortunate that the cost of production to the farmer has materially increased, particularly during recent years.

The extension of a well organized system of agriculture credits, which might provide capital for agriculture either for long or short term loans at one per cent less than the current rates of interest, would help very materially toward the desired end.

Another one per cent gain to farmers in central and western Ontario on capital invested in agriculture might quite easily be obtained by improving market facilities, and I would recommend for the earnest consideration of this committee the advisability of the adoption of the system and principle that has worked out so successfully in the interior terminal elevators in the west of Canada, and extend it also to handle other staple farm products, including potatoes, apples and dairy produce.

In years of surplus grain crop in the province of Ontario the harbour elevator at Montreal is used a great deal by Western Ontario shippers. When forwarded for storage at Montreal, western Ontario grain is no longer available for three important markets, i.e., the domestic market, the American market, and the market on the Mediterranean ports. There are few ships plying between Canadian Atlantic ports and the Mediterranean. The American and Mediterranean markets are important for peas, beans, barley and seed supplies.

QUANTITY OF GRAIN PRODUCED.

The province of Ontario now produces 5.2 per cent of the wheat, 15.1 per cent of the barley, and 20.2 per cent of the oats raised in Canada. The total grain crop of Ontario for 1918 was approximately 225,000,000 bushels, made up as follows—I am quoting from the *Monthly Bulletin of Agricultural Statistics* for January, 1919, published by the Department of Trade and Commerce:—

Ontario—	Bushels.	Ontario—	Bushels.
Wheat	15,241,000	Beans	1,387,800
Oats	131,752,600	Buckwheat	4,598,000
Barley	24,247,700	Mixed grains	27,462,400
Rye	1,813,000	Flax	196,200
Peas	2,381,000	Corn for husking	13,015,200

The western provinces have facilities for a total of 115,000,000 bushels of grain at country elevators and 11,500,000 in interior terminal elevators.

The province of Ontario has facilities for only 40,000 bushels in country elevators, 1,700,000 bushels in milling elevators, a very large capacity of elevators on the lake ports which are virtually available only to western grain, and no public interior terminal available for the assembling and marketing of the Ontario crops.

The marketing of grain in the province of Ontario is conducted largely on the basis of samples submitted. The ability of a grain merchant to market to advantage

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depends in part upon his trade connections and his business and financial reputation. Very few of the producers, either individually or co-operatively, are able to market their own surplus grain and seeds to advantage, and in the absence of a firm basis for merchandising, such as are enjoyed by the farmers of the west of Canada, the Ontario farmers are in real need of a small army of middlemen who will market their surplus produce for them. In consequence the spread in price between what the farmer receives and what the local grain buyer receives commonly amounts to from five to ten cents per bushel, and what the wholesale buyer receives for export to as much as twelve cents per bushel in a steady market, which spread in price amounts to three or four times as much as it cost the farmer in the west of Canada to market his grain in relation to the export market values. Mr. Hay can give you very good reasons why in the province of Ontario under the present facilities for marketing it is really necessary for the middleman handling the produce of the farmers, to have a wider margin than the grain dealers in Western Canada.

THE CONDITIONING OF GRAIN.

Because of climatic conditions it frequently happens in Eastern Canada that crops have to be harvested in a moist condition. Moist grain will keep fairly well while the weather continues cold, but should be dried to about 14 per cent of moisture before being exposed to warm weather. The losses due to the marketing of grain in a tough condition are large in the aggregate. It would be very helpful, both to the farmers and local grain dealers in central and western Ontario, to have conveniently available to them a public elevator where they could consign their grain to be dried, cleaned, graded and stored at cost. Under present conditions the risk involved on the part of local grain merchants in buying grain that is tough, is such that they must take a wide margin of profit to cover the losses due to occasional car lots heating before they can secure a market for them. The merchandising of tough grain of any kind is a precarious business that always bristles with difficulties.

The 1918 bean crop of the province of Ontario amounted to 1,387,800 bushels valued at \$4.66 per bushel, making a total value of \$6,476,400. The beans were harvested in a moist condition. It is known that a considerable part of those beans are still in farmers' hands, and without proper facilities for drying them the losses will naturally tend to a pronounced discouragement among bean growers. I venture the prediction that the area planted to beans in the province of Ontario this year will be the smallest in the history of the province. There can be no reasonable doubt that if these beans had been assembled, dried, recleaned and graded as to quality they could have been marketed, either by the farmers' co-operatives or bean merchants. Export buyers, however, could not consider the purchase of small lots of beans scattered over the country, of varying conditions of quality, and generally known to contain upwards of 17 per cent of moisture. This unfortunate condition which applied last year to beans may apply this year to fall wheat, and next year to oats, barley or peas.

Because of the destructive effects of the pea and bean weevil throughout the warmer climates to the south, supplies of peas and beans are grown largely in areas where the winter temperatures destroy these weevils. We ought, therefore, to provide facilities that would enable our farmers to take advantage of this situation. The province of Ontario ought to be able to produce peas and beans of a quality and in a quantity equal to that of the states of Michigan and Wisconsin.

In recent years the province of Ontario produced about sufficient wheat for home consumption. There is no good reason why the acreage of wheat in Ontario may not be doubled if a reasonably profitable market for export, with proper facilities for marketing, are provided.

We used to say and sometimes still say that our Toronto market controls the world's prices for alsike clover seed. We export very largely too of red clover seed.

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With a well equipped and well manned interior terminal elevator located in central Ontario, the co-operative farmers and seed merchants, working in wholesome competition, will very soon double the clover seed output from the province, simply because export demand is strong for seed supplies that are available on the business basis of the interior terminal elevators.

I think that many questions which would naturally occur to you gentlemen could be answered to better advantage by a man who has been thirty years or more in the grain business, dealing with the farmers direct, and I would suggest the advisability of having a statement from Mr. Hay.

Mr. BEST: Do I understand you to say that there was double or three times the spread between what the producer got and the selling price of grain?

Mr. CLARK: Yes, between what the producer receives in Eastern Canada and the export selling price as compared with those prices in Western Canada. There are some reasons for that.

Mr. BEST: Will you tell us why it is that the farmers of Ontario do not generally make as big a noise about a matter of this kind as the western farmers, the price they are getting and the price which they sell at?

Mr. CLARK: The farmers of Ontario have not all their eggs in one basket.

The CHAIRMAN: I think the committee would like to hear from Mr. Hay.

Mr. HAY: I know that you gentlemen desire to hear from the commercial side of this elevator proposition. I am reminded of my early experience when I came here from my home town, Listowel, to ask the late James Sutherland, who was then Minister of Public Works, to erect a public building in Listowel. I came down here loaded with the commercial proposition, and pointed out that the amount of rental they were paying for the post office, customs house and inland revenue building was excessive. I recall that it was on a Sunday morning, and Mr. Sutherland was just shaving. He said go on and tell your story, and I began: "You are expending so much money for rental for various public offices, and if you erected a building you would save all this." He said, "Do not tell me anything about it as a business proposition, but if there is anything to be said about it politically, tell me that part of it." I know that that kind of thing does not obtain now, because we have had a change.

In Ontario we have been engaged in the merchandising of grain and would probably be classed as a middleman. We are buying grain from the farmers and have been for many years. We buy as cheaply as we can and sell as dear as we can. That is a fair commercial proposition. You will require to determine, if a recommendation is coming from your committee, if there is a probability of this venture being commercially of advantage to the farming and consuming community in Ontario. Mr. Clark has told you that in the province of Ontario we have not what could be termed a public storage elevator, exclusive of course of the terminal elevators at Goderich and Port McNichol, and those were used, as you will know, from the geographical location of them, wholly for grain in transit. There is a public warehouse man, I believe, in Toronto now, Mr. Campbell, but his plant is attached, of course, to his flouring mill, and while there can be no reflection upon that organization as a public storage corporation, yet we all know that a Government certificate for grain storage or for other commodities is at least beyond question.

The farmers growing grain in Ontario have cultivated the different grains from time to time. In and about my own home town, Listowel, we were very largely, a number of years ago, known as a flax-growing section. We drifted then largely to peas, then to barley, and now very largely to oats. But the trade channels change and a campaign is now being put on in this connection and a great deal of advance with the farmers is being made. They are being encouraged

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and are taking hold of the question of again going into the planting of flax. And I think that although our flax mills have been out of commission for a number of years one will be erected there this year.

The question of an elevator from a commercial view point is one of course that one must examine into carefully with a view to ascertaining what the results would be. We do know that many years ago the then Minister of Public Works built a very large terminal elevator, practically on his own initiative, at Port Colborne, and a great deal of adverse comment was hurled at that minister at the time throughout this whole province, but I understand that the elevator has been a commercial asset as far as producing revenue to the Government is concerned. It was held, of course, that the ships from the head of the lakes to tide water would relieve themselves of a part of their load. However that is true for the present, but whether or not that will always be true we cannot say, because vessels of heavier draught may later be enabled to go through to tide water without relieving themselves of part of their cargo. But around that elevator has sprung up another industry, and it is altogether likely that a similar result would be produced by the erection of these terminal elevators in the province of Ontario. I do not live in Toronto, but it seems to me that is the logical location for the elevator because it is on the direct run to the seaboard.

The establishment of that elevator would naturally be detrimental, so far as my business is concerned, but I think that it would be beneficial to the farmer. The farm movement is growing, there is a greater desire that one, two or three farmers should club together and load a carload of grain, but the difficulty they have been labouring under in the province of Ontario is, there has been no public outlet for that grain. They must sell it to me or to some other local dealer because there is no public storage they can go to where it can be graded and weighed and where they can sell at their leisure.

The question of the treatment of grain is a very serious one in many seasons. While we have a lot of sound grain sometimes there is a very great deal of damp grain and unless we have facilities for treating that grain properly, it results in a very serious loss being inflicted upon us. I might relate a personal experience: We had during the last two months two carloads of buckwheat shipped to us from near Goderich. We were shipping that buckwheat to a little station in New York state, and the grain was held, just outside of Hamilton, where it was graded and rejected. Well, with only a few days to deliver this grain, we had no chance to take it to the elevators in Buffalo where it could have been brought into condition for sale. Had there been a terminal elevator in Toronto then we could within two or three days have taken that grain into the elevator, fanned it and shipped it out on our contract. Without this elevator the result was that only yesterday we succeeded in selling that buckwheat with a loss of \$1,600 on the two cars. The farmers who sold us that buckwheat got the full market value of it at the time but our memory for losses is very long and when we buy buckwheat another year we will buy it at a price that will at least give us some protection. The market condition was such that it entailed a very heavy loss, as under the circumstances we could not make a second tender or deliver within the time which we had to deliver it in Albany.

Then we will meet with the condition where we may take an order for 50,000 or 100,000 bushels of grain for export from a man very quickly should he have it of a certain grade, but we find very often we can load up say 25 carloads of oats, barley or whatever grain we have to sell and if we can let it run to the seaboard it is all right, but very frequently we have adverse circumstances to contend with. You all know that much of our grain for the export trade goes to New York and it is held at the frontier, at Niagara Falls. There is one other condition; the elevators have only a limited space for Canadian grain in New York, so that it often happens they will accept one, two or three cars as the case may be of number two which is the usual trading grade, but if we have as we some-

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times do, a car that will only grade rejected because it is slightly musty or damp, there is nothing else for us to do but to divert that car to some local point and find for it immediately a local customer, which means a sacrifice because we are mostly human and we all take advantage of every situation which may occur to enable us to buy as cheaply as we can. But if there were a public terminal elevator at some central point in the province of Ontario we could divert that car to that point for treatment, and would thereby be enabled to bring the loss at least to a minimum. That happens quite as readily with an advancing market as with a declining market, because as the market may be declining your buyer will not allow you to make a second tender while if it is advancing the seller will have to make delivery. I think a government public elevator in the province of Ontario would bring about such a beneficial condition of affairs for the grower that it would make him absolutely independent of the middleman or the dealer. The suggestion is often made that we do not at all times pay the market price; I submit that is not correct, notwithstanding the adverse opinion that may be expressed, but I am free to admit that all government departments are usually technically right but commercially they are very often wrong. We must recollect that with regard to the price of wheat, we are restricted to a profit of five cents a bushel which I think hardly pays us, because before we can accumulate a sufficient number of bushels our overhead charges have taken up all the profit. However, the spread of price, whether five cents or ten cents, is largely a question of location.

Sometimes at the smaller stations if a man were to get grain for half what it is worth he would not get very much profit during the year because of the small quantity which he would be able to buy. Take my own home town, Listowel, for instance, where we would in former years take from the farmer 150,000 bushels of barley in an ordinarily good season, that has dwindled down now to 25,000 or 30,000 bushels of oats and perhaps ten thousand bushels of barley. We all know the farmer has not been getting from the ground nearly what he should have been getting from it, but we are all hoping that his anticipations of an improvement are near realization. We have been led to believe that by the depletion of labour we are not able to produce so much now as we might have done, but we have found, and the farmer has realized, that by a little extra effort on the farm there can be produced more with his reduced help than was formerly produced and we are glad for that fact.

I have nothing further to suggest except that I believe a government-owned elevator operated as a government proposition will ultimately be profitable to the whole community. It will make, if it is centrally located, a central distributing point for the buying and the consuming portion of the province of Ontario. There are only two places now where grain can be brought either by water or by rail and stored, and they are not central, at Goderich and Port McNichol. With a large elevator with facilities for taking in the early fall the grain for domestic trade distribution to the interior of Ontario I cannot help but think as a commercial proposition it would finally provide a good return on the amount invested. My mind drifts entirely to the question of grain such as we are dealing in nowadays, but there are wonderful possibilities in the development around a Government elevator of various profitable propositions of one kind and another which I think would only be located there because of the storage facilities which are afforded. The different enterprises that Mr. Clark has referred to depend upon the creation of the necessary facilities. We have now no public elevator in the province of Ontario to which a man can send a car of grain and get an official weight certificate, grain inspectors certificate of grade and warehouse receipt for the delivery of the same. We cannot sell our grain to best advantage until we can get a certificate of inspection which is attached to delivery documents in the regular way.

The farmers in the province of Ontario without any fault-finding with the better conditions in the West, they are worthy of every expenditure the Government has

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made upon them, think we ought to have equal consideration and facilities to take care of our grain instead of depending on the middleman, as we now have to, because we have no facilities for taking care of it until the time we desire to sell it.

There is, I think, no fault being found by the farmer with the grain dealer in the province of Ontario. I think they are all fairly honest men dealing in a commercial way, but the providing of these facilities will, I believe, be the commencement of a movement that will gain momentum and bring about a better feeling among the farmers when the Government can say to them "There are your facilities, there is a place to which you can ship your grain and leave it there until you find it more convenient to sell it."

Mr. BEST: When you are considering the railway facilities for western and central Ontario would it be asking too much to ask your reasons for locating the elevator in Toronto? I am not saying this because I want it located in Toronto, but I thought we ought to have your opinion as to where the best place would be to suit the people of the province of Ontario generally. That is my opinion, but I thought that you, as a middleman, would have a better opinion on the matter than I would.

Mr. HAY: Mr. Chairman, we all realize that there are certain centres, there are insurance centres, banking centres, grain centres. There is a grain centre in Chicago and there is another one in Winnipeg, and I lean to the opinion that the grain centre for the province of Ontario is in Toronto. Another point that would serve as a guide in coming to a conclusion on the question is the railway facilities. There is no other commodity that may be centralized more readily than grain and I think, personally, that Listowel would be the best place were it not a little far inland, therefore I think Toronto would be the best locality.

Mr. ARMSTRONG: Might I ask if the gentleman can give us some idea as to the cost of operating government owned elevators, and whether they are on a paying basis at the present time, and where located.

Mr. CLARK: I would suggest that if you desire to get that information it would be better to get it from the Department of Trade and Commerce. They have all the statistics upon which to base the information. I understand that the new elevator at Vancouver, for the reason that there is no tonnage coming in there, is not on a paying basis. The elevators at Calgary, Moosejaw, Saskatoon and Port Arthur are on a paying basis including interest on the capital invested. The elevators at Transcona and the one at Port Colborne are, I believe, under the Department of Railways and Canals; they are transit elevators, really a special type of freight shed for grain. The elevators at Montreal and Quebec city come under the Department of Marine and Fisheries, and are under the control of the Harbour Commissioners of those ports. I do not know what they are paying, but I have reason to believe that the revenue from these elevators is sufficient to pay all the expenses and interest on the capital invested and leave a surplus to conduct the work in the harbours. I have been in these elevators occasionally during these last two or three years, and I have sometimes thought it was unfortunate that these elevators were not under the control of the Board of Grain Commissioners.

I think perhaps it would not be quite proper for me to discuss that subject here, except to say that we have found that the Board of Grain Commissioners have been unusually sympathetic when we approached them with a proposition such as we have in the province of Quebec. It takes a good many years to work up to a good basis for export of farm produce, and it is nearly six years ago that we started in the province of Quebec the production of red clover seed. The Provincial Government spent a good deal of money in the purchasing of clover seed threshers and put one in each county. If we had at a central point in Quebec facilities for assembling, cleaning, grading and making red clover seed ready for commerce, either for home consumption or export, I believe we could go ahead pretty rapidly in the development of clover seed

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production. If the elevators in Quebec city were under the control of the Grain Commissioners, even though it might not for the first year or two be profitable to put in the equipment for the handling of clover seed, they would not hesitate to take action, because looking to the future they would recognize the benefit to agriculture and that ultimately the installation would result in a paying basis for the elevator. From the viewpoint of the Harbour Commissioners, those elevators bring ships to the port, and perhaps they are not so much concerned as to whether the grain in those elevators is produced in Canada or produced elsewhere. They are excellent elevators. The superintendents at Montreal and Quebec are both competent men, but the Harbour Commissioners naturally do not concern themselves with the development of agriculture as much as we could desire.

