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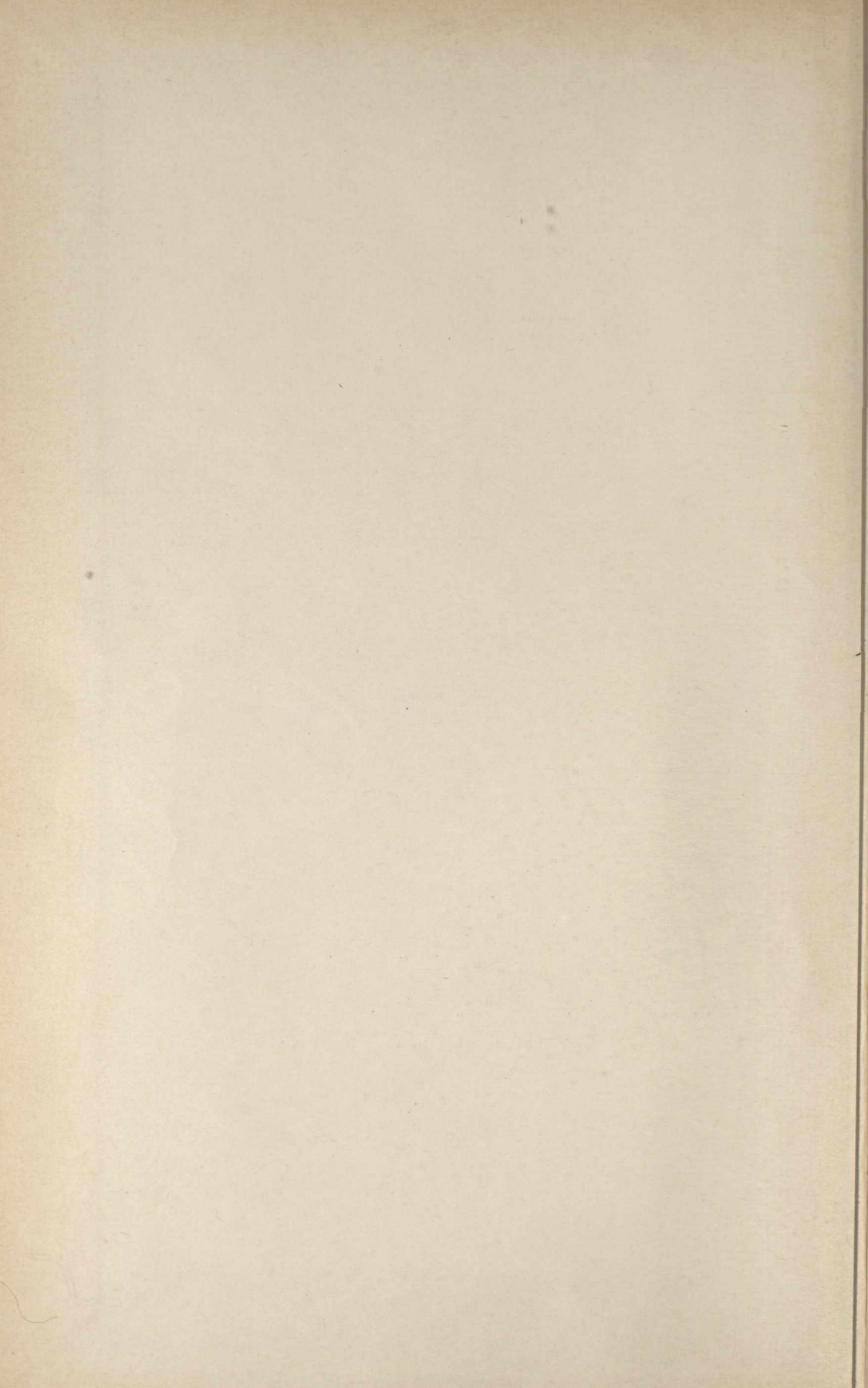
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1957 Second Session

THE SENATE OF CANADA



PROCEEDINGS  
OF THE  
SPECIAL COMMITTEE ON  
**LAND USE IN CANADA**

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No. 1

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THURSDAY, NOVEMBER 21, 1957

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The Honourable C. G. Power, Chairman

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WITNESS

Mr. William Houde, B.S.A., President, William Houde Ltd.,  
La Prairie, Que.

EDMOND CLOUTIER, C.M.G., O.A., D.S.P.  
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY  
OTTAWA, 1957.

1957 Second Session

SPECIAL COMMITTEE ON LAND USE IN CANADA

The Honourable C. G. Power, Chairman

The Honourable Senators

Barbour  
Basha  
Boucher  
Bois  
Bradette  
Cameron  
Crerar  
Emerson  
Golding

Hawkins  
Horner  
Inman  
Leger  
Leonard  
McDonald  
McGrand  
Molson  
Pearson

Power  
Smith (*Kamloops*)  
Stambaugh  
Taylor (*Norfolk*)  
Taylor (*Westmorland*)  
Turgeon  
Vaillancourt  
Wall  
White

27 Members

Quorum 7

## ORDERS OF REFERENCE

Extract from the Minutes of the Proceedings of the Senate

TUESDAY, October 29, 1957.