Mr. McISAACS: To-day's discussion is important, I am sure, but it does not affect my province. I wish to bring before the committee a small matter and ask the Seed Commissioner a question. The meetings of the Agricultural Committee this session and last session, so far as I have gathered, have been taken up with discussion of the agricultural conditions in the west and in Ontario, and to-day the question is pretty well confined to the matter of elevator facilities in Ontario. That is an important question and quite a proper matter for special discussion. In the province from which I come we have no elevators. I do not know whether or not we may yet have one or more, but it will be some distance in the future at any rate. We are a progressive agricultural province. I think that fact could be borne out by any officials of the Department of Agriculture who have visited that province and participated in the proceedings of the Agricultural Association. Complaint is made of late years, and especially at the present time, that the clover and timothy seed coming to Prince Edward Island, from Ontario I presume, is nearly all extremely dirty, and the farmers are all complaining that as a result of sowing these seeds their farms have become covered with weeds. That is not a proper condition, and it is an important circumstance, and I would like to ask the Seed Commissioner what supervision is exercised by him or by the official designated for that purpose, that pure and clean seed is transmitted from one province to another for the purpose of agriculture. It is of the utmost importance, as any one will readily understand, that we should have the best and cleanest seeds, and it is the greatest possible misfortune that our farms should become filled with weeds in consequence of the quality of seed imported into our province.

Mr. CLARK: All timothy, alsike, red clover and alfalfa when sold in Canada for seeding must be graded either extra No. 1, No. 1, No. 2, or No. 3. We in Canada have the reputation in other countries of having the most efficient system of seed control of any country in the world. The grading of those seeds is based on control samples. A farmer or dealer may have a quantity of these seed. He draws his own sample. We call that a control sample. It is filed in the seed laboratory which has control of the district in which he lives. The sample is tested, graded, and a seed certificate issued based on the sample, and the sample is put on file and kept there for six months. The seed is merchandized under the test number of the original certificate. The men who are retailing the seed, never know the hour when the Seed Inspector is coming into their store. The Seed Inspector can determine whether seed that is offered for sale under grade No. 1 is of inferior quality. His first action would be to call the seller and secure from him his authority for grading the seed No. 1. The local merchant commonly produces the invoice and other information, that he obtained from the dealer from whom he obtained the seed. The Inspector may draw a sample of the seed in dispute and sends it into a laboratory together with certificate number. The seed is then put on the grading table along with the control sample. We have had a few instances where wholesale seed dealers would send into our laboratory a sample of really good seed, and get a number one certificate on it, and then proceed to use the

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certificate number to merchandise an inferior quality of seed, but we have yet to find anyone who would care to try that game twice. The fine is small, but there are few seed merchants who care to be summoned into court in the district in which they live for jumping the grade in selling grass or clover seed.

In the interior terminal elevators the system is different. We have an inspector at the elevator who takes direct responsibility for the inspection of the seed in process of sacking. That is a more reliable basis, and it is because of that more reliable basis that dealers in Eastern Canada will pay more for their timothy seed inspected out of the Calgary elevator than for seed that is certified on the sample basis.

Mr. McISAAC: Have you any remedy to suggest for the grievance I have mentioned?

Mr. CLARK: Of the total quantity of seed produced in Canada—I am speaking of grass and clover seeds, clover in particular in Eastern Canada—not more than about 50 per cent in the average year may be cleaned to grade as No. 1. Unfortunately in some districts the farmers, of their own volition, because the seed is offered at a lower price, will buy the No. 3 grade instead of No. 1.

But I venture the opinion that most of the weed growth in Prince Edward Island is a legacy from the period prior to the passing of the Seed Control Act, when the inferior seed from Ontario was largely distributed in the Maritime Provinces. Investigations carried on by our Seed Branch have established quite clearly that weed seeds remain in the soil for years retaining their vitality and germinate with subsequent cultivation of the soil. The long rotation of crops practiced in Prince Edward Island coupled with the great decline of the sheep industry until the last few years, might explain the prevalence of weeds in that province. Our inspection records of recent years show that the farmers of Prince Edward Island are quite generally purchasing the higher grades of seed.

Mr. GLASS: With regard to the policy which has been so ably suggested by Mr. Clark, the establishment of proper elevators where the seed can be taken care of under the control of the Government, ample provision has apparently been made for the West; and I am sure that the western members, knowing the immense advantage to themselves in having these facilities will appreciate the representations for the very great need of action for the province of Ontario. I come from a district in south-western Ontario where the larger portion of the beans grown in the year 1917 was produced, and where an enormous amount of the crop was unavailable for the market by reason of the very conditions which Mr. Clark says we lack, proper facilities for cleaning, grading, and drying these beans. The loss to that section of Ontario was immense, not less than \$3,000,000 for the year. I think that in view of the large amount of seed grains that are grown in the province the need for facilities along the line suggested by Mr. Clark, is very great, and I think that this committee should take immediate action to bring the matter to the attention of the Government. While I am on my feet, I may draw attention to a very important and growing seed production, that is the fibre flax seed. There was produced last year 196,000 bushels, a large proportion of which was sold to the British Government at something over eight dollars a bushel. That seed to-day is being put on the British market at \$16 a bushel, or about £10 a sack for the growers in Ireland and Great Britain. There certainly seems to be a large spread between the price which the farmer obtained here and the price that is being realized, though that might be due to conditions which could not be controlled some months ago. I hope that before this meeting closes, we will have an opportunity of hearing Mr. Gridale on this subject. We sent over a large quantity of our fibre seed, and would be glad to know how it was received in Britain, and what success it had on the British market. I presumed it was considered a very good seed when it

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was put out at the price I have mentioned. I believe we have established a reputation in that market which is going to be of great value in that part of Ontario where the flax fibre seed is produced. The flax growers of Ireland and Great Britain do not grow any seed. They do not take any seed from their crops with which to grow future crops. The seed they require has to be obtained every year from outside sources. Ontario seed has obtained an enviable reputation in that market, and it is absolutely necessary that this flax seed should be taken care of under Government direction, properly cleaned, and put on that market in a condition that would bring no blot upon the reputation which Ontario has already established. I move that a committee consisting of Mr. Grisdale, Mr. Clark, the chairman of this committee, Mr. Best, Mr. Bowman, Mr. Armstrong and Mr. Brien be appointed to draw up a resolution and bring it before the next meeting recommending that the Government take immediate action and that a proper sum be set aside in the estimates with the view of establishing a terminal elevator in Ontario.

Mr. ANDERSON: I beg to second the motion. I understood some time ago that it was the intention of the Government this session to bring down a certain amount in the estimates for the erection of an elevator at Toronto. I am satisfied that the farmers in the section from which I come fully expected that such a measure would be taken this session. If there is anything this committee can do with regard to impressing upon the Government the necessity for such action, the committee should do it. I would like to ask Mr. Clark what is being done with regard to the control of seeds sold to local merchants by the farmers themselves. The farmers sell their seeds I think to the local seed merchants, and I believe the seed merchants sell them out again. Possibly some of the seed that goes to Prince Edward Island has been from such sources and is not under the inspection by the Government.

The CHAIRMAN: Before Mr. Clark answers that question, perhaps Mr. Grisdale has something to say in reply to the question that was put to him a few moments ago.

Mr. GRISDALE: The question under discussion to-day is one of the most important connected with the agriculture of Ontario. I think Mr. Hay dealt with the commercial side of it very effectively and showed conclusively that an elevator would be of tremendous advantage to the farmers of Ontario. I think that Mr. Clark brought out some points of great value also in connection with the seed trade. The fact that the Dominion lying to the north of the United States puts us in a position to produce great varieties of seed that are superior in quality, superior indeed in every way to what they usually produce in the United States, and that gives us a standing in the markets of that country that might be developed to untold dimensions if we are in a position to take advantage of it, and the erection of such an elevator as is contemplated in Toronto should be advocated along these lines. We in Ontario are producing different crops to what might be called in a general way the grain producing part, while we have here all the livestock and more than enough to consume all the grain produced, any surplus on the individual farm can be put on the market and in my opinion could be made of such a character as to demand a great deal higher price. It is a certain fact, and an agreeable fact, that the farmers of Ontario and Quebec can find a market almost invariably for every kind of grain.

Mr. Glass has referred to the flax-seed business which was started about three years ago in western Ontario and as you are all aware the full quantity of seed was commandeered last fall by the Canadian Government for the Imperial Government. That Government needed it for the crop in Ireland last year. The price paid was \$8.35 per bushel, and, as Mr. Glass has said, it was sold for somewhere around \$16 a bushel in the old land. As I had to do with the handling of this flaxseed, unfortunately for

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me, I wish to say that we did not make a margin here. We paid \$8.35 for it, and we got \$8.35 for it plus the actual expenses. The seed all went to the old country, and that is where the margin was made. I do not think I am butting in, but for instance I have seen it said in the various trade journals, and I have heard it from the people in Ireland, that the dealer over there got one dollar per sack for just letting them go into his storehouse and giving it out again without any effort at all on his part, he did not have to look for the customers, but that was his margin and there were two or three other margins quite as great. So that if the profits were made that cut off some of the price that the producers here should have otherwise received, it was not in this country that these profits were made. That trade is susceptible of very material development and it is trade that will be very materially helped by such an elevator as is contemplated. I can say this from what I had to do with getting this seed cleaned, bagged and shipped to the old country all last winter, and we experienced a great deal of difficulty in getting uniform samples. It was almost impossible to get them, but if this elevator were put up and in operation all seed intended for export could be sent to that elevator and put in uniform condition and we would have a uniform sample to send to the Irish market. This would greatly enhance the reputation of our seed which has already a most excellent reputation over there. According to our Mr. Hutchinson, who returned last week after spending two weeks in Ireland looking into this matter our seed has the highest reputation of any on the market, including that from Belgium, Holland, Russia, Japan, and America. Our Ontario seed stands higher than the seed that is grown in any of those countries. Seed that was grown in Ontario and produced from Ontario fibre flax-seed, is known as the best in the market bringing from one to three and four shillings a sack more than any other seed on the market.

Now Mr. Hay mentioned the fact that in Listowel they are agitating for the establishment of seed flax mills there. There is no reason why the whole of western Ontario should not be growing flax to a greater or less extent. This desire has not been fulfilled during the past twenty years, largely for the reason that there was no demand for the seed. We have established a reputation in the old land for our seed and there is a still greater opportunity in the next four or five years to increase our reputation and to get a greater hold on the Irish market which will cause a demand for all of it there. It has largely been supplied from Russia heretofore, but there is no reason why we should not hold that market instead of letting it go back to Russia which supplied seed that is inferior to ours. Now taking into consideration flax seed, beans, rye clover, alfalfa and alsike, as well as coarse grains of a superior quality that can be grown here, I am satisfied from what we have heard that there is good reason for establishing a first class terminal elevator with all necessary facilities for cleaning these seeds.

Mr. ARMSTRONG: I want to say that I am heartily in sympathy with the motion. I have already had two interviews with the acting Minister of Trade and Commerce and I have had several communications in connection with the matter of establishing a Government terminal elevator in the province of Ontario. Mr. Clark has made the suggestion that this committee is not wholly confined in its operations to the province of Ontario, but he has made a valuable suggestion, to my mind, that there should be provision made in the central part of Quebec. I know they have to use enormous quantities of red clover and other seed, and he suggested that one of the elevators at least in the province of Quebec should be placed under the Grain Commissioners. I think that is a most excellent suggestion and I would like to know whether he also thinks that the elevator at St. John, New Brunswick, which I understand is not at

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all profitable at the present time, could not be used in the same way with regard to the products of those eastern provinces. I would like to hear Mr. Clark's opinion on this matter.

Mr. CLARK: The elevator at West St. John is constructed almost entirely for the care of transit grain and loading it on the ships. It is located in the southwest part of the province of New Brunswick and I am doubtful whether it could be made of real service in the work that I have been describing as being done by the interior terminal elevators. The elevator in the city of Quebec we have used very largely for seed grain. They put in some cleaning machines at our request and that elevator is capable of doing and has done very superior work. I do not know whether I have gone too far in making trouble for the Harbour Commissioners. We have got along admirably with them.

Mr. ARMSTRONG: Could not the St. John elevator be so rearranged as to take care of the grain from the eastern provinces, and probably take care of my friends from the Island?

Mr. CLARK: Yes, it might be. There would be some disadvantage on account of freight haulage to move Prince Edward Island grain to St. John. It does not take very much freight haulage to destroy the market, because the grain is handled as a rule on a narrow margin.

It has been commonly stated that the primary purpose of the constructing of these interior terminal elevators was to take care of grain for export. I would offer the opinion that the interior terminal elevators at Calgary, Moosejaw and Saskatoon have derived two-thirds of their revenue thus far in handling export grain, and not more than one-third, perhaps only a quarter, from handling grain for home consumption. The principle that would have to be adopted if this elevator is established at Toronto would be that the primary purpose of that elevator would be for the assembling, conditioning, and grading for market, of Ontario grain, two-thirds of which at least would be wanted for home consumption, and not more than one-third for export. The exports of field crop produce in the province of Ontario, looking into the future, will in my judgment be restricted to the high class barley that Ontario is able to produce, and to peas, and I think we ought to double our output in peas, because of our great areas for growing peas of high quality, and we should very largely increase our bean crop. The grass and clover seeds would come in addition to that.

I believe an elevator established at Toronto would be on a paying basis after the second year. The only really serious objection to the construction of the elevator has been that the Government has not in the past constructed elevators to take care of home trade, but has constructed them primarily for the export trade. I would like to see the principle and system that has worked out so well with the grain in the west of Canada, adopted in all parts of Canada, and not only for grain produce, but for other kinds of produce. I believe the general application of that principle and system which contemplates as a proper policy for the Government the establishment of plants for the assembling, conditioning and classifying for market of farm produce on a service on cost basis, would result in much benefit both to the producers and consumers.

Mr. SUTHERLAND: I believe that in central Ontario we have the greatest district for growing alsike clover and other clovers as well. The farmers not having the facilities for properly cleaning those seeds, the seed merchants send their men up through the country and buy up these seeds, bring them to their warehouses, have them re-cleaned and place them on the market at a very greatly enhanced price. With clover seed selling this spring at 55 cents a pound, you can realize the saving that would result from having this done at a Government terminal elevator. The other coarse grains for seed purposes, which are grown in Ontario, could be very largely

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enhanced in their value to the growers by an elevator of this kind. I simply want to emphasize the point that has been so apparent for many years, this would enable the farmers of Ontario to reap the advantages they should have by having an elevator there.

I would also like to emphasize the need of having all the elevators in Canada under one department. I do not think it is in the public interest to have two or three departments in control; and there are three departments of the Government now which have control over the elevators, but to my mind the Department of Agriculture is very closely connected with the elevator system that is being carried on in the country. It is true that for export purposes the Marine Department may have some claims on it, and the Trade and Commerce as well, but I am most emphatically in favour of having the Grain Commissioner exercise control over all the elevators, and I am also strongly in favour of a Government elevator at Toronto, which is the central point for the province of Ontario. I believe millions of dollars would be annually saved to the people of that province by having such an elevator there.

Committee adjourned.

SEED AND METHOD OF CROP PRODUCTION.

HOUSE OF COMMONS,
COMMITTEE ROOM 318.

OTTAWA, Wednesday, June 11, 1919.

The Select Standing Committee on Agriculture and Colonization met at 11.00 o'clock a.m., the Chairman, Mr. Henders, presiding.

The CHAIRMAN: Arrangements were made at the last meeting for a discussion on the subject of "How can the benefit of using good seed, and the best method in crop production, be brought home to the average farmer." And we have succeeded in securing the services of several speakers, through the assistance of the Deputy Minister of Agriculture, Doctor Gridale, to address us on this subject this morning. I understand that Dr. C. E. Saunders and Mr. John Fixter of the Experimental Farm and other speakers will address us. As Dr. Saunders has another engagement he would like to speak first so I have great pleasure in introducing him to you.

Dr. C. E. SAUNDERS, (Dominion Cerealist): Mr. Chairman and gentlemen, the question for consideration this morning is in two sections. How can the benefit of using good seed be brought home to the average farmer, and how can the best method in crop production be brought home to the average farmer. The methods of crop production are not properly part of my work, but belong to the Field Husbandry Division of the Experimental Farm, and I shall therefore speak to you on the first subject only: "How can the benefit of using good seed be brought home to the average farmer." Let me say in the first place that the average farmer or the average man in any class of society is an extremely difficult person to reach. Frequently you cannot reach him directly, and I do not think that, as a rule, in our Experimental Farm work we reach the average farmer. We can appeal to the farmer who is a little above the average or a great deal above the average far more easily than we can to the average man. The average man is reached through his neighbour far more effectively than by any other means. So that if we are trying to demonstrate the advantages of good seed it is more beneficial, in my opinion, not so much to try to appeal directly to the average farmer as to try to appeal to the man who is, at least, a little above the average. When that man becomes interested the average farmer, and the farmer who is below the average, will learn from him. So that our problem then becomes this, "How can we bring home to the superior farmer the value of using good seed?" This can be accomplished in a variety of ways: by demonstration farms, through articles in the public press, through the work of the Canadian Seed Growers' Association, and (here the matter concerns my division directly) by the distribution and sale of superior seed. Seed in order to be suitable must be of good vitality and pure and must be of a suitable variety. There is a very great deal of seed sown which is reasonably good otherwise, but which is not of the variety most suitable for the conditions where it is sown. My work, as most of you know, is chiefly concerned with the production of new varieties and with the testing of these new ones, along with the older ones, in order to determine which varieties are most suitable for all the soils and climates which occur in Canada. It is my business to tell the farmer located anywhere in the Dominion what varieties of cereals would be most likely to succeed under his conditions and, if he cannot obtain seed of the best varieties through some ordinary commercial channel, it is my business to at least give him a start in growing the sorts which I recommend. This, of course,

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is the last phase of my work which you have asked me to speak on this morning; so I shall not discuss at all the production of new varieties or the methods of testing them. Granted that we have found that certain varieties are best for certain localities, how are we to interest the best farmers in those localities in growing the new and superior sorts. In many of the older districts, of course, excellent varieties have been grown for many years. Now those sections, my work has not been so important as for the newer localities where the settlers had no satisfactory varieties on hand. In some of the older parts of Canada we have to consider not only how to introduce superior varieties (when we find them) but also to prevent the spread of rather unsuitable new sorts which have succeeded very well in other parts of Canada, under other conditions of soil and climate. Take the case of the marquis wheat for instance. There is trouble in Eastern Canada on account of the popularity which it has secured in Central Canada. People read in the papers of the wonderful success of the farmers, in Saskatchewan particularly, and they insist on having the same variety, Marquis, for a moist climate and light soil in the east where it is not likely to succeed remarkably well, and where some other variety would probably be better. In many cases when we are dealing with strictly new varieties which have not yet become famous, or where we have to do with any but the best farmers, it is difficult to arouse enough enthusiasm in regard to new sorts of grain. Other farmers, again, are too anxious to try novelties—especially those which are not recommended by any Dominion or Provincial expert. In my Division bulletins and short articles on recommended varieties are published, and we carry on a free distribution of small samples of the best sorts of cereals. Finally, we sell seed grain—usually in lots of from 1 to 5 bushels. The distribution of samples is carried out in this way: we have application forms which we send out to those who wish for a sample. Any farmer may receive that application form up to a certain limit for each province, as we wish the distribution to be as fair as possible for the whole Dominion. On this form the applicant is asked to give information as to what his soil is like, what varieties he has grown, and what his difficulties have been. Then we select for him the best variety available and send him a sample, usually five pounds in weight. Some farmers think it is perfectly ridiculous to send so small an amount and do not take much care of it. Others appreciate the fact that the quantity sent is sufficient to give them a good start, if they take proper care of it. Occasionally we meet the other class of farmer who thinks he is being dealt with in a very generous manner, when he receives, free of all charge, a few pounds of grain of altogether superior pedigree and purity. I shall never forget a letter received years ago from a farmer who had asked for a little seed of a new and very scarce variety, which he could not procure elsewhere. I wrote that I was very sorry indeed that I was only able to send him an extremely small quantity—about two ounces. He replied that he was much pleased to receive so large an amount. He appreciated its value.

Our free distribution now amounts to a little over 7,000 samples a year; it however went very much higher in the early days when not very much check was kept upon it. It was found difficult however to produce the requisite quantity of seed up to our standard, because it is the highest standard in Canada, as it should be. We found also that a great deal of waste was going on and we began therefore to adopt restrictions to prevent careless men from receiving a sample every year, whether they made good use of it or not. The adoption of wise restrictions and limitations reduced the distribution from 30,000 samples in 1910 to a point somewhat below the present figure, a year or two ago. It is now increasing again. The grain distributed has included up to the present, chiefly wheat, oats, barley and field peas; but we expect to add flax for seed, flax for fibre and field beans in the future. It has been an extremely difficult problem to avoid waste in this distribution. Of course those who oppose the work of the Experimental Farms say the waste is too great; but any such statement is incorrect and is not based on a knowledge of the facts. If I thought you had plenty of time and wished me to deal more fully with the matter I could read you letters from scores

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of farmers who attribute a great deal of their success in grain growing to the free samples we send out. My point is this, that the distribution must be judged by its results. If these results justify the total expenditure, then evidently the waste of some samples is not a serious matter. There will always be some waste in such work: the question is whether on the whole it is worth while. As far as the free distribution is concerned I claim that on the whole it is splendidly worth while. Allow me to say, however, that personally I do not favour a large free distribution. But whether a small charge be made for each sample or whether the distribution be free does not matter very much.

We also sell grain, though not on a large scale. There are good farmers who will not handle a few pounds of grain but are perfectly willing to pay a reasonable price for enough to sow an acre. We try to meet the wishes of such farmers; but in the case of new varieties where the stock of seed is very small of course we cannot often sell any seed. It is to be regretted that we do not have more grain to sell. I am giving only my personal opinion, but I am thoroughly convinced that we should sell at least ten times as much seed grain as we do now. This would not interfere with the work of the seedsmen. We do not want to interfere with them. As a rule our grain is of such a standard as to purity and pedigree that the farmer cannot obtain equally good stock elsewhere. The seed grain which we distribute is of the same standard far above what is usually offered in commerce. Until the seedsmen carry a pretty large stock of seed grain equal to ours, we certainly ought to be in a position to supply from two to five bushels to any good farmer who desires to have the very best grain obtainable. The side of our work ought to be extended very radically.

I do not think that any important changes are necessary in the free distribution. It is now run quite effectively and economically. Every farmer who receives a sample is expected to send a report on it at the end of the season. I am pleased to say that we now receive reports from nearly one-half the farmers to whom we send samples, which I think is a very good record; especially when you consider that there are many unavoidable failures, and that these the farmer usually thinks it useless to report. Of course we would rather have a report, even when a failure occurs.

It would be a decided gain, in our efforts to bring home to the farmer the value of good seed, if much more visiting of the farmers could be done. This would be expensive of course, but in my opinion it would be well worth while. At present we are not able to visit one per cent of the farms to which we send samples. The man who receives a visit from a government officer, provided the officer is not a tax-collector or an assessor, or some one looking after conscription, is usually pleased and stimulated. If the Government thinks it worth while to send an officer to visit the farm for the sake of seeing how some new variety is behaving, it helps the farmer to realize that he has something exceptionally important and of which he should take very good care. I believe that such visiting should be done on rather a large scale, in order to encourage the farmers to make the best possible use of the samples that are sent out, and to aid in the rapid propagation of new varieties in those districts to which they are being sent.

I have endeavoured to give a very brief outline of the work that is being done in my division at the point where it touches the farmer. We publish lists and descriptions of suitable varieties; we send free samples of them and on a very small scale we sell seed grain. These are the methods we use to introduce better seed and better varieties.

The CHAIRMAN: We have with us to-day Mr. John Fixter, of the Experimental Farm, who will continue the discussion of this subject this morning.

Mr. JOHN FIXTER: I am pleased this morning to have the privilege of explaining the work of the division of illustration stations. The question I am asked to speak on is: "How can the benefit of using good seed and the best methods in crop production

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be brought home to the average farmer?" Five years ago, Dr. J. H. Grisdale, now our deputy minister, thought of a plan whereby the work of the Experimental Farm producing good seed and the best cultural methods could be brought in closer touch with the farmer. In order to give you some idea of the work it might be well for me to read this article relating to the work:—

"The Department of Agriculture of the Dominion Government is carrying on illustration work in crop production and cultural methods. Farmers owning or operating land favourably situated for the carrying on of such work might co-operate with the department if selected by the department for this purpose. The farmer puts under our direction a part of his farm, having a good wide frontage on a well travelled highway, each field having the same frontage along the same highway, so that the crops and cultivation are unavoidable in evidence to the casual traveller and easily inspected by the interested visitor."

Dr. Saunders stated that it was very hard to get the poor farmer, or the very best farmer to take any interest in sowing good seed. With the illustration work, every person can see what is going on, because it is brought right home to them in their own neighbourhood. The farmer does the work and the other man thinks he is just as good a man as his neighbour, and tries to do a little better. The poorest farmer will gain information when passing the illustration field. The article continues:—

"The department, for the first year at least, furnishes the seed necessary to sow such of the fields as it is decided to put under crop that year. In subsequent years the farmer saves enough of the best of the crop grown on these fields to do the necessary seeding. This, of course, provided the grain produced is satisfactory as to purity and germinability."

Some years we have a failure, through frost, or there may be a drought. If the seed is not first-class we have to supply the farmer with fresh seed. The object is to keep the best seed supplied to the operator that it is possible to secure. This article continues:—

"All cultural and harvesting operations in connection with these fields, that is to say the ploughing, etc., of the fields, sowing, harvesting, and threshing of the grain therefrom is done by the farmer. All work indicated above is done in exactly such times as directed by this branch of the Department of Agriculture."

We have instructors going from station to station giving instructions, and encouraging the farmer to put into practice the very best methods that we find have been proved successful on the Dominion Experimental Farms. The article proceeds:—

"The farmer keeps a record of the amount of time taken to perform the different operations on each field, and threshes the grains harvested separately, so that it will be known how much is harvested in each field."

Besides that, we want to know exactly how much each bushel of grain costs, how much each ton of hay costs; we cannot weigh the hay, but we can give an estimate. We can measure or weigh the grain so that we can tell exactly how much a bushel costs on each different illustration station.

"The records just mentioned of the work and crops resulting, together with brief notes made each week, are duly entered on blank forms provided for that purpose. The work of making such notes and entering up the work done on each field does not entail more than one hour's work each month."

Most people think it is a great deal of trouble when we explain this work to them, and almost hesitate, but after the operator enters this work for say two or three months

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he finds it is no trouble at all, not only to keep track of the illustration work but all of the work carried on on his own farm.

“Each week the farmer mails to the Divisional Illustration Station a form filled out with full particulars as to the work done and general weather conditions and crop progress on the different fields. The farmer permits to be placed in front of each field a sign stating briefly the method of preparing the land for the crop growing thereon, or the treatment given the crop that year.”

The farmer cannot help but notice the work that is being carried on in those illustration stations. Signs are placed in front of each field and at the corner of the farm, so that he can tell just exactly what kind of crop is grown. In 1915 Dr. Grisdale and myself started stations in Alberta and Saskatchewan. There are to-day seventeen illustration stations in Saskatchewan, fifteen in Alberta, and fifteen in the province of Quebec. We put in the very best cultural methods that have been found on the Dominion Experimental Farm. Supposing we have a farm located in Alberta. The experiments that have been found best at Lethbridge are put in operation on the illustration stations near to that particular point. We have special methods of summer-fallowing and special methods for breaking, etc., and instructions are given to the operators and farmers when the inspector visits the different stations. Dr. Saunders was speaking about seed grain. We make the production of good seed grain one of our specialties. It is so difficult to get good seed grain that we make every effort to grow a surplus on those illustration stations. The department makes a contract with this farmer to sell the surplus seed that is grown on the illustration station. This is a very pleasing feature of our work. Some of our farmers have sold as much as 2,000 bushels of their crop for seeding to their neighbours. We do not expect the illustration station operator to sell all of the grain the first year. We expect him to keep enough to seed his own fields as well as the illustration fields. Then we expect him to hold the surplus or sell it to neighbouring farmers. At one place the farmers are so anxious to get the seed grown on the stations that they do not let the operator take it to the elevator, they have their wagons at the threshing machine to draw it away. This applies to both wheat and oats. These are our principal crops of grain on the illustration stations. We are doing other work besides this on private farms. If we get a good farmer who is interested in growing other kinds of crops, such as barley, oats or fall rye, we supply him with the seed, so that he will have those different seeds for sale. With regard to the western country, the prairie farmer wants some kind of fodder to take the place of the natural prairie hay, and to supply plant food to the soil. The average prairie farmer grows wheat or oats for two and three years in succession, then summer fallow. This takes all the fibre out of the soil and returns nothing. We are running crop rotations, and among those rotations we have growing Western rye grass and alfalfa. The Western rye grass has proven to be successful in almost any part of Alberta and Saskatchewan where we have our stations. Last season was so dry that results were not as good as the two or three years previous. Western rye grass has given as high as four tons of fodder per acre, and the farmer who grows Western rye grass for seed has had from 400 to 900 pounds per acre. From growing this Western rye grass on our illustration stations, the demand for seed has been so great that the price has risen from 9 cents to 23 cents per pound, and I do not think you could buy 100 pounds of rye grass seed in the western provinces to-day. So great has been the demand that we are urging all of our illustration operators to save the bulk of their crop for seed. By saving the seed you do not destroy the fodder. Naturally the fodder is not quite as good, because part of the feeding value had gone into the seed, but it makes fairly good feed. If any farmer can grow 400 pounds per acre, at 15 cents per pound, I think it is a pretty safe crop to go into. Now, as to the roots of rye grass, I do not know

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any other plant at the present time that will hold the soil better. In some parts of the western provinces, the soil blows a good deal. We have to grow some kind of crop that will keep it from blowing. Another crop having fairly good success is alfalfa, and our farmers have got to know more about growing it. I think you will see a good deal of it grown, and you cannot grow any better crop in the western provinces. I need not speak of its value for fodder, which is well known. With reference to how to grow alfalfa, I might give a pointer to the Ontario farmer to grow alfalfa in rows and cultivate it the same as corn if you want to be successful. Many men have made a failure by sowing it broadcast. Years ago we used to sow our corn broadcast, and now we are growing it in rows. As to the growing of alfalfa seed, we have one man at Maple Creek growing it successfully, but there are many other points where the seed will grow. Another phase of our work: in the prairie country we are growing corn and wheat alternately. Some farmers complain of having to summer-fallow too much of their land. They feel that it is a waste of time. Therefore, we have started in growing corn on a certain piece of land, then follow it up next year by growing wheat. Our experience has been that we cannot grow quite as many bushels of wheat per acre after corn as we can after summer-fallow, although we get very good crops. My opinion is that it is going to be a paying proposition to grow corn and wheat alternately. Some parts of the province will grow it much better than others, particularly in the south. The rotations that we are carrying on in Alberta and Saskatchewan, in the southern parts, with wheat we like summer fallow wheat alternately. That is in parts where we have found a lack of moisture. By that means, we can keep the land clean and be fairly sure of a crop, with this method of farming we are very soon going to run out our land if we follow out that method of cultivation; so that we are working another illustration which is a four-year rotation. That includes summer fallow, wheat seeded with Western rye grass and two crops of hay. I think by working the hay crop on the prairie farms that we are going to do a great deal of good. I hope to see a little more work carried on with the alfalfa crop. In northern Alberta and Saskatchewan we have a little different rotation. They are going in more for the three-year and five-year rotations. The three-year rotation consists of summer fallow, wheat and wheat. I do not know that that would suit most of the farmers. The average farmer there likes to have a three-year rotation, fallow, wheat and oats. One of the objects of the Division of Illustration Stations in having wheat follow wheat is the growing of pure seed. We want to have clean seeds. We found that by growing oats after wheat we had oats mixed with the wheat. The oats can be easily taken out of the wheat, but most people do not do it. Therefore, we have wheat follow wheat and oats follow oats. We can then find out the value of summer fallowing. Last year it was very marked; in almost every instance there was twice the amount of grain grown after summer fallow as there was wheat grown after wheat.

An Hon. MEMBER: What about the expense of that system?

Mr. FIXTER: The average cost of growing wheat on six stations in Saskatchewan on summer fallowed land was \$1.10 per bushel. On land that had wheat grown on it two years in succession the second crop cost \$2.84 per bushel. The five-year rotation consists of summer fallow wheat followed by oats and seeded with Western rye grass, two years in hay. These illustrations are only carried on in the parts of the province where we were fairly sure of a good rainfall.

An Hon. MEMBER: What do you mean by corn?

Mr. FIXTER: Indian corn, chiefly grown for fodder in Alberta and Saskatchewan.

An Hon. MEMBER: In what part of Canada can that be raised?

Mr. FIXTER: Almost any part. You must get the variety that is suitable to the particular districts. The variety that we find best in Alberta and Saskatchewan has

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been the Northwestern Dent. Table corn is grown north of Battleford. Corn is going to be a paying crop in the western country especially with farmers who have live stock. It will also eliminate a great deal of summer fallow.

Mr. BOYCE: How do you get the good seed to which you refer?

Mr. FIXTER: Our Dominion Experimental Farms supply the illustration stations with seed as far as possible. Outside of that we have to go to the best seed merchants we can, or to our illustration station operators. I prefer buying from our illustration operators to buying from any seed firm I know of. Any farmer has the privilege of buying the seed grown on the illustration stations at a reasonable price. We make it a part of the contract that the farmer must not charge over 15 cents a bushel more than he can obtain at the elevator. If we find that any of our operators refuse to sell grain to his neighbour and he has that grain to spare the department has the right to buy it and sell it to the neighbour at the same price.

Q. That is not my view in regard to the question that I asked, I would like to know what the system is at the present time with regard to the farmer when he grows pure seed. I pretend to know something about what I am talking about, with regard to that because I have produced pure seed many years and have sold it all over Ontario, and the system I advocated was adopted; you can go through with a hoe and keep it clean, it did not take very long, and I found it worked very well. Prof. Robertson said he would take it up and the Experimental Farm used my seed, and I also sent 24 bushels to Bordon, Scotland, I found we were able to raise ten bushels in a plot of one-tenth of an acre and in the third year you could get all the seed you wanted from a small sample. I found that is a very good way to get seed.—A. That is work for the Experimental Farm and for the Seed Branch, we cannot take up land for that work at the illustration stations. We cannot take any chances, we must grow crops there that will be a credit to the farmer and to the department.

Q. Do you not think that these illustration stations should be extended to Quebec and to the provinces in the West?—A. We have just three provinces at the present time in which there are illustration stations, I have requested that farms be located in all the different provinces of the Dominion.

Mr. GRISDALE (Deputy Minister of Agriculture): We had to make a start somewhere.

By Mr. Molloy:

Q. Which do you find the best for the western provinces, the brome grass or the rye grass?—A. For hay in the western provinces rye grass, which is so easily eradicated if you want to get rid of it. The brome grass is one of the sweetest grasses you can grow for hay or pasture if you want it for a length of time, but it is a very hard grass to eradicate. There are people who like the brome grass, but rye grass is best for seed and for fibre, holding the soil, and particularly for the seed, there is such a great demand for it. Mr. Grier at Macleod in 1918 had 900 pounds to the acre and it is worth \$23 a hundred to-day; I would not say that it is going to keep at that price, but there is bound to be a good market and good prices for the next ten years.

Q. Is Western rye as good as the brome grass?—A. It is not as good as brome. If a person is running a ranch and can leave a piece of land in brome grass it is all right. We have grown it in Ontario. The only trouble I have here is that I cannot get it to grow very well. Some time ago at the Central Experimental Farm we experimented with different grasses, there was timothy, two-acre, clover, and brome grass, a mixture of brome grass, brome grass alone. There were sixteen acres in that field, and that field was pastured that year. I think it was 21 head of cattle pastured on it. The cattle went through the timothy and the other grasses till they came to the brome grass which was kept eaten down close all through the summer, and the same

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season we got a crop of hay off the other part of the field. I have the figures at the farm giving the amount of hay cut off this field. If you are ranching and do not want to break up the land, go into brome grass.

By Mr. Maharg:

Q. What is your opinion with regard to rotations?—A. We do not like to have long rotations. We like to have short rotations.