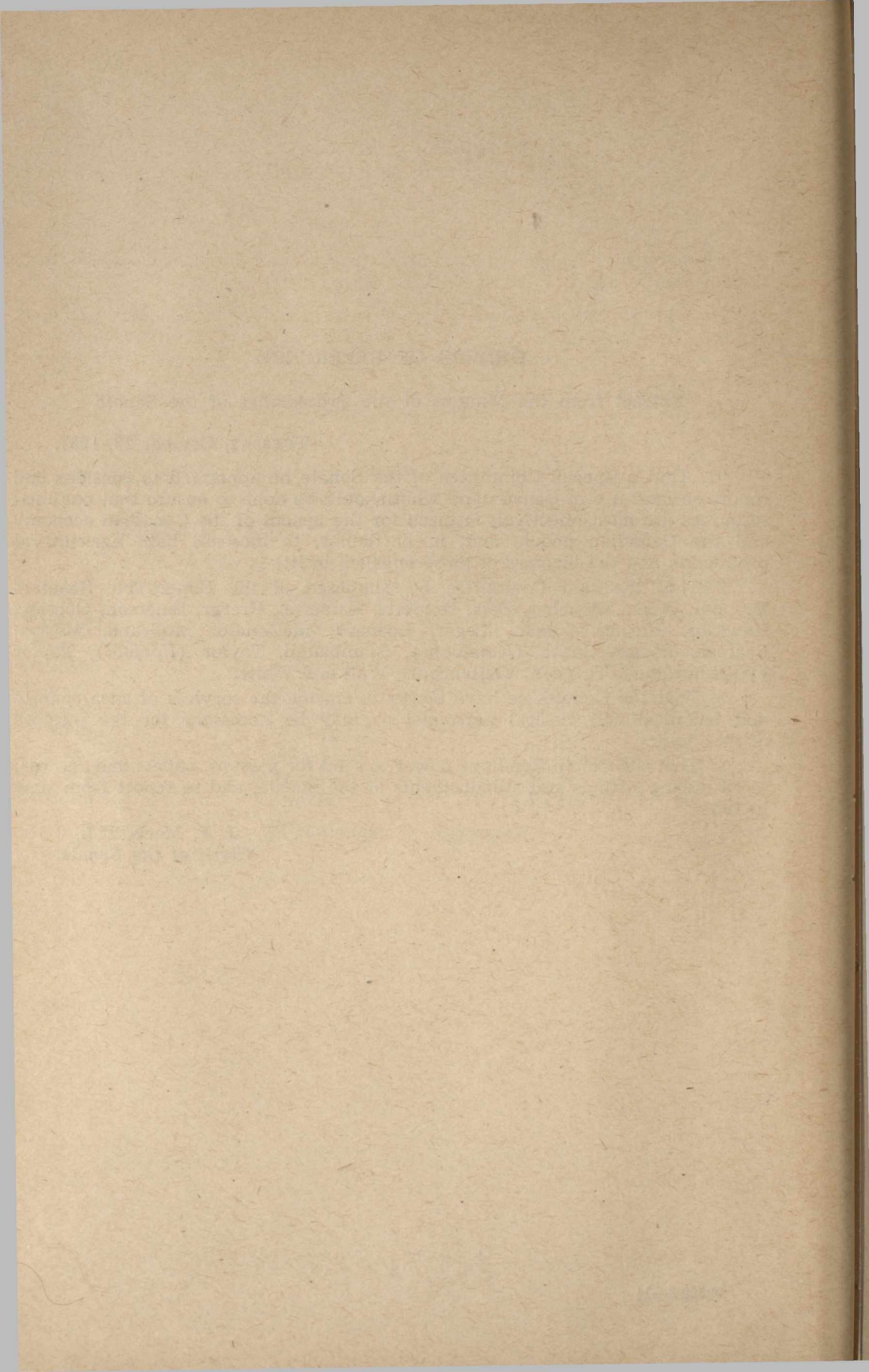
"1. That a Special Committee of the Senate be appointed to consider and report on land use in Canada and what should be done to ensure that our land resources are most effectively utilized for the benefit of the Canadian economy and the Canadian people and, in particular, to increase both agricultural production and the incomes of those engaged in it;

2. That the said Committee be composed of the Honourable Senators Barbour, Basha, Boucher, Bois, Bradette, Cameron, Crerar, Emerson, Golding, Hawkins, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Pearson, Power, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Turgeon, Vaillancourt, Wall and White;

3. That the Committee have power to engage the services of such counsel and technical and clerical personnel as may be necessary for the purpose of the inquiry;

4. That the Committee have power to send for persons, papers and records; to sit during sittings and adjournments of the Senate, and to report from time to time."

J. F. MacNEILL,  
*Clerk of the Senate.*





## MINUTES OF PROCEEDINGS

THURSDAY, November 21, 1957.

Pursuant to adjournment and notice the Special Committee on Land Use in Canada met this day at 10.00 a.m.

*Present:* The Honourable Senators Barbour, Basha, Boucher, Bois, Cameron, Golding, Inman, Leger, Leonard, McDonald, McGrand, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Turgeon, Vaillancourt and Wall—18.

*In attendance:* The official reporters of the Senate.

In the absence of the Chairman and on motion of the Honourable Senator Golding, the Honourable Senator McDonald was elected Acting Chairman.

Mr. William Houde, B.S.A., President, William Houde Ltd., La Prairie, Quebec, was heard.

At 11.30 a.m. the Committee adjourned until Thursday next, November 28th, at 10.00 a.m.

Attest.

John A. Hinds,  
*Assistant Chief Clerk of Committees.*



**THE SENATE**  
**SPECIAL COMMITTEE ON LAND USE IN CANADA**  
**EVIDENCE**

OTTAWA, Thursday, November 21, 1957.

The Special Committee on land use in Canada met this day at 10.00 a.m. Senator McDonald in the Chair.

The ACTING CHAIRMAN: Thank you, honourable senators, for the honour of choosing me as your acting chairman.

Near the end of the last session this committee presented its second report as follows:

1. In accordance with the order of reference of January 30, 1957, your committee held nine meetings, at which 27 witnesses were heard.
2. Your committee feels that while the progress made is gratifying, it also serves to illustrate the magnitude of the problem to be studied and to rule out any possibility of fully reporting on the subject at the present session of Parliament.
3. Your committee therefore recommends that the committee be reconstituted at the next session of Parliament to continue the inquiry.

I am sure that all members of the committee were gratified when on October 23rd last the Leader of the Government in the Senate made a motion which had the effect of setting up this committee again. This is the first meeting of the committee at which witnesses are being called. We are pleased to have with us today, as our first witness, Mr. William Houde, B.S.A., president of William Houde Limited, La Prairie, Quebec. Mr. Houde, we welcome you here and would ask you to make your presentation now.

Mr. William HOUDE, B.S.A.: Mr. Chairman, honourable senators, as I believe I am completely unknown to many of you, I would ask your permission to introduce myself.