Q. What is your experience in that regard?—A. I would work one summer fallow and two crops of grain for the north; for the south I would grow one crop of grain and one year summer fallow. We find it best to have the summer fallow because we must conserve moisture and keep the land free from weeds which is the great problem. A third rotation should include summer fallow, wheat, Western rye grass, hay. The Chairman wishes me to say something about the stations in the province of Quebec. We have 15 stations now working in the province of Quebec. Our object there is to show the farmer how to grow big crops on his own farm at the lowest possible cost. We have our farms like the Central Experimental Farm. Hundreds and sometimes thousands visit them, but there are men who think they cannot grow the same heavy grain crops on their own farm as we are growing here. We need to show those men they can, by special cultivation, by ploughing the land, at the right time by cultivating the surface properly, and by using the right kind of seed. The average farmer in this country can grow as good crops as we are growing at the Central Experimental Farm. Now you have taken notice of the figures on the photographs that have been passed around of the result of the work at Lac à la Tortue.

The soil was so poor in places that a crop had not been grown on it for years, in fact the soil was so poor in places that not even weeds grew. Last year there were splendid crops of clover, grain, roots and potatoes, due to proper methods of cultivation and sowing the right kind of seed. We have splendid success all over the province of Quebec. How are we going to lessen the cost of production? There is not a single farmer in the province of Quebec or in the province of Ontario that we cannot show how to lessen the cost of producing a grain crop or any other crop on his farm. That is a big statement to make, but we can prove it by the crops we are growing and the cost of production and the best way to do it. The first thing we do is to advise the farmer to clean up. We go through the average farm in this country and we find three or four times too many fences, there are too many stumps, and a few hours' work might put them out of business and leave a nice clean field. Then again we go to his farm to see how he is carrying on his work. We find that he has four horses or three horses with two men driving them, and very often two men working with one horse. Now we at once encourage him to put those horses together and let the second man do other work. That is how we lessen the cost. It is worth while taking the trouble, all he wants is a little encouragement. In the arranging of the cultivators we can lessen the cost. One grand feature of our work is that we create a friendly rivalry among neighbours; we organize meetings and hold them on the different illustration stations; we get the names of the farmers for miles around and send them invitations. We get the farmers on the fields, and explain to them the method of growing and the cultivating of the different crops, and they go home imbued with the spirit that we are going to grow even larger crops than those grown on the illustration station. I may say that we have lots of times found a neighbour of the illustration station growing bigger and better crops than the operator of the illustrating station, which is the object of our stations. We do not always get the best men at our illustration stations, but we sometimes get a farmer living next to the operator of the illustration station who can grow more than the man who is doing the work for us. The neighbours see these crops, and will say, "I am just as good a man as he is, I will carry out the instructions given by the instructors, and I can grow better crops that they grow on the illustration stations. That is the feeling

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that we want to get into the neighbourhood. At one station last year I felt rather blue and I mentioned to our chief that we had better give up the work, but there was one good feature: when going from the railway station to the illustration station we met, as we do almost every time, people who had been at the illustration station and had seen the work. On this occasion on the way back about three people stopped me on the road and asked me to come and see their crops, I complied with their request and by seeing their crops I thought better not to make any change. The rotations that are established in the province of Quebec are mostly four years.. We cannot say what is the best rotation for any particular farm till we investigate, but the rotation that we find suits the average farmer is the four or five year rotation. That is one year hoed crop, one year grain seeded with clover and timothy, and two years in hay. If we can get the farmers of Quebec and the farmers of good old Ontario to adopt shorter rotation I am sure the crops will be increased one quarter. I will give you one instance, some may say that we picked out the best farms in the country and that we should have picked out the poorest farms. When the Commission of Conservation did their demonstration work they let the people pick out the farm, and farmer, they picked the best farm they could find in the neighbourhood. If you will look at the report of the Conservation Commission you will find that the hay crop of the second year was increased by one-fourth, the grain was increased by about ten to eleven bushels. One farmer went into growing pure seed grain and I believe he is selling the whole of his crop now as pure seed. That has been the result not only in one place, but in several places in Ontario. I can assure you there is no part of any country that will respond as readily to illustration work as the province of Ontario. The people there realize the benefit of good crops, and those are the people that we want to get into the work. I would certainly like to see illustration stations established in every province in Canada. Besides the rotation of the crops, we are illustrating the value of tile drainage. So far we have only one farm where drainage experiments are being carried on. That is at Stanbridge east. Charles S. Moore, the owner and operator of the illustration station, has one portion of his farm laid out with a four year rotation on tile-drained land. On another portion of his farm a four-year rotation is being carried on on the same kind of land, which has not been tile-drained. They are adjoining fields, and the results are: On the land which is not tile-drained he grew 21 bushels and four pounds per acre of oats, and on the land which has been tile-drained he grew 55 bushels and 6 pounds per acre in the same year. Both fields are exactly the same kind of soil. These crops are attracting a great deal of attention from passers by. I should like to see it carried on in all the eastern provinces. The trouble is we cannot get the tiles. We should encourage manufacture of tiles in the eastern provinces. With regard to roots and corn we cannot grow them successfully on land which is not drained. The farmer who does not rotate we advise to practise after-harvest cultivation. The result from after-harvest cultivation is that we have had an increase of 10 to 15 bushels of grain per acre, and have a very much better catch of grass-seed the following year. Another one of our favourite crops is the growing of clover-seed. Another feature of our work is the growing of good seed, not only grain, but clover seed, on the illustration stations and on the neighbouring farms. In the province of Quebec, we have only been working four years, and in 1917 in the Aubrey-district there were 182 acres. Last year the operator of the illustration station at Aubrey had 213 pounds of seed per acre, the first clover-seed that was grown on his farm, in fact the first clover seed that was grown in that district. Seed sold at 40 cents per pound in 1917. In 1918, 50 cents, and in 1919, 60 cents. That is worth while. The neighbours in that district watched the Illustration Station operator, and every man that could get seed instead of pasturing did so. The lowest yield that I could find was 90 pounds per acre. The value of the

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seed grown in that one district more than paid for all the expenses of the fifteen illustration stations in Quebec. We did the same thing at Drummondville, and at Ste. Julie in Vercheres County; we grew clover-seed as far north as Nominigue, and east to Rimouski. At Rimouski they had a nice little crop, about 50 pounds to the acre. It is worth 60 cents a pound this year. Clover-seed cannot be bought in the city of Ottawa even at 60 cents a pound. I cannot see any more profitable crop for the farmer to grow than the clover crop.

I trust the above information indicates that the individual needs of the farmers are being met, at least in some districts, and I hope the work may be extended to reach all.

The CHAIRMAN: Mr. Newman, Secretary of the Canadian Seed Growers' Association will address the committee.

Mr. NEWMAN: I have been asked to speak this morning on the subject, "How can the Benefit of Using Good Seed and the Best Methods in Crop Production be Brought Home to the Average Farmer." I might at the outset itemize the various ways, which separately and together, are useful in bringing the value of good seed home to the average farmer. First, by excursions to our experimental stations; secondly, by the distribution of good seed; thirdly, by field crop competition and seed fairs; fourthly, by demonstration farms, such as those so well described by Mr. Fixter; fifthly, by comparative short trials on schoolgrounds, and sixthly, by extending the work of the Canadian Seed Growers' Association, as a means of making first class seed more easily available in quantity.

With regard to field crop competitions, those have been of great benefit. In Ontario they are well developed, but in some of the other provinces do not occupy so large a place at present. Seed fairs have been going on for a number of years. They are very useful and might I think be extended to advantage. With reference to comparative trials on schoolgrounds, these are not always practicable. I have seen a number of places however, where they have worked out to a very great advantage. They are conducted in this way: Boys going to country schools are asked to bring to the school a small package, perhaps a pound or two, of seed obtained from their fathers' grain drills at seeding time. A piece of ground is prepared at the school, and the different packages are put in side by side for comparison. In addition to these packages, some really first-class seed is sown for further comparison, and as the growing season advances, observations are made of the different plots. As Mr. Fixter pointed out the average farmer is not always willing to admit that he is not growing the very best kind of seed, but when his seed is sown alongside that of his neighbour, and is also compared with the very best seed obtainable he is often very much surprised. This sort of work seems difficult to carry into effect in many places. It is something, however, which I think could often be recommended. I shall devote the remainder of the short time allotted me to a discussion of the work of the Canadian Seed Growers Association. It was the work of this association which our friend Mr. Boyce had in mind, when inquiring of Mr. Fixter as to what methods are recommended at the present time to enable the farmer to grow seed on his own farm. I might say at this point that Mr. Boyce was one of our very best growers of registered seed for a number of years. When we were designing our certificates for the registration of seed and seeking for a suitable illustration for a certain part of the certificate we decided to include a cut of a field of beautiful oats grown by Mr. Boyce on his own farm.

The Canadian Seed Growers' Association is a voluntary organization composed of practical farmers, scattered throughout the whole of Canada who seek to produce what is called Registered Seed, either for their own use or for the trade, or both. Usually for both. In some districts where there are a number of members located fairly close to each other they organized themselves into what we call a "seed centre."

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The general policy of the association is determined and directed by a Board of Directors consisting of 20 persons among whom is to be found one representative appointed directly by each of the provinces. Our head office is in the city of Ottawa. At present at 114 Vittoria Street.

The work of the association may be said to be an extension of the work of the Experimental Farms. These institutions, as Dr. Saunders has pointed out, carry on original work, research work, along various lines. They seek to produce new and better sorts for different regions and to distribute seeds of such sorts in relatively small quantities to special farmers for further trial and propagation. At this point our association steps in and seeks to encourage the propagation of this seed under efficient control by having the farmer become a member and follow certain prescribed methods. In other words, it is in the conservation of all that is good and useful in those improved stocks, and in exercising a close control of their propagation throughout the country that our association seeks to be of public service.

The farmer wishing to produce seed which may be officially registered first applies for membership in the association. He then seeks to obtain the very best "Elite Stock Seed" he can obtain. Wherever possible we get this seed at an Experimental Station. When we started in the work we were not able to obtain very much of this specially selected seed as a result of which each member was obliged to follow a system of selection as a means of "breeding up" the variety he was then growing or might purchase elsewhere. Nowadays both the provincial and Federal authorities are co-operating and we are able to get a very considerable amount of high-class seed for our new beginners. As an instance of the above co-operation we have just received from Professor Bracker of the Agricultural College, Saskatoon, a list of names of parties to whom he has sent Elite stock seed and "first generation" seed, totalling over eight hundred bushels. Our organization will endeavour to follow up these different lots and see that they are grown properly, and that they are put on the market in the proper state. In accomplishing this we have the co-operation of provincial experts who inspect all fields producing seed seeking registration. Finally samples are sent in and tested at the Dominion Seed Laboratory after which the final determination of the standing of the seed is made. Seed that is grown and handled according to the rules of the association is registered, that is, we have a system of registration which corresponds in a sense with that of the registration of live stock. By means of this registration the progressive grower who produces seed for which he hopes to obtain a reasonably good price is protected. At the same time those who wish to buy pure seed of a certain variety are now able to procure seed which may be vouched for.

All registered seed goes out in sealed sacks to each of which a certificate tag is attached bearing a certificate number. Our standards of registration are high and exacting as a result of which not more than about 20 per cent of all the seed which is grown is able to qualify during any one year. Each year a catalogue is printed giving the names and addresses of those offering seed for sale, also the quantity offered. This year we have catalogued over 82,000 bushels. This, however, does not represent the total amount produced, but rather the amount that was available and suitable for sale at the time of going to print. This seed as a rule is very quickly disposed of. This year, for instance, we could have placed many thousands of bushels more had it been available. In the west particularly as some of you gentlemen know, it is becoming exceedingly difficult to get seed which can be depended upon for purity of variety, and for freedom from wild oats. The need for a larger supply of registered seed is great, and our association is trying to do all it can to have more produced. We are endeavouring to get as many good farmers as possible to do something along this line of producing better seed with the hope of discovering some really first-class men. The influence of a few outstanding men among their neighbours can hardly be overestimated. One of the most striking examples of

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this fact is to be found in the case of Mr. Sayer Wheeler, of Rosthern, Sask. Most of you, no doubt, have heard of Mr. Wheeler already. It was my good fortune to "discover" this gentleman in 1908, quite by accident. When in Rosthern I heard of this man and learned that he was interested in this sort of thing. I drove out to his farm and found him working away by himself, relatively unknown. An explanation of the work of the association was all that was required to induce him to join our ranks. That very fall he prepared an exhibit of wheat and sent it to the Great Land Show in New York where he obtained the world's prize for the best wheat, consisting of \$1,000 in gold. I have here the letter written by Mr. Wheeler expressing his appreciation of the new impulse he received as a result of that first visit. It simply illustrates what may be accomplished if we can locate these good men throughout the country and can give them a little personal attention. Dr. Saunders spoke of the importance of personally visiting the growers. I certainly agree with him on that point. If you can get a man started right and can have him visited for a few years until he gets a good start he is likely to do good work for many years. On the other hand you will often find that when a man is left entirely to himself he may drop out for want of encouragement. I therefore think that our organization constructed as it is, is able to do some very useful work. Mr. Wheeler has now got to the stage where he is able to write a book called "Profitable Grain Growing." It is quite a commendable book, and one which any one would do well to read. He gives his experiences from the early stages of his work up to the time when he got into the work of the Seed Growers' Association.

Referring again to the matter of following up the distribution of high-class seed from experimental stations I might cite another case or two to illustrate how this works out in practice. I have here a list of names of men who procured a considerable quantity of registerable seed last year from the experiment station at Indian Head. The superintendent of that station furnished us with the list in order that we might use our organization in following it up and having it propagated under control. We have lists of further distributions from other stations such as the station in Prince Edward Island, the Central Experimental Farm at Ottawa, the Ontario Agricultural College at Guelph, Ont., etc. We have men on our list who have produced registered seed almost continuously since 1900. They are scattered from Prince Edward Island to Alberta and the value of their work can scarcely be measured. They have produced some excellent stocks which have been widely used as the foundation or starting point for new beginners all over the Dominion. As explained before, however, we look chiefly to the trained experts at our experimental stations for our "starting points" for new men. This is the principle that has been recognized in the system of seed production and propagation in Sweden with such splendid success. In studying the methods employed by that organization we found that two separate institutions were involved, viz.; the scientific and the commercial; the scientific is represented in Canada by the experimental stations while the commercial side finds its counterpart here in the Canadian Seed Growers' Association.

If this principle is to prevail in Canada and if this work is to extend and advance as it should, it seems to me that we have about reached the stage where further progress will be measured largely by the extent to which facilities are provided for assembling, cleaning, grading, marketing and distributing seed in a larger way than is possible at present, particularly in Western Canada. It is essential that we should have a considerable quantity of seed produced but we should have better facilities for handling it. It is not always possible for the farmer to hold over his seed for any length of time for financial and other reasons. Shortage of storage room often compels him to dispose of his seed. If some system can be worked out by which that seed can be stored for a time and by means of which financial difficulties may be overcome we can very quickly propagate and utilize very large quantities of prime seed, at present, large quantities of really good seed—which has originated from registered

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seed, goes into the ordinary grain elevators, and inferior seed made to take its place. I understand that certain parties who have it in their power to follow up this matter are starting a movement to alleviate the situation. I have gone very quickly over this work and perhaps given you a very hazy idea of it. I simply want to leave this point with you that this Seed Growers' Association is an organization composed of voluntary members who are practical farmers, and who are trying, through organized effort to propagate in a large and practical way under certain supervision the good seed that is being brought out by our experimental stations as well as seed produced by our best members with a view to making that available in quantity to those who want to buy seed.

The CHAIRMAN: Mr. Newman has given us a very good idea of the seed improvement question. We have with us Mr. Eddy, assistant to Mr. Clark, who addressed us at our last meeting.

Mr. EDGAR D. EDDY (Chief Seed Inspector): Mr. Chairman and Gentlemen,—In connection with the subject under discussion this morning I wish to deal very briefly with some matters of special concern to the Seed Inspection Division of the Seed Branch of the Department of Agriculture. In order to do so in the briefest possible time I shall confine myself largely to notes unless some members have questions to ask.

That there is room for improvement in the quality of seed used in Canadian agriculture few who are acquainted with ordinary farm practice will question, but the extent of the needs and the seriousness of the neglect in this regard are by no means fully recognized.

Six years ago this spring an inquiry was instituted by the Seed Branch to secure information respecting the quality of seed grain being used on Canadian farms. Seed inspectors were instructed to procure throughout Canada samples of seed actually being put into the ground, together with information in regard to variety, source of supply, treatment for smut prevention, rate of seeding, cleaning and selection. Over 2,000 samples of oats, wheat, barley and flax were forwarded to the seed laboratory at Ottawa where they were tested for purity and germination. The aim was to get samples representing the average seed used by farmers. Some features of the inquiry may be of interest to this committee in connection with the subject under discussion.

The lack of attention given to the selection of most suitable varieties and strains is indicated by the fact that over 40 per cent of the farmers from whom samples of wheat, oats, and barley were collected did not know the variety name of the grain they were sowing.

Nearly eleven per cent of the wheat, oats, barley, and flax sampled was being sown direct from the thresher with no cleaning whatever. Over 88 per cent of the samples represented grain reported as having been cleaned with a fanning mill, some being put through twice, while less than one per cent represented seed which had received special attention by selection in the field. Most of the grain supposed to be cleaned contained large numbers of very small seeds, as well as small, light kernels and inert matter, clearly indicating poor results from the attempt at cleaning. With flax this was shown by the presence of such small seeds as tumbling mustard, cinquefoil, wormwood, lamb's quarters, wormseed mustard, and large seeds as black bindweed and cereal grains in samples that had been through fanning mills. One sample of flax reported as cleaned with a common fanning mill contained 17 species of weed seeds, including over 2,500 tumbling mustard, over 1,000 lamb's quarters, 803 black bindweed, and 140 wild oats per pound, besides wheat, oats and barley. Some of the grain samples furnished equally striking examples of failure to remove even small weed seeds by the fanning mill. In a few instances excellent work was being done but the high average weed seed content shows that in most cases the attempt at cleaning had accomplished

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very little. There appeared to be a general lack of appreciation of the importance of cleaning seed and also of equipment for doing it.