I was born on a farm in the province of Quebec, along the St. Lawrence River near Lake St. Peter at Louiseville. I took my regular agronomic studies in agriculture at the University of Montreal and graduated in 1921.

For ten years I worked for the Department of Agriculture in the province of Quebec. I was instructor in the field of Field Husbandry Branch in the district of Montreal. My special studies involved the introduction of alfalfa, which was unknown in the province. I spent two years as Assistant Agronomist in Matane and North Gaspé. I was then appointed inspector for Demonstration Farms, which were set up by the Department of Agriculture to show the farmers what could be done with better techniques.

Later on for a period of five years I served as county agronomist for Drummond County. In 1931 I left the Department of Agriculture to join Canadian Industries Limited which, as you know, is a very important company manufacturing superphosphate and fertilizers in eastern Canada. I served with this company for nearly 18 years as district sales manager, in 1948 I left the company to form William Houde Limited, of which I am still president and manager.

So, for the past 26 years I have been directly connected with the fertilizer industry in Canada, and during all my career I have been travelling and in close touch with the farmers in the province of Quebec, with the occasional trip to the Atlantic provinces, and Ontario.

I am here today personally. I am a member of Canadian Fertilizer Association, which, by the way was formed only a week ago today. As a member of this association, I may say that we would be prepared to appear before your committee at any time suitable to you.

I appear here today for the most part as an agricultural technician; and since I heard only last Friday that I would be appearing before the committee today, I have not prepared a very complete brief on the subject. However, perhaps it is just as well, because without too much preparation one is able to deal with the matters as they come up for discussion.

Mr. Pope, the chairman of our association has asked me to tell you that we will submit a complete brief whenever you wish us to do so. Today I shall deal with this rather incomplete brief, which will give you some of our thinking on the problem of land use as related to the question of fertilizers. On page 1 I have set out a lot of figures, which I shall not read in detail, but shall call a few facts to your attention.

The farm population today in Quebec is 765,000, which is a decrease over the past 10 years. According to the information released recently by the Dominion Bureau of Statistics there were in 1941 some 838,000 people living on farms. Out of the total population today the percentage on farms is 16.5, whereas 10 years ago it was 25.2 per cent. We also find that the total area of farms has decreased from 18 million acres to less than 16 million acres, although the average acreage per farm has increased from 116.8 acres to 129.8 acres. With respect to improved land, we had in 1941 something more than 9 million acres, and today we have only 8,600,000 acres. The average improved land per farm today is 70 acres. That means that of total area in farms, only 54.6 per cent is improved land, in the province of Quebec.

The ACTING CHAIRMAN: Has that decreased in recent years?

Mr. HOUDE: The acreage per farm has increased slightly.

The ACTING CHAIRMAN: That is as a result of using machinery more than horses.

Senator McGRAND: What is the meaning of the term "improved land"? Could you define it?

Mr. HOUDE: The definition given by the Bureau of Statistics is as follows: All land which has been cultivated and seeded to pasture and was used for grass, is included in this item. Enumerators were instructed not to include natural prairie or hay land that was pastured after the crop had been removed.

That means any land which has been cleared from forest, and which has been plowed at least once and has been seeded down. That is improved land. You will notice that for improved land under crop we have about 5½ million acres, of which 1¼ million is in oats, nearly half a million in other cereals and almost 3½ million in tame hay.

Senator BARBOUR: What acreage do you have under wheat?

Mr. HOUDE: Very little. I think it is around 15,000 acres.

Senator BARBOUR: Fifty years ago you had more than that.

Mr. HOUDE: I live at LaPrairie, which is just south of Montreal. A few years ago I was talking to an old friend of mine who had a store. He told me he had started off in the business of wheat, and had a tremendous warehouse for the storage of it. Today that has all disappeared. But I do not think the province of Quebec can produce wheat as economically as western Canada.

I put another heading entitled "In Grass", because I felt that most of the improved land in the province of Quebec is grass. If you add the acreage which is in pasture to that which is in Tame hay, you will find that it totals over 6 million acres of grass, which is 71 per cent of all the improved land. I believe this is very important in a province where you have as the base of

its culture, animal husbandry and mixed farming, because according to some experts grass is the cheapest feed you can have, especially when it is grazed by cows. For instance, I had some figures the other day showing the cost of total nutritive units when it is supplied to cattle in the form of grass. When the pasture is grazed by cattle it costs 1½ cents; when it is supplied in the form of dry hay, 2 cents; if it is silage, 3 to 4 cents; and if feed, 6 cents. Of course, you cannot expect that cattle will go along the year round with pasture only, because pasture is good for only six months of the year, but the figures show the economics of production for animal and dairy products.

Senator SMITH (*Kamloops*): I wonder if Mr. Houde would tell us as compared with other provinces if there is any of this grass land which produces more than one crop a year? You spoke of going into alfalfa down there.

Mr. HOUDE: Alfalfa with some clover, with some exceptions. Timothy is usually mowed once a year, alfalfa twice a year. Some farmers will make two cuttings of red clover, harvesting around the middle of June in order to have a cleaner seed, and then a second crop for seed which means then that they will only have one crop of hay. Does that answer your question?

Senator SMITH (*Kamloops*): Yes, thank you.

Mr. HOUDE: Livestock: We have roughly one million milch cows, and not quite a million young breeding cattle under two years. Then horses, pigs, sheep and poultry, comes to the equivalent of not quite two million animal units. I may give you an explanation of what we call animal units. The basis of an animal unit is this: take a one thousand pound milk giving 6,000 lbs. milk per annum of 4% butterfat. Then we figure how many sheep and how many hogs it takes to make the equivalent of one animal unit. You will have noted that with over 8½ million acres of improved land there are less than 2 million animal units. It takes therefore roughly 4½ acres of improved land to support one animal unit, which seems to be a very light loading capacity. In other words, for each milk cow or its equivalent it takes 4½ acres of improved land in the province of Quebec. In fact, it takes more than that, because on the first page you will have noticed that we have unimproved land of over 7 million acres of which not quite 5 million acres are wood land, which means that you have probably around 2 million acres of rough pasture, partially cleared, but nevertheless some cattle will graze there.

Senator BARBOUR: That 4½ acres does not just include pasture, does it?