The average weed seed content of the 978 samples of oats collected and tested was 76 of the kinds classed as noxious under the Seed Control Act, and 239 other weed seeds per pound. One sample secured from a farmer in Leeds county, Ontario, representing home-grown seed which had been run through a fanning mill in preparation for seeding, contained 4,800 wild mustard seeds and 38 Canada thistle seeds per pound, besides 174 seeds of weeds not classed as noxious. With the average weed seed content and the rate of seeding reported in connection with the samples taken, weed seeds would be placed on the land seeded to oats at the average rate of about 44 noxious and 138 other sorts per square rod.

With barley the average weed seed content was 53 noxious and 445 other sorts per pound. The sample containing the largest number of noxious weed seeds was secured from near Edmonton, Alberta. It contained 2,539 noxious weed seeds per pound, all ball mustard except 16 wild oats. A sample was secured in southern Manitoba containing over 10,000 weed seeds per pound, principally lamb's quarters. The average weed seed content and rate of seeding with barley indicated weed seeds being placed on the land at the rate of 32 noxious and 270 other sorts per square rod.

With spring wheat the impurities were even worse in respect to noxious weed seeds. The average of the 506 samples was 79 noxious and 343 other sorts per pound. One sample taken in the southern part of Quebec contained 11,528 noxious weed seeds per pound, mostly wild mustard. This sample represented home-grown seed that was being sown without cleaning. In New Brunswick a sample of home-grown grain being sown without cleaning was secured which contained over 17,500 weed seeds per pound. The average weed seed content and rate of seeding for spring wheat indicated that weed seeds were being placed on the land at the average rate of 50 noxious and 220 other sorts per square rod.

The fall wheat samples were much cleaner than the spring wheat, but the flax was very dirty. The average weed seed content of the 144 samples of flax tested was 662 noxious and 4,087 other sorts per pound. One sample contained 15,425 noxious weed seeds per pound made as follows: wild mustard 11,936, false flax 1,729, wild oats 1,280, hare's ear mustard 288, stick seed 128. It also contained 11,616 other weed seeds, making a total of over 27,000 of all kinds per pound. The average weed seed content and rate of seeding with flax indicate that weed seeds were being placed on the land seeded at the average rate of about 136 noxious and 840 other sorts per square rod.

It would perhaps be unfair to assume that the samples collected accurately represent average conditions for Canada, although they were taken with this object in view, but after all due allowance is made for inaccuracies the results of the inquiry furnished surprising and conclusive evidence that the value of Canada's grain crops is enormously lowered through the use of inferior seed.

It is difficult to estimate even approximately the extent of the loss and how much of it is preventable. The value of the grain crops in Canada last year as reported by the Dominion Statistician was approximately one billion dollars. Opinions will differ widely as to the probable increase in production if the best obtainable seed had been used. On a conservative estimate of five per cent increase the value of Canada's grain crops last season would have been \$50,000,000 greater.

How then is this loss to be prevented, or rather the increased yield to be secured? There are of course, many ways of directing educational and administrative efforts towards securing this end but I shall attempt to outline briefly only some of the work now undertaken and being projected by the Seed Branch.

As an educational means for encouraging the production and use of better seed, competitions in standing fields of seed grain, local seed fairs and provincial seed

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exhibitions were organized by the Seed Branch in co-operation with the provincial departments of agriculture and local agriculture societies. The direct management of these competitions has been taken over by the provincial departments of agriculture and they are now supported by the Seed Branch by subventions for moneys paid in prizes. The subvention is on a basis which provides approximately one-half of the total cost of competitions, the other half being met by the provincial governments and local societies. During the last few years the amounts paid by the Seed Branch for this purpose has been between \$35,000 and \$40,000 per year. The competitions have done a great deal to stimulate interest in better seed and have created a valuable source of seed supply. Plans are now under consideration whereby the regulations may be changed somewhat to give more attention to really high class seed crops and provide greater service for inspection and marketing.

The work in connection with the administration of the Seed Control Act and the testing of seed for farmers and seed merchants has for its object the control of the sale of seed, and providing means whereby farmers and seed merchants may secure information respecting the quality of seed which they intend to use or offer for sale. Considerable publicity has been given to the work of the seed laboratories and the seed testing service has been utilized very largely by both farmers and seed merchants. In Eastern Canada about 75 per cent of the samples received for test at the laboratory come from seed merchants who require reports on seed which they propose offering for sale. In Western Canada about 75 per cent of the samples come from the farmers and represent grain which is being considered for seed. A large proportion of the samples in Western Canada represent oats for germination test. The seed testing service was extended last season by the establishment of a laboratory at Winnipeg. During the first season's operations up to March 31, 1919, there were 8,073 samples received at the Winnipeg laboratory. At both the Ottawa and Calgary laboratories from twelve to over-thirteen thousand samples are received annually.

In administering a law governing the sale of seed there are many limitations. It is impracticable to compel farmers to use a higher quality of seed than they themselves are willing to prepare or pay for, and as yet there are a great many farmers who do not realize that it is poor economy to use anything but the best seed obtainable. The operations of the Seed Purchasing Commission last season gave striking evidence of this. Many farmers preferred to purchase ordinary commercial grain, badly contaminated with weed seeds and possibly low in vitality, rather than pay about twenty cents more per bushel for No. 1 seed grain that was guaranteed by the Commission in respect to both purity and germination. Seed inspection records indicate that the same condition prevails in the seed grain trade throughout Canada. About all that can be done through the administration of a seed law is to provide means whereby farmers and dealers may purchase seed of the quality which they desire and be reasonably sure of getting that quality. It is the object of the Seed Control Act to provide this service by defining grades for the different kinds of seed. Grades were established for timothy, red clover, alsike and alfalfa seed by the Seed Control Act of 1911. Since that time there has been a greatly increased demand for seed of high quality which will grade No. 1. Before the Seed Control Act came into force the best clover seed produced in Canada was exported but since then there has been an increasing tendency for the high class domestic seed to be marketed in Canada and the low grade seed to be exported.

The principle of marketing seed under definite grade standards has been applied to grain sold by the Seed Purchasing Commission during the past few years. It is now proposed to define grades for seed grain, including corn, which may be used by the trade or farmers. In this way recognition will be given for definite standards of purity and germination, and the purchaser will be able to buy seed grain with a clear understanding of the quality which he should receive. It will also give the growers

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an opportunity to market superior seed grain under a grade which will distinguish it from ordinary commercial stock. The proposals respecting seed grain grade are being embodied in a draft of an Order in Council under the Seed Control Act which will shortly be submitted for approval.

One of the principal needs in connection with the handling of seed grain is for central cleaning plants where seed grain can be assembled and cleaned under proper supervision. The Government interior terminal elevators have provided very valuable service along this line in connection with the seed grain handled by the Seed Purchasing Commission, but they are not equipped for handling high quality variety seed grain, and the No. 1 and No. 2 seed such as the Commission has sold could be cleaned and inspected much more satisfactorily if the apparatus for receiving and discharging seed grain at the elevator were not also used from day to day for handling grain of commercial grades which is commonly polluted with weed seeds.

With small seeds there is also great need for better facilities for assembling and cleaning seed. At present practically all the clover seed grown in Ontario, which is exported or reaches the home market through the trade, has to pass through the hands of the wholesale seedsmen because farmers do not have efficient power machines for cleaning small seeds economically. A public-owned elevator and cleaning plant where seed could be assembled, cleaned and graded for the cost of the service would be a great stimulus towards the production of more clover seed and would enable farmers to retain possession of their seed until it was ready for either the export or domestic trade.

Mr. GLASS: I have listened with interest to the statement in regard to the investigations and the report concerning flax-seed. I want to say that, notwithstanding the propaganda by the Department of Agriculture throughout the country, that the prejudice against the sowing of flax-seed in any soil seems to exist. Surely after such an examination as has been detailed in this report it is quite evident that the flax-seed generally used does not get the proper care and cleaning, and no doubt that fact is largely responsible for the condition complained of. May I ask, is that a report of the flax-seed of Western Canada, or is it a report in regard to fibre flax-seed, where they take a little more care in preserving the quality of the seed.

Mr. EDDY: These samples are all taken from Western Canada and probably represent flax-seed other than the fibre variety.

By an hon. Member:

Q. Has any examination been made by the department of the seed from fibre flax produced in Ontario, and has the seed been cleaner than ordinary flax-seed?—A. I have not much definite information on that, but what fibre flax-seed has come to the laboratories has been very much cleaner than the samples procured in connection with the inquiry referred to.

Q. I know that the department attributes great importance to the cleaning of flax-seed and to the adoption of some standards in regard to purity and other points. That shows the importance of establishing the terminal elevator where it could be properly cleaned. From what has been said here this morning, it is apparent that very, very great care should be taken to protect the reputation of the seed that has been established and which is in danger of being injured by carelessness. The evidence here this morning simply strengthens my opinion as to the necessity for proper facilities being provided not only in the province of Ontario but at other points where provision might be made for the cleaning of seed.—A. The resolution dealt with by this committee this morning is certainly a very important one in this respect, as it concerns the cleaning and grading of flax and other kinds of seed. If facilities provided in a public elevator for the proper handling and cleaning of seed there is no doubt it would be of the greatest advantage to the industry.

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Q. In what part of the Dominion of Canada can you obtain well matured seed corn suitable for graining a crop for husking or ensilage?—A. About the only part of Canada from which seed corn for ensilage can be obtained in quantity is the southwest part of Ontario, principally in the counties of Essex and Kent.

By Mr. Brien:

Q. Is it not a fact that the farther north we get that seed the more valuable it is, and more likely to produce a better class of ensilage?—A. Provided you have the same variety and strain of seed that is probably true but a great deal of the value of corn for ensilage and other purposes depends upon the variety. Other things being equal it is usually considered that the farther north you grow a variety of corn to full maturity the earlier it will be in maturing. One of the important points in connection with seed corn is to get an early variety or strain which will mature sufficiently to make a good quality of ensilage.

Q. That being the case there should be an effort to provide corn for seed purposes in Ontario and Quebec and then probably in the western provinces that would be the most suitable for the districts where it is to be used. Seed corn is being imported that is grown in the United States and possibly from states farther south than it should be; that is going on at the present time.

There have been a number of complaints along this line and I may say that the matter is under consideration at the present time, and in connection with the proposed Order in Council which I mentioned provision is being made which we hope will overcome this difficulty. The proposal is being made to have seed corn that will comply with certain standards of purity of variety, moisture content and germination put on the market under the grade of No. 1, and require that it be marked to show the province or state where it was grown. If that were done it would give the purchaser an opportunity to procure seed corn of stated quality and place of growth, and would also give the growers in Canada any advantage which there might be in selling Canadian seed corn. I hope something of that kind will be worked out and put in operation before the next season.

Committee adjourned.

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STANDARDIZATION OF AGRICULTURAL MACHINERY.

HOUSE OF COMMONS,
COMMITTEE ROOM 318,

OTTAWA, June 18, 1919.

The Select Standing Committee on Agriculture and Colonization met at 10.30 a.m., Mr. Henders, the Chairman, presiding.

The CHAIRMAN: About a month ago we had a meeting at which we discussed in a general way the question of the standardization of agricultural implements and the parts thereof. There were present some representatives from outside points, and a very interesting and profitable discussion took place. As a result, it was felt by the members of the committee that there were great possibilities in a movement of this kind, and the consensus of opinion was that we should continue the discussion of the subject. Accordingly, arrangements were made to hold another meeting to which we would invite a larger representation of manufacturers than was present on the former occasion. Invitations were sent out to representatives of the manufacturers as well as to representatives of the farmers in the province of Ontario to attend this meeting. I am glad to see such a full representation of the manufacturers and farmers and of members of the Committee of Agriculture to deal with the question. The subject for discussion is "The standardization of parts of vehicles and agricultural machinery" and I should be very glad to have the members of the Manufacturers' Association and the representatives of the farmers, as well as the members of the Committee, express their views freely on the question. There will be a sort of round table talk, and later we may be able to crystallize our conclusions in some practical form.

Mr. BEST: I may explain that at a meeting of the committee, at which this question was discussed a few weeks ago, it was unanimously felt that the farmers are very much put about in regard to getting parts, especially small parts such as guard sections and bolts that would fit in with their machines, and it was felt that if we could have practically the same bolt holes or rivet holes, and things of that kind, it would be of great advantage. There was a discussion as to what could be done, and it was finally decided to invite representatives of the Manufacturers' Association here to discuss the matter with the committee to see if some scheme could not be arrived at by which those things could be improved. We have been told that in the United States they have improved the conditions very much within the last few years. I have farmed all my life, and I know from experience the trouble that is caused by the diversity of these parts. Take the wagon, for instance. There is an arm which is of the same length as perhaps another vehicle, but the nut will not fit, and we have had a great deal of trouble trying to get a nut to fit. There are many other little parts of machines to which the same objection applies. I would suggest that the manufacturers present indicate as far as possible what can be done, and explain why there should be so many different parts. The committee is not asking the manufacturers to change their machines. We realize as well as anybody that there has been great strides in Canada in the way of improving machinery. Our machinery some years ago was very crude. We have them down to a pretty fine thing, and it works pretty well. It is the small parts which do not affect the working of the machine in any shape or form. It is merely to assemble the small parts, so that the users will not have trouble in getting the parts. On the other hand we

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realize that our local agents throughout the small centres in the country cannot afford to carry 40 small repair parts that would be required because it is only an odd time they will be called upon. If there were a lesser number of the small parts the agent could carry them. If in the midst of harvesting or haying a farmer has to wait to send to the firm for a small part it is a great loss to him and to the country. If a suggestion could be made which would not put the manufacturers to too great an expense, and would at the same time assist the farmer, I think it would be a good thing for the country.

Mr. J. C. RUBY: On our way up here I had a short formal talk with other representatives of the manufacturing interests, and I explained to them what occurred at the meeting a few weeks ago. There is still a question in our minds as to how far the committee desire this standardization, whether you want us to standardize as to sizes, and how far you want the standardization to apply to parts. The manufacturers' representatives here this morning feel they would like to know just the extent to which this standardization is desired on the part of the committee, and perhaps they could give us some idea as to the extent they desire the standardization applied.

Mr. McCOIG: Mr. Ruby was present with us on a previous occasion when this matter was brought to the attention of the committee, and possibly he could have informed the other manufacturers who were kind enough to come before the committee to-day with reference to what took place here on that occasion. I do not think the committee intended to do anything that was going to increase the cost of manufacturing machines, or the cost of production, but we are anxious to do everything possible in the way of reduction of cost in the different lines of agriculture. I do not understand that the manufacturers at the present time are manufacturing a lot of unnecessary machines of different sizes which are not needed and very seldom disposed of—machines for which there will be call for only a few times during the year—I refer to the variety of seed drills that are being made by the different manufacturers. I know some of them are making drills for the Ontario trade that could be easily eliminated from their price list and catalogue, and make it much easier from a shipping and manufacturing standpoint to reduce the cost of production. The same thing would apply to wagons. I do not think it is necessary to manufacture so many different kinds. One manufacturer was turning out 47 different kinds of wagon. I should say the manufacturers could possibly turn out four different sized wagons and that would be all that would be necessary to supply the demand from the different sections of the country. With regard to the point we were making as to setting a standard, they could also have the same dies used in the manufacture and they could be manufactured so that the different nuts would fit. I suppose we have representatives of Bain's wagons and the other different wagons. One of the big objections raised is that if a man buys a Bain wagon, for instance, if a nut drops off he cannot replace it in the village, because there is a limited number of wagons sold in the village. The same thing would apply to the mowers. I understand they are making 22, 24, and 28-section mowing machines. I do not know why it is necessary to manufacture the 22-section. I think they might cut out some of these sizes which are not necessary. Possibly the same thing would apply to the different sized disc-harrows, for instance. Some makers manufacture an extra size to get a little ahead of the other manufacturers, and it only causes trouble. The same thing applies to the other machines. The farmers are not objecting so much, but it would be an advantage to the manufacturers if they could manufacture machines that would supply the trade and sell them at a lower cost to the farmer.

With regard to asking the manufacturers to change their mode of manufacture, that was not the idea of the committee. Nobody desires to change any of the patterns. We recognize that they have been using a lot of different parts in the

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construction of machines, and it is not the object to cut them out, but the idea is to have the parts on a wagon standardized as nearly as possible. The same thing should apply to ploughs. Ploughs are made in Brantford and Toronto and other places and the parts are not interchangeable. The bolt-holes should be made the same distance apart. I recognize the argument against that is that you would not be able to sell your own repairs, but you would be able to get your own share of the trade if you made the best. With reference to harvesting machines, I do not think there is a manufacturer present who will not agree with me that it is ridiculous to have mowing machines and binders all using three-inch sections and not one of those sections interchangeable because there is a sixteenth part of an inch of a difference in the place where the rivet goes through the hole. It is a nuisance and should be overcome. The same thing applies to the ledger plates in the mowers and binders. I have had the experience of trying to get ledger plates, and you might come within a fraction of an inch of getting the rivet in the proper place. There is no reason for that. I would not like to say that the manufacturers could get together as far as regulating their prices is concerned, but they could settle on the little details that would be of great advantage to the customers. We know that sooner or later, there will be a great fight for the foreign trade, and what an advantage it would be for the Canadian manufacturers to be in a position to say that the parts of their farming machinery were interchangeable. That is only one reason of many why you should give this matter serious thought and consideration.

Mr. J. C. RUBY: I may say that so far as the standardization of implements is concerned, I think the manufacturers will be quite prepared to get together and discuss that question and see what they can do in the way of eliminating parts that are very little called for. The wagonmakers got together last week and discussed the question of cutting out certain types which are sold to a very small extent. They have cut down the sizes, the widths of tires and so on, and I think I am free to say for the implement manufacturers that they are willing to get together to see what they can do along the same line. I think they would be glad to follow the practice of our American friends in standardizing the size of their machines.

Mr. McCOIG: I notice that across the line they have got together, as you say, but they have lessened the width of the tread of the wagon. I do not think it is a good idea because I do not believe agricultural opinion in Canada would favour the narrowing of the tread of the wagon.