Mr. HOUDE: Everything. It takes this quantity, this acreage of improved land to support one animal unit.

Senator BARBOUR: For the year?

Mr. HOUDE: For the year, yes.

*By Senator Taylor (Westmorland):*

Q. That is not included in the importation of feeds that are brought into the province?

Mr. HOUDE: No. Instead of saying it takes roughly 4½ acres of improved land to support one animal unit I should have said to support partly, because the dollar value of Federal Government subsidy to import grain from the West represents a very big item in the province of Quebec. For instance, you had last year close to 900,000 hogs on the farms. Many farmers are raising hogs almost exclusively with grain from the west; they do not have enough grain on the farm to carry on, and when the price of hogs is so high, well, we have seen doctors, lawyers, and so on, raising hogs by the thousand in the country on one or two acres of land, which is not actually agriculture, and does not mean, either that the feed comes from the soil of Quebec. This wide ratio of

one animal unit per  $4\frac{1}{2}$  acres obviously indicates that our soil fertility resources are not used to the best of their potential efficiency; I think everyone will agree with that.

Now for those of you gentlemen who may not be too familiar with the province of Quebec, I have this map here. From a physiographic, geographic and economical point of view, the Quebec agriculture divides itself into three broad sectors, namely: (1) The metropolitan area; (2) Intermediate area or sub-metropolitan; (3) Frontier's land. I have indicated the metropolitan area in red. It is limited by the following triangle: a straight line from Hull to the northern end of Ile of Orleans, from there to the east side of Champlain Lake and the border, from there to Hull. Generally, from an agricultural point of view, we may state that this section is relatively prosperous. The metropolitan area comprises all the St. Lawrence low land. There the soil, generally speaking, is very fertile, and with exceptions, far more so than the rest of the province, and I think we can say that in comparison with the balance of the agriculture in the province of Quebec it is a sector which is relatively prosperous.

Intermediate or sub-metropolitan: This area surrounds generally the above area, namely, Ottawa, Gatineau, eastern Township, Lower St. Lawrence. This area can be described as fair or marginal.

Finally we have the Frontier's land, which is the balance of the cultivated area of the province of Quebec, namely: Gaspé, Saguenay, Lac St-Jean, Abitibi. From an economic point of view, this section can be described as actually poor.

Of course, in any of the three sectors there are numerous exceptions; there is a great variety in the soil, and I do not know what can be done with the Frontier's area where the soil is poor, and the same applies also in the other sectors. We have a good example, however, of what can be done with appropriate crops on very poor sandy soil. In the Joliette district, which is close to Montreal, there is a large sector of, I would say, 50,000 to 100,000 acres of very poor sand, and farmers gave up, left and went to the towns, several years ago. In the early thirties some people thought that this very light sandy soil might be splendid for the growing of tobacco, and I have friends there who purchased large acreages of farms with buildings on them, for a few hundred dollars and the same farms were sold ten years later for \$35,000. Today we have there between 5 and 6 thousand acres in tobacco, and thousands of people are making a very good living out of those poor soils, which shows, with proper technique and a study of the possibilities of the land, what can be done. However, it takes a special study. As I said before, in the metropolitan area a proportional percentage of the land is in the upper economic brackets. These are the highest level of fertility. The geographical locations offer advantages in the way of marketing facilities; they are close to Montreal and other cities and big towns. This is the section of the province which is heavily populated, so they have better marketing facilities.

Senator CAMERON: How much of the province has been covered with the soil survey?

Mr. HOUDE: I could not tell offhand. Work has been done here and there. As far as the soil survey is concerned, in the agricultural area I would say that at least a very good work has been done on one-third; but some preliminary work and survey has been done nearly everywhere, with few exceptions.

This section I have referred to is where you find a widely diversified agriculture. When I say "widely", of course we do not have nearly the same variety as in the province of Ontario. There are all kinds of farming there,—mixed farming, dairying, vegetables, flue-cured tobacco and cigar tobacco, sugar beets and so on. But the total acreage devoted to these various crops is very little as compared with the total area in hay, pasture and grain; because again

if you refer to page 1 and the acreage there, you will find that all kinds of vegetables, for instance, represent only 51,000 acres, tree fruits, 28,000, small fruits 6,000; tobacco, I think, about 11,000 acres.

The ACTING CHAIRMAN: Has the area for the production of tobacco increased to any great extent in the province of Quebec?

Mr. HOUDE: Do you refer to flue-cured tobacco?

The ACTING CHAIRMAN: Yes.

Mr. HOUDE: Yes, but not as much as in the province of Ontario. Because as I said before—I am just quoting from memory—I believe that the total acreage of land suitable for flue-cured tobacco in this Joliette district, including a few thousand acres around Three Rivers, does not exceed between 50,000 and 100,000 acres; and of course you cannot crop all that in the same year, because you have to follow rotations; and the soil being very poor, exclusively mineral, with absolutely no organic matter, you have to seed and plow back the full area with green manure and follow a two or three years' rotation.

The ACTING CHAIRMAN: Senator Taylor, would the climate be too severe for tobacco in a lot of that country?

Senator W. H. TAYLOR: I was just wondering about the climate.

Mr. HOUDE: Climate is a risk, specially in the northern edge of the district. This map may be too small to provide details. But just south of the city of Joliette, and extending southwest around Lanoraie and Lavaltrie, there you find 85 per cent of the total acreage. Up to twenty-five miles north of this main area there are a few places where they grow tobacco, and just north and west of Three Rivers there are also a few tobacco farms there; but in these areas north and northeast there is more risk; and this year, even in the main area, they have lost a good one-third of their crop through frost.

The ACTING CHAIRMAN: Have our scientists developed a hardier variety which is being used in Quebec than in Ontario?

Mr. HOUDE: No, they are using the same.

The ACTING CHAIRMAN: Is there any chance that a hardier variety will be developed?

Senator W. H. TAYLOR: Not to maintain quality.

Mr. HOUDE: There is a close relationship between Ontario and Quebec growers, because many of the Quebec growers were growing tobacco when Ontario started, and they came to Quebec on account of the very low cost of the land. But I do not believe we can ever expect to have the same acreage as you have in Ontario.