Mr. RUBY: They decided, British Columbia being excepted, I think, on a 4-foot 8-inch tread. That is the standard automobile tread. So far as New Brunswick is concerned, I think it was left to the discretion of the manufacturers. We know that some exception has been taken in certain parts of the country, in the Eastern Townships particularly, to the use of a wider tread. At any rate, that was the position taken by the manufacturers, that after the present sorts were exhausted they would adopt the 4-foot 8-inch tread. We found difficulties in attempting to deal with the question of standardization, because as soon as you begin to eliminate certain sizes used in a particular section, you will meet with objections.

Mr. McCOIG: There is no demand for the narrowing of the tread, because I think the first argument you will find against it is that the narrowing of the wagon will have a tendency to make it upset much more easily.

Mr. RUBY: The 4-foot 8-inch is almost a universal tread. It is used generally I think in the northwest with the exception of a small part of Alberta, and it is used generally throughout the United States. It is the same tread as an automobile.

Mr. McCOIG: It will be 4 inches less than the tread of the wagons we have in Ontario.

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Mr. RUBY: Four feet six inches is the Ontario width. There is some question among the different manufacturers. Some take 4 feet 6 inches from centre to centre and others count to the outside of the rim.

Mr. McCOIG: There is a difference between the tread of the wagon and the tread of the automobile to-day. What is it?

Mr. LEWIS: It depends on what part you are in.

Mr. RUBY: That illustrates the difficulty the manufacturers have in standardizing. We spent a whole afternoon in Toronto last week threshing this question out and we did not get quite through.

Mr. KAY: Did you take up the question of arms and nuts?

Mr. RUBY: We eliminated a few sizes on the one-horse wagon, but I think there was nothing eliminated on the two-horse wagon. We did not get down to the parts.

Mr. McCOIG: That is the thing that the committee is most anxious to get information about.

Mr. RUBY: So far as the machines themselves are concerned, I think the manufacturers will be quite ready to get together and talk the matter over, and eliminate any sizes that they feel can be eliminated without detriment to the trade, to the consumers, or the farmers. The question of standardizing repair parts is bigger and involves a great deal more than appears on the surface. I would suggest that Mr. Kettle of the International Harvester Company be heard.

Mr. H. E. KETTLE: I guess that Mr. McCoig knows that we cannot take any guard made by any of our friends and apply it to our binder and make it work. But we had trouble, as you all know with the breaking of the knives of the Deering binder. I do not believe it is possible, and I believe the mechanical men here will agree with me, to make a standard guard that will go on a machine at present in use and get the same service that you are getting right now.

Mr. McCOIG: We grant the guard.

Mr. KETTLE: In regard to the ledger plates, the guard might be changed. I am not saying that this will apply to all the machines made by our friends; but so far as the arms are concerned we could accommodate the guard to become the ledger plate, I think. Of course, the ledger plate and the guard are essentially the cutting apparatus of your machines, and they would have to be very carefully manufactured. It would necessitate a great deal of investigation. It is a thing that could not be brought about satisfactorily to our customers, speaking from their standpoint, without a tremendous amount of investigation, and it would take some time to put it into effect. Perhaps some of our western friends could tell us some of the experiences they have had in buying cutting parts from manufacturers who simply duplicate. I am not saying that outside of some very peculiar circumstances in connection with a particular machine like our Deering binder that the ledger plates cannot become uniform.

Mr. McCOIG: What is the objection to having a standardization, to have your different machines all on the same principle.

Mr. KETTLE: You mean to make a common chain link on the different binders?

Mr. McCOIG: Yes, make them interchangeable.

Mr. KETTLE: That would probably change a lot of other parts on every machine.

Mr. McCOIG: You could have the same size of cog.

Mr. KETTLE: You would have to have your sprockets accommodated to the chain.

Mr. McCOIG: Sure.

Mr. KETTLE: That is just it. In the first place comes your driving apparatus, and then you have to accommodate your chain to it.

Mr. McCOIG: Make a different style of chain.

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Mr. KETTLE: You have probably been out in the field and seen the driving chain climbing up on the sprocket.

Mr. McCOIG: That is the trouble we are having. There are so many different sizes made, but if there was one there would not be that difficulty.

Mr. KETTLE: A great deal of the chain could be standardized.

Mr. McCOIG: That is the point. It is not a question of trying to impose any hardship on anybody. We are trying to figure out something that will be of mutual benefit to the manufacturer and the user of the goods. It is not with any desire to be unfriendly to the manufacturers. We are simply trying to see whether some of the troubles we have experienced cannot be eliminated, so that there will be a better feeling between the manufacturer and the farmer instead of a difference of opinion. When we get free agricultural implements you will be able to retain your trade because the farmers will recognize that you have parts that will fit any machine.

Mr. KETTLE: I understand that, and I fully appreciate what you say. I am just trying to point out some of the difficulties that the manufacturers will have to face and overcome in order to give service equal to what you are giving to-day. Our watchword is service, as it is with our friends.

Mr. BEST: You have told us about the guard and the principal difference in the chain. We do not find very much fault with that. The trouble is with the fraction of an inch difference in the width, one-sixteenth of an inch where the bolt-hole is. I do not see why the bolt-hole should be the slightest fraction of an inch different from any other, or why the rivet-hole should be different. I have repeatedly spread my guard, and have taken a hammer and closed it down. Naturally the space gets wider between the upper and the lower part of the guard, but you can take a hammer and close it down. That is easily done, so long as we can get the guard for that section with the same bolt-hole so that we can put it on. We know the enormous trouble and expense it is to the farmer. I do not see why the lowering or raising of the upper part of the guard should make any difference, because you can either raise it or close it.

Mr. KETTLE: You cannot close it evenly. If you close it up by uniformly straight guards you will not get the desired result. When we get a complaint we always take it into consideration and investigate it. We like the farmers to come and tell us their troubles. You ask why we cannot put the holes in the sections, in other words why there should not be a common section that will fit every knife back.

Mr. BEST: I would not say every one, but you could say have three or four different kinds instead of twenty-five different kinds.

Mr. KETTLE: That could be done satisfactorily, I think, but it would mean considerable cost and outlay for new equipment. You will probably realize that these knifebacks are punched on a tremendously expensive equipment, and that all the dies for these machines might have to be changed.

Mr. McCOIG: They are frequently changed. The difference in the width of the holes is the trouble. You know you have not a section on one of your mowing machines that will fit the McCormick or the Deering. If my neighbour has a McCormick and I have a Deering, and I lose a section of my machine I cannot go to my neighbour and get it. I have to go to town, and after I get there I find perhaps that all the repairs were made in such and such a year and that perhaps the section I particularly wanted was made in a certain year and was not in stock. So far as the sections are concerned, the committee thought that a time should be set for the manufacture so that the sections would be all alike.

Mr. KETTLE: Of course you understand that we would all have to carry a duplicated equipment.

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Mr. McCOIG: Perhaps the other manufacturers would adopt the section that you are making, or you could adopt the parts that they are making. You could adopt one section as a standard section. There would be different varieties. Whose would you adopt?

Mr. KETTLE: Naturally they would try to adopt the best one. The other fellows would have to change.

Mr. McCOIG: You could change some other part that they are making that could be satisfactorily used on their machine.

Mr. KETTLE: It might be possible and it might not. Some other part might be in such relation to this part that it would not permit the change, and perhaps you would have to go to a lesser number of sections on a certain sized machine. I do not see much more trouble, leaving out the question of cost, in standardizing, making a common section and ledger plate, than there would be in the guard.

Mr. KAY: Could you not make a common grade for the Deering and the McCormick?

Mr. KETTLE: No, not to get results. What difference does it make to him, outside of storage space, if he does happen to have different guards?

A DELEGATE: He might have the guards manufactured in 1914 and in 1916 they might change the guards. He would have to carry the guards of different makes.

Mr. KETTLE: All he has to do is to have a roof over them.

Mr. BEST: The manufacturers do not keep them. The trouble is to find where you can obtain them. I had a stove in my house, and it was a good one, and the water front was broken, and I tried through our dealer to get a water front, and he could not get it for me. I had to sell the stove for half its value and I paid \$60 for it. I could not use it because I could not obtain the water front.

Mr. KETTLE: It may be that they did not make the effort to give the service the agricultural men give.

Mr. BEST: Supposing a man was harvesting, and it took him a week to find out where he could get a certain part for his machine, what would become of his harvest?

Mr. KETTLE: That need not happen. In the first place you have your local dealer, and if he has not got the part you require, explain carefully to him, so that he will understand what it is you want, and you can get that part in any place in Canada where these machines are used.

Mr. McCOIG: That is very true. Different firms are very good at keeping stocks of repairs, but it would obviate the necessity of their keeping such a large stock. That is all right so far as the section is concerned but are there not other parts which would be possible without any great expense or reconstruction of a machine, that you could get together and standardize upon?

Mr. KETTLE: On a mower or harvester?

Mr. McCOIG: As to the matter of links, would it be possible to standardize?

Mr. KETTLE: Yes, I said that some could be standardized as to their design and size. Our friends make a chain which is a special design, and even though you have got a chain which is satisfactory in size and type, what about its wearing qualities?

Mr. McCOIG: The malleable chain is about the only chain, besides the steel chain.

Mr. KETTLE: But how many kinds of malleable chain?

Mr. McCOIG: You would have to settle on the best kind.

Mr. KETTLE: I am showing you the intricacies you are up against in investigating this matter.

Mr. BEST: You admit all those chains are made of a very much inferior material.

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Mr. KETTLE: No, I am not insinuating that at all. I did not say there were. I said in other words that it was a special business to produce chains.

Mr. KAY: With reference to the sections in your different machines, would you be willing to standardize the sections of the McCormick and Deering, for instance?

Mr. KETTLE: We would be willing to conform to the consensus of opinion between the committee investigating this matter and our friends the manufacturers, but if left to ourselves we would not do it from the standpoint of service.

Mr. BEST: You would all have to agree to standardize on one.

Mr. KETTLE: Yes.

Mr. BEST: If you are making the same machine, there is no reason why you should not standardize the parts.

Mr. KETTLE: Yes, there are a hundred things.

Mr. DENIS: I think we are wasting time by this discussion. We are all asking questions and we will never arrive anywhere. We could talk for two days and never arrive at anything. I have all due respect for the manufacturers, but I know very well no one in this committee will ever make his case by going to the manufacturers. If I were a manufacturer I would object to the plan of standardization, as it only means trouble and expense to the manufacturer on the one hand and no benefit to them on the other. Moreover, it means to them keener competition, because when pieces are standardized he will have to adapt his price to the standard. He will have to compete as to price, because the pieces will be exactly the same. He will be in the same position as the man who sells boots or other standard goods. Consequently, it is natural for the manufacturers to object to these proposals, and my view is that if we go on questioning these gentlemen, for whom I have the greatest respect and consideration, we will never come to anything. The first question is, is it a practical possibility, that pieces can be standardized. If it is proved that it is not a practical possibility, that the disadvantages would outweigh the advantages, then there is no more to say. So far as I am concerned, I think it is a practical possibility. I am neither a farmer nor a mechanic, but I know a little of both occupations, and I think it is a practical possibility, but I want the opinion of some one else. If we cannot agree, then there is nothing else to do in my opinion but to go to a commission of experts and get their opinion. We could question them and find out to what extent it is practicable if at all, and to what extent the pieces can be standardized. It is not a question of whether such and such a piece can be standardized. The point is that these experts could tell us what are the pieces that can be standardized and we could get their conclusions before we come to any decisions, and so avoid the possibility of mistakes.

Mr. McCOIG: That is just the course we have pursued. These gentlemen are all experts, and we are asking them to say what parts can be standardized. We are not going to ask them to do anything impracticable.

Mr. BEST: We are met here to find out if it is possible to standardize, not to say that we are going to have it done. We desire to know in the first place whether it is possible. Mr. Denis wishes to appoint a commission before we find out whether it is possible. What would be the use of appointing a commission if it is not possible?

Mr. DENIS: That is my opinion.

Mr. McCOIG: Let these gentlemen tell us.

Mr. DENIS: I am ready to submit to the opinion of experts. If we can get a number of pieces standardized, let us go on.

Mr. J. H. GRISDALE (Deputy Minister of Agriculture): I did not anticipate being called upon to say anything on this matter although it is one of very great importance at the present time. We have discussed it a couple of times in this committee, and

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we were of the opinion that a great many of these small articles, small repairs, might be standardized. I have just had a conversation with one of the manufacturers' delegates here and on inquiring as to the possibility of standardizing sections, I was informed that he thought it could be done though there would be serious objections. No doubt there would be some objections, but the number of small parts that could be standardized is very great. The parts that were mentioned at the meeting a few weeks ago are, I think, the ones most ripe for consideration. The men who are interested in the manufacture of these parts might make a mental note of these and discuss the possibility of coming to some understanding among themselves as to whether these particular articles or parts can be standardized. I will start with the plough. I see no reason why the points should not be standardized. I do not mean that there should be only one size of point; there might be two or three sizes, and different shapes. I think there might be easily a point receiver or point attaching bolt. The bolt-hole might be located uniformly in one place and be so standardized. Then as to the sole plate, I see no reason why that should not be standardized in different sizes. The muzzles or heads might be standardized. They are very considerable at present. I can see no reason why there might not be three or four sections. As to the handles, I think the wooden parts might be standardized, with perhaps three or four different pieces. Then there is the harrow. It has gone through many variations. I have seen hundreds myself but we have got practically to one type of harrow, and I think there should be some standardization there. As to the discs, I do not see why we should not have two or three sizes so that that which now fits the Massey-Harris make should fit all makes provided it is of the same diameter. At present with the slight difference in curve at the bore, it is very seldom that you can fit one to the other. I can see no reason why they cannot be made uniform. We could have different sizes, twelve, fourteen, sixteen and so on. As to the rollers, I do not see why they should not be cut off in yard lengths and standardized. Then there are the whiffletrees. There is a tremendous variety of irons. I do not know whether it is worth while to consider these. There is such a variety. They are all fair, and some are a little better than others. It would be an easy matter to bring out three or four of the very best. As to the chains and sprockets, this committee discussed the chain and sprocket question very fully. In my opinion there is no reason why two or three types of chain with two or three different sizes of links might not be put on the market that would fit any of the sprockets. The fact that it is a special industry in itself and requires a great deal of attention applies to other parts. I have had a great deal to do with chains of one kind or another. There is a tremendous number of varieties of chains on the market. Why not select the good ones and standardize these in sizes that would be useful? As regards rakes, the variety of rake teeth is tremendous, and I cannot see the necessity for having so many. The belly varies slightly and necessarily will, but with two or three types, or two or three sizes we could get them reduced to something like uniformity so that a man could get what he wanted if he went to the manufacturer of these parts. When it comes to cultivators I think that the cultivators to which the scuffler plates are attached might be standardized. I can see no reason why the bolt hole at the bottom should not be replaced or why the cutting plates cannot be attached to any one at all. I cannot see any reason why the plates should not be so punched and bolted that they would fit any cultivator except possibly when the size was different. As regards mowers I think that what has been said about the binder would apply in this case. In the track cleaners I think there is room for standardization. The Pitman head has had a great career. I can remember a dozen different kinds and many of them have boomed fairly satisfactorily. Many of them are not satisfactory. By now the manufacturers know pretty well the type of that particular head, the type that will give the best results, and I do not see why some effort at standardization should

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not be made in that connection. The drive rods might also be standardized and cut off in sections, or made in small lengths so that the parts could be made fit and used by all. The guard plates have been mentioned. I think they might very readily be standardized, even if the guard could not be. I admit that the standardization of the guard is a difficult matter. There are so many varieties of use made of it and the cutting bar varies so much in width. There are so many little factors that enter into the size and shape that it is possible the guard could not be standardized, but I think much could be done in the way of uniformizing, the guards as well as other parts. In connection with the binders, the same remarks apply to the sections of the guard. The canvas lowan table I think might be standardized, I see no reason why it should not be. The canvas lowan on the cultivators vary very slightly in width. I would not like to say that they should be standardized; we may leave that out at present. In regard to the fore-carriage there might be a standard that would fit any binder. It is not an article that has to be repaired often, but I see no reason why a standard fore-guard should not be used. In the case of reel flaps they are not often replaced, and the farmer can make one himself, but they might be standardized. The corn harvester does not lend itself very well to standardization. There may be some question as to whether it would be worth the trouble to standardize the sections. As regards the blowers, the most common trouble is with the chains and with the pipe. I see no reason why the pipe should not be standardized. As regards wagons, there are 47 different kinds, and I think we might very judiciously reduce the number of varieties and get down to a common basis, get them into some reasonable shape and some reasonable standard. The skeins and the nose on the end of the sections might, I think, be standardized. The fact that practically every maker has a different thread on his skeins and a different bolt, and that very often there is a different thread on the same manufacturer's sections, is a very annoying feature. I see no reason why a skein of a certain size should not have a uniform thread with bolts and nuts to fit. That would be one of the greatest conveniences I know of so far as the wagon is concerned. As to the width of the tread, I think that is really a minor point so far as the farmer is concerned. Whether it is 4.6 or 4.10 is of minor importance. It might be useful a little later on, but so far as the manufacturing is concerned, I do not see that there is any point in it at the present time. These are the principal points that I think might be considered as possible of standardization. No doubt there are objections to many of them, but I think a good many might be given consideration.

Mr. KETTLE: I do not want any of our friends to think that I was referring to them when I spoke of the chains. It was our own chain I was speaking about.

Mr. MANNING W. DOHERTY: I represent the United Farmers of Ontario. This matter has been up for discussion at meetings of the United Farmers during the past year. It is a very live question with the farmers of the province. They were very quick to see the immense advantages that would accrue to them from the standardization of the wearable and breakable parts of their machines. Last fall there was a meeting of the Fairs and Exhibitions Association in Toronto, and they discussed this matter at some considerable length, and passed a resolution. I only refer to these matters to show the members of this Committee that the farmers of the province of Ontario will appreciate anything you can accomplish along the line which you are now following, and would be very grateful for any results that can be secured along that line. I congratulate you, Mr. Chairman, and the committee upon taking up a question that is of such vital importance to the farmers. At the Fairs and Exhibitions Association, in which 350 agricultural societies of Ontario are represented, the following resolution was passed:—

“That this Association in Convention assembled hereby express their hearty approval of the standardization of the breakable and wearable parts of

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farm machinery and would respectfully recommend that the Federal Government arrange for a committee of mechanical experts, three to be appointed by the Federal Government and three by the manufacturers of farming implements to arrange for such standardization and that a copy of this resolution be forwarded to Sir Robt. Borden and Hon. T. A. Crerar."