Senator BOIS: It all depends on the varieties you are using. It might be that through proper plant breeding work you could develop a variety which could be used a little farther north. The big risk is the climate, the frost. It is exactly the same problem as we have with wheat, to expand the area by means of earlier varieties.

Senator W. H. TAYLOR: Tobacco is a very tender plant and stands very little frost.

Mr. HOUDE: Tobacco is a semi-tropical plant.

The ACTING CHAIRMAN: Then there is the question of watching the quality of the tobacco. You have to keep the quality good.

Senator LEGER: How much fertilizer is applied per acre?

Mr. HOUDE: They would put from 1,000 to 1,200 pounds per acre specially planted for tobacco.

Senator W. H. TAYLOR: Probably we use up to 1,500.

Mr. HOUDE: In Ontario they have been cropping their land with tobacco for a longer period than in Quebec. But we are gradually increasing year after year in Quebec, too, as the soil is decreasing in main mineral elements.

Now I am coming back to this metropolitan area here and speaking of fertilizers. This is where the consumption per acre or per farm is heaviest. For instance Jacques Cartier county, a little spot on the map here just north of Montreal, is where you have the market gardeners; and another spot that I have mentioned is Napierville south of Laprairie. In Jacques Cartier county, the farmers consume nearly eight tons of fertilizer per farm. Much the same consumption, with only a very slight difference, would be found in Napierville county, with  $7\frac{1}{2}$  tons.

The ACTING CHAIRMAN: What is the size of their average farm?

Mr. HOUDE: They are smaller than the average of the province of Quebec. In Ile Jesus they are even smaller than in Napierville county. Here again I am quoting from memory, but I believe that the average farm in that district is 50 to 75 acres.

Senator LEGER: In most of the districts I would say it is a little smaller than that, because they grow vegetables, and they are operating on an area of about 20 or 25 acres.

The ACTING CHAIRMAN: Then their cropped area would be very small compared to farming districts.

Mr. HOUDE: They are highly specialized there. The acreage of crop would be comparatively small.

The ACTING CHAIRMAN: What would the average crop acreage be?

Senator BOIS: As I told you, it varies between twenty and thirty. They are family enterprises, so if there are many sons in the family it is larger, because farm labour is hard to find and high in price.

Mr. HOUDE: It will also depend on the kind of vegetables that are grown. Some farmers in that area will cultivate early potatoes for market and if he does so he can cultivate a larger acreage than if he were growing lettuce or radishes. These latter types of crops require plenty of labour. So, Mr. Chairman, in those two counties the consumption per farm is between 7.5 and 8 tons as compared with 1.15 tons per farm for the province's average.

The ACTING CHAIRMAN: I suppose there is a lesson there, Mr. Houde. These market gardeners have a ready market for whatever they can produce right at their very door almost.

Senator BOIS: Within 15 miles, Mr. Chairman.

The ACTING CHAIRMAN: The great problem with a lot of our primary producers is the distance that they are situated from ready markets. That is the trouble with quite a number, especially those located in the Maritimes. The market for Maritime products is to the south of us in that thickly populated New England area. We talk about feeding the markets in central Canada, but the farmers in this district are able to look after those markets and the consumers do not need our produce. To a large extent if the farmers can find a ready market for their produce they will make a success and they can afford to buy fertilizers.

Senator LEGER: I presume they have canneries there too.

Mr. HOUDE: There is quite a problem that I would like to point out to the committee regarding this market garden area. This market garden area is fast disappearing because real estate operators are buying up the farms and paying anywhere from \$2,000 to \$2,500 per acre. Presently the Government is building a new highway to the north and it is being located right through the heart of that garden market district. The highway is absorbing anywhere from 300 to 400 feet in width all across the island. But we cannot blame the farmers for taking \$2,500 per acre, if they are offered it.



The ACTING CHAIRMAN: Does that mean that the market gardeners will have to move?

Mr. HOUDE: Yes. They are moving and there seems to be a trend down to Napierville county. Napierville was not a good market garden area ten years ago but today it is becoming more so. There they have the type of soil and climate required for good market gardens. Farmers in that area are extending their market gardens. But as to how long will they be able to farm there we do not know. As you know, the St. Lawrence Seaway Authority is developing the St. Lawrence River. You have all heard about the Laprairie Basin, which is one of the projects connected with the seaway. Well, the St. Lawrence Seaway Authority have purchased land in that county for their works, and business people have purchased many farms also.

Senator LEGER: That condition exists all along the seaway.

Mr. HOUDE: Not only along the seaway, but for many miles inland on both sides. In the parish of Laprairie, which is my home, the seaway has taken I would say 5,000 acres. A large organization has purchased 3,500 acres in one block, all farmland, to create a development which they will call Candiac. They expect that by 1970 there will be 50,000 people living in that development.

There are two farmers that I know of in my area who will not sell their farms, only two in a 10 mile length of the parish. These two farmers have refused to sell their farms so far, probably because they don't want to quit farming or they may have more money than they need or they may be expecting to receive a higher price later on.

The land along the St. Jacques River is coming in for a little attention now because about three weeks ago there was a conference at Sorel to discuss the deepening of the Richelieu Canal which would provide a deeper waterway from Sorel to New York. The following week many farms along that river were sold at prices up to \$2,500 per acre.

In the parish of Laprairie we have seen a decrease in farming area of probably 15,000 acres at least.

The ACTING CHAIRMAN: Mr. Houde, we had the pleasure of hearing from Mr. S. J. Chagnon, Assistant Deputy Minister of Agriculture, and he suggested among other things that not sufficient fertilizer is being used by a large number of farmers, and he suggested that every farmer should have the soil on his farm tested to find out in what respects it is deficient and then apply fertilizers in certain proportions of potash, nitrogen, and phosphoric acid suggested for that particular farm. What have you to say about that suggestion?

Mr. HOUDE: I think that was an excellent suggestion made by the Deputy Minister. That is what we are doing. Companies selling fertilizer in in the province of Quebec are equipped to take soil samples and make an analysis, and the provincial Government has a laboratory at Ste. Anne de la Pocatière, and the federal Government has a similar laboratory too, but I don't believe that the farmers have taken advantage of these facilities as they might.