Mr. BEST: What is the date of that?

Mr. DOHERTY: April, 1919. At a meeting of the Agricultural and Horticultural Institutes of Manitoba in February, 1918, a resolution was passed very much along the same lines. The question appears to present itself in two sections; the standardizing of machines and the standardizing of practical and wearable parts. I would gather from what I have heard this morning, that it is in the minds of most of you and most of the speakers that the standardizing of the machines is almost impracticable. I have no particular engineering knowledge, but I have faith enough in the ability of the engineers of this country to feel that it is far from being impracticable. Only a short while ago, we had a deputation of the most prominent engineers of this country interviewing the Minister of Finance, the Acting Premier at the time, asking for the information of an engineers' standardization association, and I read the following paragraph, newspaper clipping:—

"The object of these associations was to secure an international standardization of parts, which would permit an interchange that would cheapen manufacturing costs and expedite deliveries. They were also endeavouring to arrive at standards for Government work as well. They have sectional committees to deal with similar problems with regard to cement bridge building construction, electrical standards, standards for railway equipment, automobile parts, etc., falling within the sphere of activity of these associations."

And it goes on and gives the various branches of engineering. These eminent engineers of the Dominion were of the opinion that we could proceed very much further in standardizing all our production much further than we have proceeded at the present time. It would be a tremendous advantage to the manufacturers themselves. As you are probably aware, in the United States during the war the War Service Board cut off some thousands of patterns of machines being made, and would not permit them to be made during war time, and I understand the manufacturers themselves have come to appreciate what was accomplished and have now asked that this Board be perpetuated in some form or another.

In regard to the matter of the repair parts, I would say that I do not believe there is any other portion of the consuming public of the Dominion that would have put up for such a long time with the inconveniences that the farmers have been put to in the matter of the wearing of workable parts of farm machines. I do not believe it would be possible for the manufacturers to put out goods to consumers living in urban centres of as many patterns, and causing such inconvenience and loss of time and get away with it for so long time as has been the case with farm implements. I remember only a few years ago, if you bought an electric bulb it might or might not fit the socket. That is done away with. We have had standardization of plumbers' fittings. They would not tolerate such a thing as having different threads on pipe, and so on. The same with automobile parts, tires, etc. But the farmers have gone on for years. This matter has grown and grown, and it has grown without being appreciated until to-day it is the source of considerable loss of time and a great deal of trouble. Take the matter of ploughs. I had made a list here of some parts that I thought could be interchanged, but Mr. Grisdale has covered it very fully and very much better than I could, and I will not say anything along that line. I remember some years ago in the province of Ontario we had a great many similar manufacturers of ploughs, and the wearing parts of these ploughs were practically all inter-

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changeable at that time. Many of these disappeared and went out of business, and the later manufacturers varied the nose, so that we have now a plough point not interchangeable, and it is my opinion—I cannot see it any other way—that there is no part of the public more fully alive to the great benefits which this country has had from the manufacturer than the farmers, but I am forced to say the farmers consider, and I consider, that 50 to 75 per cent of the variations made in parts of farm machines are practically no benefit or use to the machine at all, and there is no excuse why 95 to 100 per cent of the parts enumerated by the Deputy Minister could not and should not be made interchangeable. Only last week in working our cornfield, we were about two weeks and a half behind in getting out the manure. A wheel broke, and I had to hurry out to Brampton. They had another sprocket wheel there and it would not do. I had to go to Toronto to get the part. Every farmer knows that during haying and harvest a loss of time is a serious matter, and I am perfectly convinced that if we standardize the whole machine and reduce the number of machines on the market, it will result in a tremendous saving to the manufacturers and to the public. The number of machines at present carried will not be required. The competition in the sale of machines would be lessened, and it is my opinion that the greatest national wastage of this country to-day, that characterizes this age, is that resulting from our slipshod method of distribution of the manufactured article to the consumer, and of the farm product to the consumer, that the difference in the price received by the manufacturer and the cost to the consumer, and the difference in the price received by the consumer is a monument to our extravagant methods of doing business and the efficiency of the manufacturers of this country would be increased very much by a board of engineers, along with the engineers of the manufacturers. Mr. McCoig says we have the experts here, and I am quite prepared to admit that they are as expert as any experts you can find. They are experts in business, and if you had a commission of engineers acting with these experts, I am sure you would succeed in working out a national benefit which would accrue to the manufacturers and also to the farmers.

Mr. BEST: You are in favour of the standardizing of machines?

Mr. DOHERTY: I am of the opinion that something can be accomplished. I am not an engineer.

Mr. BEST: Would there not be a danger of eliminating the possibility of improving machinery if that was done?

Mr. DOHERTY: I noticed in the press a short time ago an interview with a prominent manufacturer in which he set forth the objections. One of the objections was that it would destroy incentive for inventive genius. In my opinion it would have the very opposite effect, because if you had a board of engineers in control of the standardization of these machines, a man in the factory of say the International Harvester Company conceives an idea; he works it out in drawings, and then goes to his board of engineers. They scrutinize it, and if they decide to adopt it they pay what it is worth, and he is more likely to get a good thing out of it that way than under the present conditions. Another objection that was raised was in regard to the loss which would result in having to scrap the patterns, jigs, dies, and so on. There is very little in that objection because the patterns and dies and jigs are only of use in making the repairs in those machines which have been made before. This cannot be accomplished without a great deal of inconvenience to the manufacturers or without some loss to the farmer, but no great progress can be made without some loss and inconvenience to some part of the community.

Mr. GILBERT M. MURRAY (Canadian Manufacturers' Association): I have no opinion to offer as to the practicability of standardizing wearable and breakable parts, but there is one thing I am sure of, and that is the willingness of the manufacturers

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of implements to go just as far as it is possible or practicable to go in meeting the wishes of the farmers. There is no money for the manufacturer in the increased variety of implements he is making or in the styles of each particular variety. They only add to his overhead charges, and to the expense of keeping repair parts in stock. It is undesirable in many ways from his standpoint. But from association for a good many years with the manufacturers, I am convinced that they only do such things because of a demand for the varieties of styles that they are producing. It is patent, I think, to all of us that if they are to meet with any success in their efforts to standardize wearable and breakable parts—I am leaving altogether out of consideration machines—there are two very considerable difficulties to be met. One is the difficulty of time. It is going to take time to bring about a change of these things. There are changes that can be effected more speedily than others, but certainly to make anything like substantial progress with the standardizing of wearable and breakable parts, we have to allow ourselves perhaps an interval of two years to work up to it. That would be the minimum interval, I would say. Another difficulty is the question of expense. It is admitted by those who hold a brief for the farmers, and I think in fairness to the manufacturers it must be admitted, that if they are to get together from a desire to meet the wishes of the farmers and are to put themselves voluntarily to the expense of effecting something tangible, I would just like you to consider this: In preparing your report recommending some measure of standardization in regard to some of these wearable and breakable parts, and if you get an assurance that they can be brought about in two or three years' time, would you recommend to Parliament that imported implements should be made to conform to the standards which the Canadian manufacturers of implements might agree to. Reference has been made to the Engineering Standards Association. I am not so familiar as I might be with that association, but I believe I am right in this, that if the interested parties in the formation of any standard—be it agricultural implements, automobile, or anything else—and by interested parties I mean the producers on the one hand and the consumers on the other, if they can agree that a certain standard is desirable and they set up a standard carefully defined by specification, then any manufacturer who desires to conform is directed to the Canadian Engineering Standards' Association. That association will examine it and pass upon it as to whether it does or does not conform to standard. Suppose the Canadian Engineering Standards' Association were made the arbiters as to the extent to which the wearable and breakable parts conform to the standards agreed upon by the committee representing the farmers on the one hand and the manufacturers on the other—with the Canadian Engineering Standards' Association acting as arbiter, would you not think it wise under these circumstances, to recommend that, in view of the expense that our manufacturers would voluntarily submit themselves to bring about this change, those who come into this market to compete with them should be desired to bring their implements to the same standard.

Mr. R. J. DURLEY (Canadian Engineering Standards' Association, Ottawa): Mr. Murray and the previous speaker have been kind enough to refer to the Canadian Engineering Standards' Association, of which I am secretary. I just want to say that at a recent meeting of our committee, the question of the investigation now going on with regard to the standardization of agricultural machinery was brought up, and I was instructed to convey to this committee the desire of the association to co-operate in every way and to help along in every way what is an extremely important but a very difficult piece of work. Mr. Murray is not quite correct in his statement of the objects of the association which I represent. The association, which is a semi-governmental body, has a very representative main committee on which Mr. Grisdale represents the Department of Agriculture. Its function is to carry on, or to organize just the kind of work that is being discussed here to-day. We have, for example, at the present time a committee investigating the possibility of getting a Canadian

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standard specification for incandescent lamps. There are a number of things upon which the association is engaged, but with which I will not take up the time of the committee. Having had considerable experience in standardization work, may I be permitted to give some of the results as showing the best way of carrying it on. The function of the association is really to bring about co-operation between the producers and the users. No standard arrived at in any other way is of any use. Legal compulsion for the use of engineering standards has not proved satisfactory. If a standard is good, people will use it; if not, they will not. By good I mean not only from an engineering point of view, but from the commercial point of view and the users' point of view. When a question comes up before the association which I represent and a suggestion is made for the formation of a standard specification for material or a standard set of dimensions, the dimensions for a sparking plug, or whatever it may be, our main committee begins negotiations with the various people concerned, and appoints a sectional committee on which are represented in approximately equal proportions the manufacturers and the users. These are the people who have actually to do with the technical discussion, and they find out first of all what things can be dealt with, and secondly how it is going to be done. They then divide up into a number of sub-committees, one dealing, for example, with sprockets and chains. Their recommendations will then be reported to and passed upon by the main committee. That is the way we try to do our work. We follow the method which has proved very successful during the past seventeen years in England. The British Engineering Standards' Association has been working along these lines and somewhat similar methods have been adopted by the great technical societies of the United States, such as the American Society of Testing Materials, the American Society of Mechanical Engineers, the Society of Motive Engineers, and so on. They have all arrived at standards, many of which are in use. It is really the result of conferences between the producers and the consumers. The committees, if I may say so, should not be too big, otherwise you will not get anywhere. If you have a committee of twenty or thirty people dealing with technical points, it is not a workable arrangement. The committee should be reasonable in size, consisting of eight, ten or twelve members under the chairmanship of a person not particularly tied up with either of the two parties. The work does not proceed very quickly. I would just offer a word of warning in that respect. The formulation of a satisfactory standard, even in regard to a comparatively simple thing, is often a matter of months or years, because there are so many different points that have to be taken into account by both sides. Mr. Murray, I am afraid, confused a little the objects of our association as regards the testing end of it. We are not equipped and not organized for the purpose of examining or experimenting with, or testing material or machine parts with the view of seeing whether they do or do not conform to certain specifications or requirements. The association is really for the purpose of getting agreement and formulating standards. If we had in Canada an institution like the National Physical Laboratory in England, or the Bureau of Standards at Washington, it would be the function of that body to make official tests and investigations as to whether or not a certain model complies with a certain standard specification.

Mr. BEST: Do you not think that that is something that should be done?

Mr. DURLEY: Undoubtedly some tests should be made.

Mr. BEST: Before they are allowed to go on the market?

Mr. DURLEY: There should be some public body or institution with that very function, and I understand that that will be part of the work of the projected research institute. I understand that provision is made in that project for work of that sort. The standardization of agricultural implements seems to me a work that can be done. It seems to me to be grouped under two or three heads. Some of the work will be comparatively easy, and some will be extremely difficult. Several speakers have classi-

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fied the various things that require attention. Personally, I think the first thing that should be considered is the question of fastenings, that is bolts and nuts and screws and things like that. Our experience in standardization work leads us to favour beginning with the easier things first. Our association and its committees do not favour the method of jumping right in at once into some complicated or elaborate problem of standardization when there are easier ones that are equally crying out for solution. I should suppose that in connection with agricultural implement work, the question of bolts, nuts, screw threads, the location of bolt holes and so on in various parts might well take up the attention of the committee before they go on to some more difficult or more complicated features of the work. I do not know, sir, that I should take up your time further than to say that anything that the association which I represent can do, or anything that I myself can do will be done willingly as we desire to furnish every service we can. I might add just one thing more. Some apprehension is occasionally manifested on the part of manufacturers—I do a great deal of talking to manufacturers' representatives, and some of them appear to think that the standardization work is going to interfere with freedom of design. That is not the intention at all. I had a very good illustration of that last year. I was in England and France in connection with the deliberations of the International Air Craft Standards Commission which was appointed to try to get agreement between the air forces of the various allied countries in connection with certain details of air craft. The manufacturers in England and France were worried because they thought this commission was going to try to tie them down in design, and it was feared that it would be impossible to maintain the relative superiority of their product, and so on. When the programme of the Commission was published, however, it was found that the work to be done was not of that character at all. I will give you just one illustration in connection with the propeller hubs. It was felt that it would be very awkward if an airman went from England to France and broke his propeller, and it was thought that he would not be able to get a propeller out of the French Air Service stores that would fit onto the shaft of his machine. We considered the question of how far it was feasible to have the holes in the wooden part of the propeller, the hole over the shaft end and the diameter and spacing of the bolt holes on the propeller hub agreed to internationally. I am glad to say that progress in that respect has been made which will no doubt be of importance in connection with aviation. That is only one example of the kind of work that is being done.

Mr. BEST: I think that one of the most important things this committee could recommend would be that the engineering committee have the power to examine any new machine when it is manufactured before it had been sent out. No class of people has been more deceived than the farmers. I know a binder known as the McMaster Binder which has been sold in the country. They were not good machines. The machine did not work, causing a loss to the farmer. Then there was another binder manufactured, and I put money in it. Quite a few machines were made. It was a failure, and we lost the money we put in it. I would not like to cripple or retard improvement in any shape or form in machinery, but I think one of the most important things we can do for the welfare and benefit of the farmers of this country would be to say that no manufacturer would be allowed to put any machine on the market until it had been examined and thoroughly tested, so that people would not be paying for it and have to scrap it in a few days. I think the committee should have power to say that no machine would be sold or put on the market unless the machine had proven after thorough examination to be a success.

Mr. F. S. LEWIS: We seem in a way—and perhaps it is a wise thing—to be reversing the order in which the different classes of machinery in this country have been built up. I think all manufacturers will say that they had not extended their line unless they felt there was a demand for an extension or widening of that line by the farmers, and that the farmer shares equally with the manufacturer the

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situation we find ourselves in to-day, with the wide variety of machines made and sold. I think you will all agree that the farmer is always looking for something new and some improvement in the way of machinery. As soon as a manufacturer sees that there is a demand for something, he tries to fill the order, and the result is that all over the country, in different sections, we have different machines which have arisen from the demand for slight changes, and we are not going to reverse that process. We are going to cut down the standards, and I think it would first be necessary for the Committee to feel that it would have power, after it has standardized a machine, or a part of a machine, to prohibit either the manufacture or sale, except for replacement purposes on old machines, of that discarded part, on any machine which was made after the standard was adopted. That is a pretty serious step to take, and would undoubtedly require to have the federal authority of Parliament behind it. Another point; the manufacturers I think are prepared to standardize, both in cutting down the number of machines and in standardizing parts, but you must remember that this is going to be an expensive process, because, while it has been said broadly that all this could be done without a great deal of expense, we will all have to be prepared to carry this equipment and have to make new equipment, and will have to make changes from time to time and improvements, after we feel that experimentation has made the change safe, and I think before we can do anything on standardization, we would have to go through the same process. We would have to do it gradually and feel our way, and not get the Committee, the manufacturers or the representatives of the farmers who decided on the standardization into trouble by making a change which did not work out satisfactorily. I think also, of course, from the manufacturers' standpoint, it would not be fair to have standardization forced on us and that different designs in machinery from other countries should not be allowed to come in; in other words, that they should be forced to conform with our standards. It cannot be done in one conference, and it may require the work of the Committee for months before the results suggested to-day can be accomplished.

The CHAIRMAN: Have we had sufficient discussion now to decide on future action and what step we shall take along the lines marked out here?

Mr. McCOIG: I would suggest, after listening to the remarks made by the representatives of the United Farmers and Engineering Branch and also the manufacturers, that it is not the wish of the Committee to ask for anything that is impossible, but the object of having these gentlemen present is to try and accomplish something to overcome a lot of the grievances and hardships the users of agricultural implements have to put up with. I suggest that the manufacturers who are represented here to-day will meet and consider the suggestions of the Deputy Minister of Agriculture as far as possible in regard to standardizing the repair parts which he enumerated, some of which might be standardized for next year, and it might be impossible to standardize some of them for a year or so later, on account of having large stocks of the present goods on hand. If the motion be in order, I would move that the manufacturers appoint a committee of three, to meet with the committee that you may name, to decide as to what course should be pursued along the lines of standardizing the parts enumerated by the Deputy Minister of Agriculture.

The CHAIRMAN: Would it not be better if we agreed to a common resolution that, in order to proceed further along the lines of this investigation and with the work as far as possible, a joint committee be appointed to pass that resolution, leaving the responsibility to the manufacturers that they appoint so many and the other interests appoint so many members.

Mr. McCOIG: The object is that some action be taken.

The CHAIRMAN: That would leave the matter in their hands; that is if we are unanimous on the appointment of that committee.

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Mr. RUBY: Do I understand that applies to a sub-committee of the Agricultural Committee of the House?

Mr. McCOIG: They would meet with the sub-committee, including the chairman and the deputy minister. I just throw out the suggestion, so that some action might be taken immediately on the suggestion of the deputy minister. Of course, it would take a longer time to eventually work it out.