The ACTING CHAIRMAN: Have the farmers not come to the position where they realize the advantage of having their soils tested?

Mr. HOUDE: They are waking up to that; as is noted in the brief. In the last year I state that the farms of Quebec have used 141,000 tons of fertilizer as compared with 415,000 tons for Ontario, and out of a total of 808,000 tons for all of Canada. As I said before, that represents an average of 1.15 tons per farm, or 33 pounds of fertilizer per acre in the province of Quebec.

Mr. Chairman, I think you might be interested to hear that in the Maritimes you are using much more fertilizer than we do in the province of Quebec. I explain in my brief that the purchase of fertilizers for use on farms is growing in my province of Quebec and in the Report of the Royal Commission on Progress and Future Progress of Canadian Agriculture, the cost of fertilizer in 1951 per acre of improved land in the province of Quebec amounted to 77 cents. This is found on page 74 of the Report. In the province of Prince Edward Island, the comparative figure is \$2.72. Of course, in the province of Prince Edward Island they cultivate a very highly specialized crop of potatoes.

The ACTING CHAIRMAN: Yes and that requires a very heavy application of fertilizer. The same is true in other parts of the Maritimes.

Mr. HOUDE: New Brunswick and Nova Scotia spent \$2.86 per acre, Ontario \$1.44. The Prairie provinces, where they need less fertilizer, spent 13 cents per acre of improved land.

Senator TAYLOR (*Westmorland*): One of the reasons why it is higher in the province of Prince Edward Island than in New Brunswick is because of the specialized crops of potatoes grown in P.E.I. where they use up to two to three tons of fertilizer per acre.

Mr. HOUDE: I understand the difficulty there is that to get a good crop it would require probably from 12 to 15 hundred pounds of fertilizer per acre, but you never know ahead of time, of course, what kind of weather you are going to have, and if it is on the dry side or the too wet side, to take full advantage they add another 500 pounds as an insurance to get a higher yield. That is what I understand they do there.

The ACTING CHAIRMAN: Then, of course, a lot of people are using their fertilizer for other crops, and also for pasture improvement. Do you know what Quebec is doing in the way of using fertilizer for improving the pastures?

Mr. HOUDE: You mean from a Government point of view?

The ACTING CHAIRMAN: No, the average farmer, is he applying fertilizer?

Mr. HOUDE: They are just beginning to do that; a few farmers in every county, I would say, have started doing so, to improve their pasture with fertilizer, but this is not yet the general practice.

The ACTING CHAIRMAN: Is the soil acid to a large extent in your province?

Mr. HOUDE: I would say nearly all the soils of the province of Quebec are acid.

The ACTING CHAIRMAN: Are they using lime?

Mr. HOUDE: Yes, they are using lime.

The ACTING CHAIRMAN: I mean, is the average farmer conscious of the fact that he has to use lime in order to correct the acidity of the soil?

Mr. HOUDE: Not as he should. I think the consumption of lime is roughly around 300,000 tons per year. By the way, you know that there is a federal-provincial subsidy by way of freight assistance—I think it is five (5) cents per tone per mile, or \$2.00 a ton; I mention that later in the brief. I feel this is a very constructive policy, for lime is required in the province of Quebec.

The ACTING CHAIRMAN: Unless you use lime you do not get the full advantage of the fertilizer that is applied.

Mr. HOUDE: Exactly; but I believe that this policy should be emphasized. I do not know what should be done, but farmers should be induced to use more lime, it certainly is needed very badly.

The ACTING CHAIRMAN: Well, it certainly is very important. I remember we tried to sell our farmers in Nova Scotia the value of using lime on their acid soils, and we tried many kinds of experiments to catch the eye of the

farmers. I recall that at one time a great many farmers in Pictou county were having a lot of trouble because of the acidity of their soil, and an effort was made to get them to use lime. We selected a farm where there were two men getting along in years, one was totally blind, and the other nearly blind. They had a herd of cows from which they got their living selling fluid milk. These two gentlemen had trouble getting their cows in from the pasture at night; being blind they could not find them. We thought this might bring to the farmers the advantage of lime. We therefore took a ten acre block near the gate next to the farm barn and we put lime there about two tons to the acre. Clover came up and the cows fed on the clover, and the two men never had any trouble finding their cows, for they were feeding on this clover patch. I wish we could get our farmers to realize, especially in the eastern provinces, the great value of lime, and convince them that they must apply it in order to correct the acidity of the soil, and that when fertilizer is applied, if there is not enough lime, the fertilizer will not have the effect it should have.

Mr. HOUDE: No; because when you have an acid soil, if for instance you apply phosphorous in the form of superphosphate, which is the usual way, it will not have the full effect. This is rather technical, but iron and aluminum will combine with the phosphate and bind it there so that it will never become available again, whereas if you have lime it will be kept there in a form that will be available for the plants. Also, potash will release itself more readily, and organic matter will decay, and nitrogen will be released, and so on. Acid soil is not the proper medium for the crop, and you cannot expect to have big yields in the soil which is acid. That is why we feel the first thing to do after the water has been controlled, is to put lime in to correct acidity.

Coming back to this question of quantities of fertilizer used, may I mention here that the disbursement per farm to purchase fertilizers is less than \$60 annually as against over \$225 in Vermont State, where the average consumption of fertilizers is  $4\frac{1}{2}$  tons per farm. I have taken this example because in Vermont State, especially along the border of Quebec, we have the same condition in both regions. Besides that, Vermont culture is based, I would say, nearly exclusively on dairying. They have large herds of cattle producing fresh milk for the large cities, such as Boston, New York, and so on, and there they have started, in conjunction with the Soil Conservation Act, heavy fertilization of pasture, and have obtained excellent results.

Speaking of pasture, may I just mention the question which was raised a few minutes ago. I have here an example of what has been done with the farmer by Mr. Albert Billette. This is a very interesting case, because this man is a veteran who had never farmed before, and when he came back from the war, under the DVA he obtained a farm and followed very closely what he was told to do by the technicians of the department. In 1953 a fertilizer company started co-operative work with him. I mentioned earlier in the brief that it takes  $4\frac{1}{2}$  acres to support one animal unit. In the case of this man there was a seeded down pasture, with proper fertilizer, in 1953. He had 13 milk cows, and 4.2 acres in pasture, and his pasture was grazed from May 28 to September 14, in the following way—and this is another interesting point: one half hour for the first ten days, two hours a day for the next ten days, and three hours a day for the remainder of the summer. Now, this chap thought that if he ate at the table three times a day, his cows should do the same. So he had loafing pasture close to the house, and he had the cattle graze three times a day during his three meal hours, and he had wonderful results all that summer. Cows do not lie down there; they do not bed in the field; it is a very clean field; you do not see any droppings: there are very wonderful results. The same thing continued in 1954. He is still keeping 13 cows on four acres of pasture. But on areas in the province of Quebec where people are not improving their pasture it

takes sometimes three or four acres per cow for grazing. That just shows how much we can improve the use of our land. We are not using its potential capacity. This man I have referred to is taking only one-third of an acre per cow for grazing, while the next farmer is taking three acres. It is a ratio of 1 to 9.

Coming to economics: I believe that the production of beef is something which will expand in the province of Quebec. There is not much today. However, a progress report from St. Anne de Pocatiere Experimental Farm shows that for \$1 of fertilizer invested there can be a return of \$4.54 in beef.

Senator TAYLOR (*Westmorland*): On this particular farm you were speaking of, was all the grazing those cows had limited to two or three hours a day?

Mr. HOUDE: Yes, but he was feeding a bit of hay besides that; because, especially earlier in the season, the grass is high in water content and for a high-producing capacity a cow cannot get along with grass only, it has to be fed some portion of either grain or dry hay, otherwise it will take too big a volume to produce that milk.

The ACTING CHAIRMAN: Perhaps you could finish what you think you would like to say.

Mr. HOUDE: I have not much more. I think probably other questions could be cleared up later on.

There is one thing I should like to mention at this point. It is referred to in the report of the Royal Commission on Progress and Prospect of Canadian Agriculture. The expenditure on the purchase of fertilizers in the province of Quebec in 1955 represented 3.5 per cent of the operating and depreciation costs of the farm, whereas the purchase of feed, which is not mentioned in my brief here, and seed cost 35.5 per cent. There is another point here, which I have mentioned, and that is that the amount spent by the federal Government on freight subsidies to import feed grain from the west to the province of Quebec for the 12 years, 1941 to 1953, was over \$78 million, which is more than the total disbursements by Quebec farmers for the purchase of fertilizers in that province. Of course, I do not think it will ever be economic for Quebec farmers to produce all their grain, although probably they may increase the percentage, due to the rotation system we have. I think it is evident that Quebec is not using a sufficient quantity of fertilizers, and that yields are higher where fertilizers are used in larger quantities.

Senator WALL: Suppose I am an average farmer in Quebec, farming 125 acres of land, 80 per cent of which is improved, and you are trying to persuade me to use the required amount of fertilizer, the soil being average, how much would it cost me a year?

Mr. HOUDE: It varies. Let us take the average. I would say—

Senator WALL: What is the outlay you are asking me to make?

Mr. HOUDE: Supposing you have 70 acres of improved land. You have a five-year rotation. Say that it means you may have to plough two-fifths of that per year,—anywhere between one-fifth and two-fifths. Suppose you plough down one-fifth a year; that is 15 acres. I presume that if you are favourably located,—not in Gaspé, but down here (near to Montreal), you will grow some acres of silage or silage corn and so on. Putting down 15 acres, at say around a quarter of a ton per acre, would be 4 tons. I presume you would have one acre under grass per cow, and if you have 15 cows you will have 15 acres in grass. I would recommend you to sow 500 to 600 pounds per acre every third year. So that is about one and a quarter tons per year. Before, we had three tons. I advise you to use between four and five tons per year, which will represent roughly, \$225 disbursements. I am quite sure that if you do that properly, every dollar you would expend would return you in the very first year anything between \$2 and \$3.

Senator WALL: All right. So, besides being a problem of accepting that fundamental thesis, that a dollar put into fertilizer would bring me this return, is there a problem of non-acceptance of fundamental thesis, or is there a problem that the farmer has not got the available money at the right time in order to make that investment?

Mr. HOUDE: The problem is twofold. First, the farmer is not properly informed, he is not convinced, he does not know what will be the actual results of fertilizer. Secondly, he has no money, no cash money. That brings me to the question of credit, which is, I believe, very important. You have in this country, and we have in the province of Quebec, some Government assistance in the form of farm credit loans. This is a long-term loan, in which the federal and the provincial Governments participate. This scheme, especially when a farmer goes under the provincial end of it, does not give him any additional money to work with because, when a farmer borrows money from the Government the chances are that he just wants to consolidate his debts. He probably owes a total of \$5,000 to John, Peter and some others and he is tired of having so many creditors so he borrows this money from the Government and pays off each of his creditors, and after doing that he is left with no money.

The next scheme is what I would call intermediate credit under the Farm Improvement Act, which is a federal scheme. Under this law a farmer can borrow money to improve his buildings, for drainage installations on his farm, to purchase farm machinery and so on. According to this report which I have here I think that of the amount of money that has been borrowed through the banks, guaranteed by the Government, 88 per cent has gone to purchase machinery. These loans have to be paid back to the bank within a period of three, five or six years, if I am correct.

If you will permit me I would like to give an illustration. This is a case of a farmer that I know very well, and this will illustrate my thinking on the subject. In the Laprairie district one of my customers was a fertilizer dealer who was growing grain on quite heavy land and he had relatives who were growing grain out west. So, when combines came along he purchased one. He had about 150 acres of grain under cultivation and thought that it would be a wonderful thing for him to buy a combine thresher. So he got in touch with his farm machinery agent and bought the combine. It cost him I think \$5,000. At the end of the first year he had to pay \$1,000, but that year he had an excellent crop and he was able to pay the agent the amount he owed as the first year's instalment. However, in the second year he had a bad crop, it was a rainy year and the crop was such that he could not use his combine at all, and yet he had to pay his second instalment of \$1,000. In that second year he was quite late in paying his fertilizer account and we had to get after him many times to get our money.