Mr. RUBY: I would suggest that a list of the parts Dr. Grisdale submitted be sent to the Canadian Manufacturers' Association, who would in turn inform our members, and we could let you know in regard to it.

There is a matter which I think would come after that discussion—I think Mr. Lewis raised it—the question of how far the authority of Parliament would be behind these changes, whether it would be a matter for us to standardize and still leave the field wide open to other manufacturers who might come in.

The CHAIRMAN: That would be for the committee to consider. The question now is, have we gone far enough to reasonably justify the appointment of the committee?

Mr. DENIS: I think the committee is unanimous on that point. We all admit that standardization of certain parts at least can be accomplished.

Mr. KAY: It seems to me that a committee composed of some of the gentlemen here representing the manufacturers and a sub-committee of this committee might meet and see how far the manufacturers are willing to go before we recommend any action to the House.

Mr. GRISDALE: Not only to see how far they are willing to go, but how far it is practicable.

Mr. KAY: Both.

Mr. DENIS: When are we going to get an answer from the manufacturers?

Mr. KAY: My suggestion is to have a meeting to-day.

Mr. HAROLD: It was at my suggestion that the committee invited the manufacturers here, and on behalf of the committee, I would thank these gentlemen for the trouble they have taken to be present. A strong feeling was expressed here to-day, and at previous meetings, regarding this question, but the discussion on previous occasions lacked the viewpoint of the other party, and that was our idea in bringing about a joint meeting. Having been in business myself for a time, I know a great deal about the difficulties of bringing about changes, both from the point of view of engineering and from the standpoint of business. The man who has a certain type of machine recognizes the difficulty of adapting the parts of a machine of some other maker to his own. It is not so easy as it looks; in fact, it is a very difficult matter to get men who are competing against each other to agree to change certain things. We want to be practical, and I would say that at the present time it would be useless for us to consider the question of having any control over imported goods as regards standard. That may come some day, but it seems to me it is a long way off. There was another suggestion that other manufacturers should have to conform to these things; in other words, that we should be arbitrary. I do not think that that is wise or sensible at the present time. The spirit of co-operation is what we should have in view. The manufacturers can be influenced not by force but by a desire to serve as a body. They undoubtedly look upon their industry as one that has to serve. I think the manufacturers of implements will take a broader view and see how far they can go as a body in giving service to the country. I think that is the thing that is beginning to be realized all over the world, and it is a thing on which groups of people can be got together. There are certain things that they can do as a group that they could not do as individuals, and this is one of them. Any results that can be accomplished will be appreciated by the consumers and it will also have a better

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effect upon the industry than any restrictions. We have a committee already appointed, and I would suggest that it stand as a committee representing the Agriculture Committee on this question. I do not think we should ask the manufacturers at this time to formulate any definite policy, but when convenient they could have a meeting and with what they have heard to-day they might be able to work out some practical proposition which they could communicate to this committee.

Mr. J. E. ARMSTRONG: I agree with what the previous speaker has said, but I would go a step further. I think this committee should pass a resolution to the effect that we fully appreciate the fact that the manufacturers have sent their representatives here and that we respectfully ask them to have their representatives meet between now and the next session of Parliament and prepare a schedule of parts that might be standardized, comprising perhaps not the whole of the fifty that the deputy minister has suggested, but as many as they believe to be practicable; and further that they submit their propositions to the department or to the Committee on Agriculture at the next session of Parliament, when it might be possible to make a definite recommendation to the Government. I put that forward merely as a suggestion, but would move it as a motion if necessary.

Mr. DENIS: By doing that we might lose a great deal of time. With all deference to the manufacturers, I do not want the question to be settled by them, nor do I claim that it should be settled by us. Let it be settled by independent experts who can give information or an opinion upon which we could come to a definite decision.

Mr. ARMSTRONG: We are taking definite action if we adopt the means I am suggesting. If you allow these gentlemen to go away without some definite suggestion, I am afraid we will find ourselves in the same position as we have been. The manufacturers can meet the committee at next session of Parliament and submit their propositions, and it will be up to the committee and to the manufacturers to show why certain parts should not be standardized.

Mr. DENIS: What about the loss of time?

Mr. ARMSTRONG: You cannot say to the manufacturers, you have got to manufacture this part or the other, or standardize certain parts without investigation; it would not be fair to them.

The CHAIRMAN: Perhaps the course we ought to pursue is the one I suggested, to have either a sub-committee appointed by the Committee on Agriculture or a special committee to deal with this matter. We have put our views before the manufacturers and they have put their views before us. We believe it is possible to proceed along certain lines, and now we ask the manufacturers to give further consideration to this matter and to appoint at their earliest convenience a committee to co-operate with our sub-committee or special committee in furthering this work. We suggest that the committees have power to carry on the work between now and the next meeting of Parliament. Then the joint committee might be able to make a report to the Committee on Agriculture at its first meeting.

Mr. RUBY: On behalf of the manufacturers, I thank you for the hearing which you have given to our side of the case, and I desire to say that I am sure the manufacturers will be very glad to receive from a committee of this House any suggestions which they might wish to make in regard to the standardization of implements, or of parts, and to give them their most careful consideration. I do not think it would be possible for us, even if we were to meet this afternoon, to deal with it, because while there are some engineering representatives here, it is largely a matter of policy for the business executives of the manufacturers to decide. If they think it possible and agree, then it will be a matter for the engineering representatives. I am confident

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the manufacturers will give the fullest consideration to any representations made to them. Any representations of that kind may be made through the Canadian Manufacturers' Association of which we form a section.

Mr. McCOIG: I move that the same committee which was appointed to deal with the matter be continued to take it up with a committee appointed by the manufacturers.

Motion agreed to.

The CHAIRMAN: On behalf of the Committee on Agriculture I wish to express our appreciation of the manufacturers' response to our call, and our satisfaction at the conference we have had.

I think this is a beginning along the right line, and I firmly hope and believe that there are great possibilities in joint meetings of this kind, not only affecting this particular feature of the work, but many other features that directly affect the interests of the manufacturers and the great agricultural interests of the country. As chairman of that sub-committee, I should be very glad to have representatives of the manufacturers here, when you have had time to consider the matter, and you can communicate with me giving me your findings, and the list of the sub-committee you will appoint, and we will arrange a future date at as early and convenient time as possible, for the future meeting of the committee, to proceed along the lines marked out.

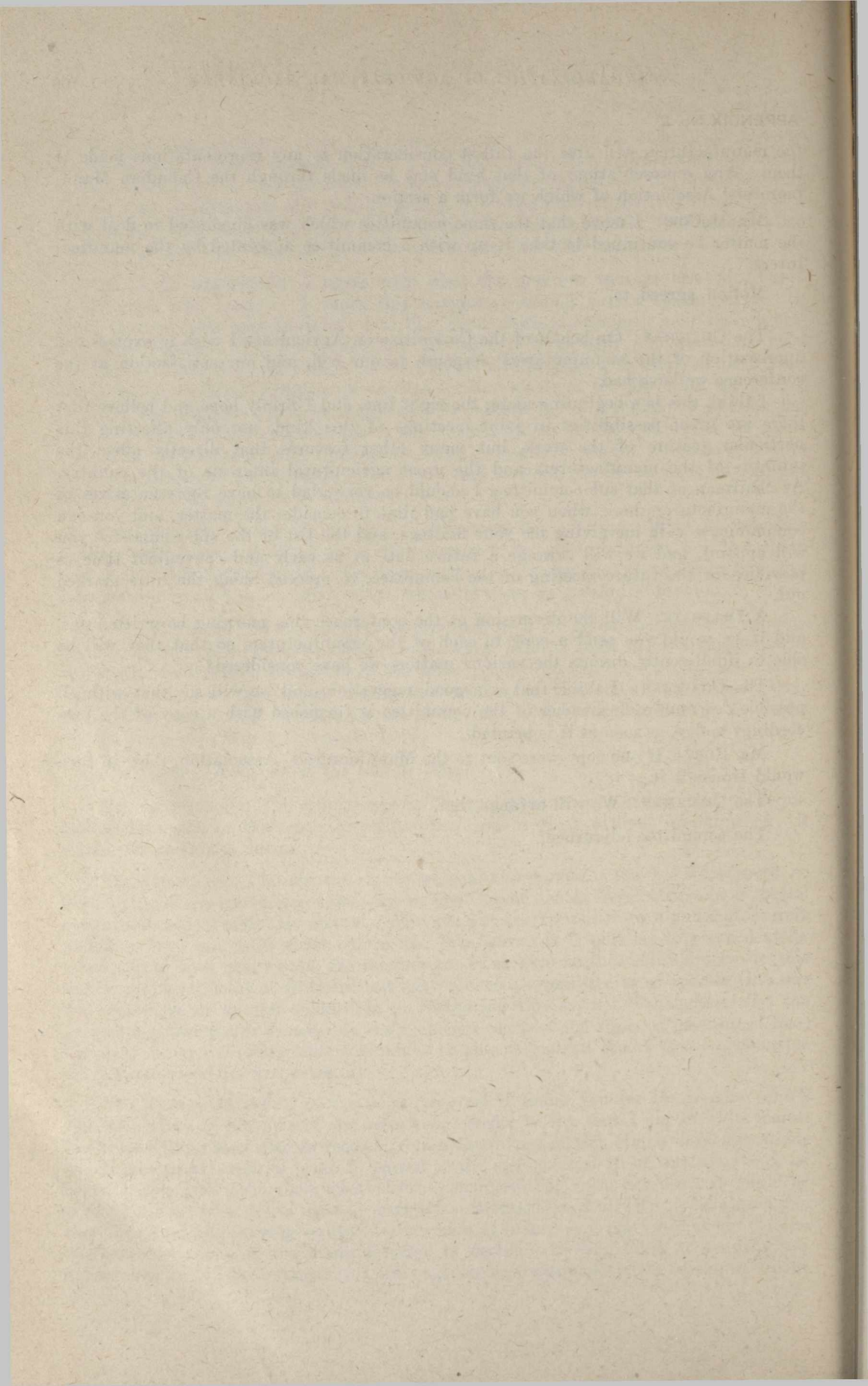
A DELEGATE: Will the discussion at the conference this morning be written out, and if so, would you send a copy to each of the manufacturers so that they will be able to intelligently discuss the various matters we have considered?

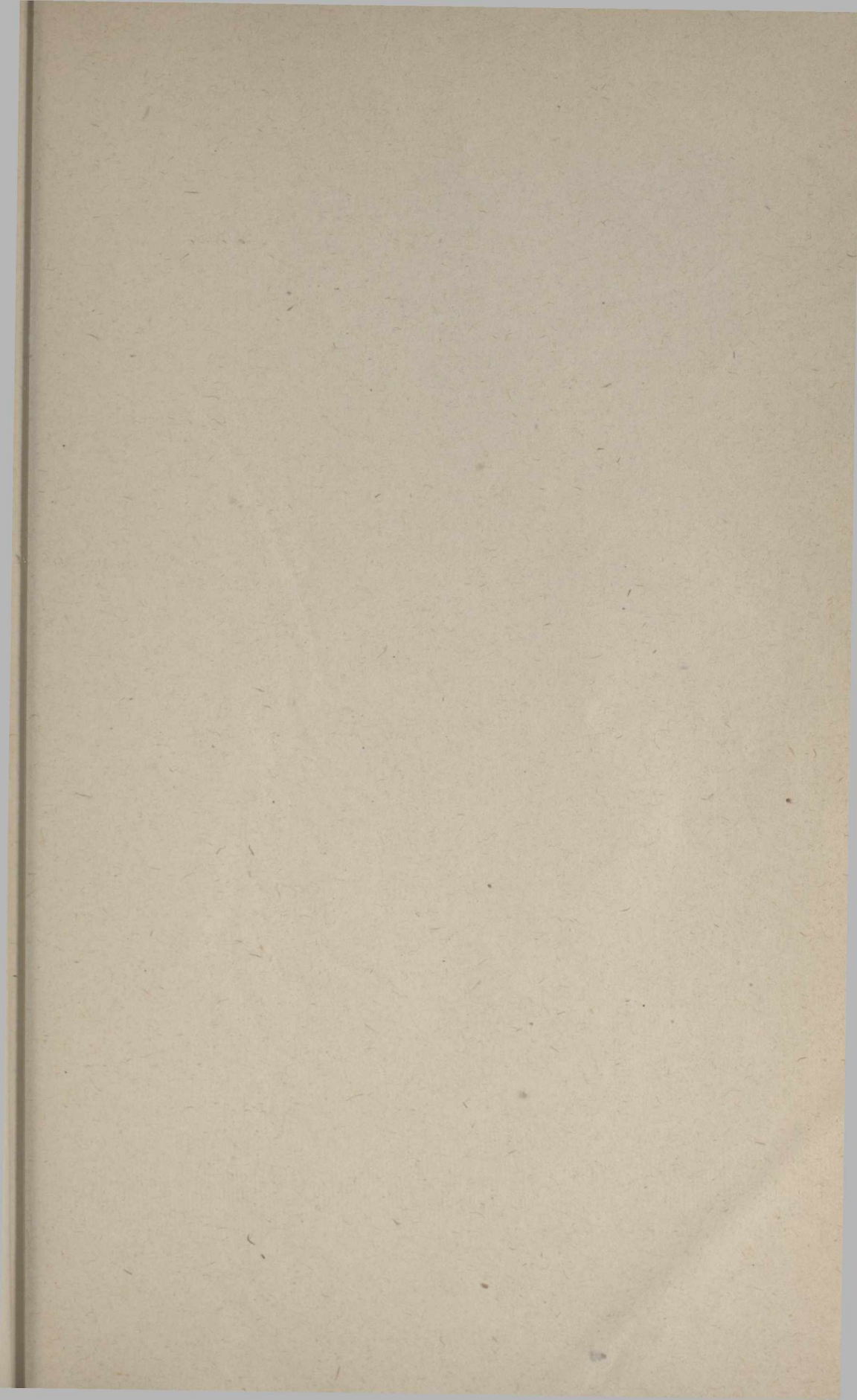
The CHAIRMAN: I think that is a good suggestion, and we will see that with all possible despatch each member of the committee is furnished with a copy of the proceedings to-day, as soon as it is printed.

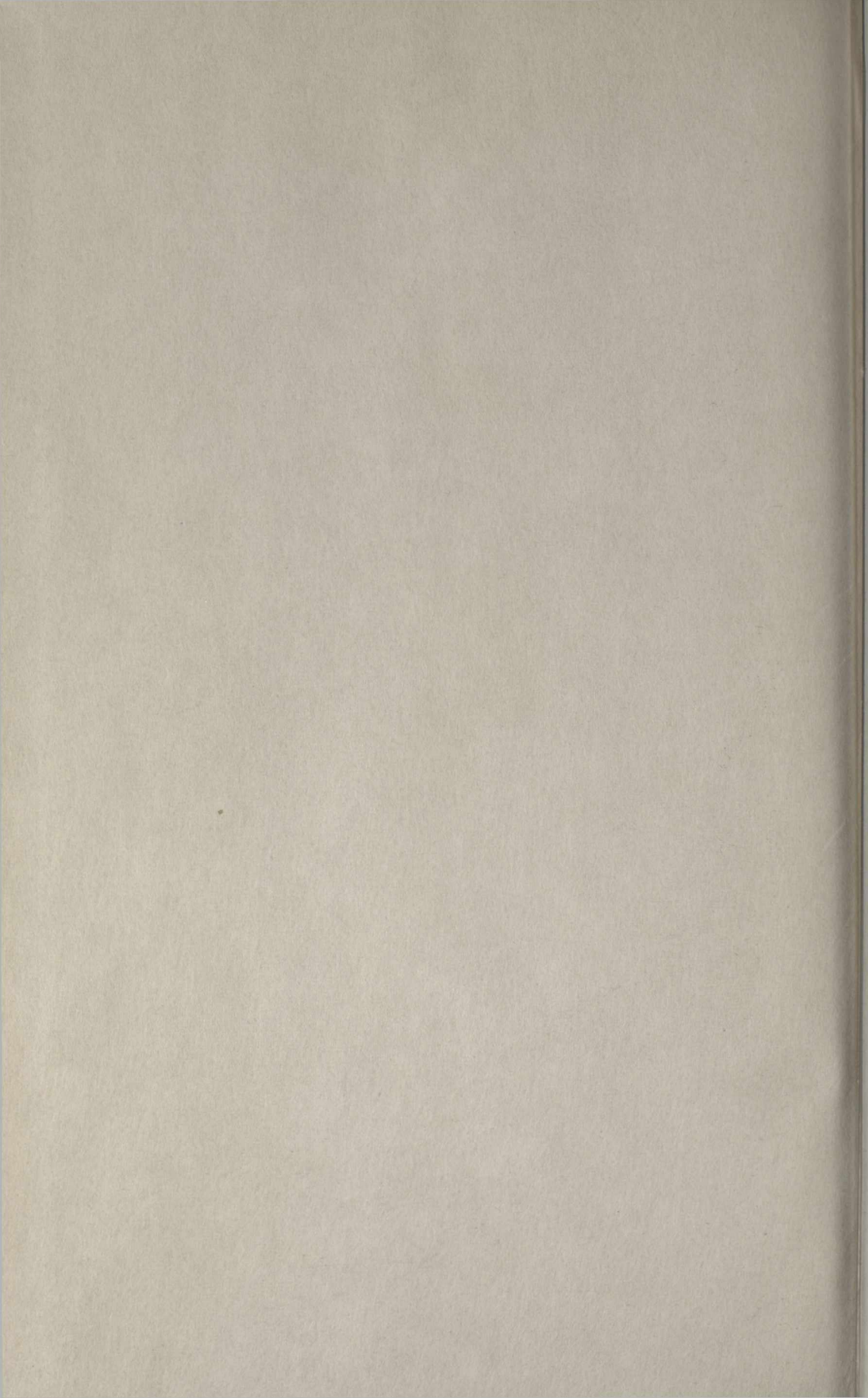
Mr. RUBY: If one copy were sent to the Manufacturers' Association, they in turn would transmit it.

The CHAIRMAN: We will arrange that.

The committee adjourned.







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