In the third year he did not buy any fertilizer; he told us that he could not afford to buy any more fertilizer. The result is that this farmer is far worse off today than he was before because he has contracted obligations which exceed his extra capacity to earn.

Senator WALL: Mr. Chairman, may I ask this specific question, recognizing both provincial and federal responsibility to agriculture as a general one? Because of the specific local conditions in Quebec would it be fair to say that some short-term loan law could be an answer, specifically because of the problem of non-use of fertilizer to the extent that everybody says would be desirable. If there could be carried on a wide educational program plus an arrangement to make short-term loans, loans that would be available to every

farmer up to a certain amount to be used in the purchase of fertilizer, would that not be a solution?

Mr. HOUDE: My answer to that would be definitely yes.

Mr. Chairman, may I quote from a joint brief presented to the Héon Inquiry Commission on behalf of the L'Union Catholique des Cultivateurs, a farmers organization having 45,000 members, and La Coopérative Fédérée de Québec, also a group of 50,000 farmers of the province of Quebec. I will read the quotation:

"Too little fertilizer is applied at too long intervals.

One objection of many farmers is the cost. Many of them do not yet know enough about fertilizers, how to use them and figure their returns."

And the same brief concludes:

"We must therefore continue to advise the farmer on the advantages and the principles of the use of the fertilizers. Here, there is a rather important problem. The period of purchase of chemical fertilizers coincides, for the farmers, with a period when they have the least cash available. So unless there is a possibility of obtaining working capital at not too high a cost, farmers are forced to limit their purchases of chemical fertilizers to a strict minimum."

That is the end of the quotation from the joint brief.

Senator WALL: In other words, the problem is fairly crucial. Now, if that problem is crucial then the implications of monetary assistance on a short-term basis are also crucial.

Mr. HOUDE: The question of a monetary solution may be crucial but I don't think that it would be costly to any Government because from past experience it has been proven that farmers do meet their obligations although sometimes they may be a bit late.

Senator WALL: Yes. And of course, too, the Quebec Government has a farm credit board and probably it has the machinery to administer a special kind of act under which short-term loans could be made.

Senator McGRAND: What is the lowest rate of interest at which they can borrow money?

Mr. HOUDE: 5 per cent to 6 per cent.

Senator McGRAND: I mean on this arrangement that has been suggested. What would be the lowest rate of interest?

Mr. HOUDE: On a provincial loan the rate of interest is 2.5 per cent.

Senator WALL: But that is a long-term loan, for something like 39.5 years.

Mr. HOUDE: They cannot borrow money under that unless it is for the farm.

Senator McGRAND: I am leading up to another question. I want to make this clear; what would you suggest the rate of interest should be.

Senator WALL: A short-term loan, not a standard loan. I may say that I too am groping for a solution to what seems to be a crucial problem and the rate of interest may not be as low as 2.5 per cent so advantageously made for the long-term establishment of new farmers and so on, but probably it could be set at a standard rate of 5 per cent. I do not know whether that would create a problem or not.

Senator McGRAND: How much effort has been made to apply the principles of cost accounting to farming? Let us take the case of a man with 150 acres of land, 75 acres are under improvement, he has 15 cows, with 4 acres to produce one animal unit and so on. What would his income be for such a set-up and

would his income on that set-up justify him or permit him to pay an interest rate of 4 per cent even on fertilizer purchases.

Senator WALL: Of course the thing that would interest me more in that case would be what would be the relative increase in his income if he made this additional investment. If he made an investment of \$200, which he could borrow and he was more or less assured that his return would be another \$700 or \$800, it would be a paying proposition.

Senator McGRAND: That is a point I wanted to establish.

Senator BOIS: There are some other things to consider. People are somewhat reluctant to lend money on such a scheme because of the risks involved. Some years ago I remember our grain crops were a failure, and the farmers could not pay what they owed. Then there is this other point, you would have to establish a period of time, six months or nine months and again, you will have farmers who prefer to delay their crops and perhaps make a big mistake in doing so. It is circumstances such as these that discourage organizations from making loans on such schemes.

Senator TAYLOR (*Westmorland*): There is another factor that goes along with it, and I have seen this happen in my own community, and I feel a good deal like Senator Bois does. We may lose a crop two years in succession, and I feel I am lucky if I get one good crop of grain out of three. There is still another factor. If a farmer goes out and takes advantage of a short term of six or even nine months and runs into a dry summer and has used all his fertilizer and there is no pasture, he is in trouble, and may have to liquidate some of his livestock or some other part of his operation. That is one of the great difficulties of the short term, as I see it.

Senator WALL: There would have to be some sort of a safeguard in the loaning procedure to take care of problems like that.

Senator BOIS: All right—it takes time.

Mr. HOUDE: Of course, my conception of short term credit was to use our regular channels. We have banks, we have credit unions, and so on, but a farmer does hesitate to go to his bank, or to Caisse Populaire, because he has not been trained to borrow money from them first. If there were a new moon, say at midnight, and no one was around, and he could meet his banker in the cellar or some out of the way place where he couldn't be seen, perhaps he would borrow money, but he doesn't like to. If the Government, however, has an assistance policy and tells the farmer that if he will go to the bank the Government will guarantee the loan, the farmer will go to the bank and pay the regular rates of interest. But the point is that today he does hesitate, and if we could induce farmers to go to the bank and tell them, "Your banker will be very glad to see you and to loan you money on your fertilizer purchases—you only have to sign a note, and don't have to get your neighbour or relatives to endorse it"—as the farmer has to do today, I think then the farmer would go to his banker.

The ACTING CHAIRMAN: Do you not think that farmers are often ill-advised about purchasing? To illustrate, I have seen farmers buy tractors and they would not have farming enough to keep them working a sufficient number of days in the year to justify the expenditure of so much money, and they have had to mortgage their farms, and some of them eventually are put off their farms because they have bought unwisely.

Mr. HOUDE: That is very correct. That is why I mentioned earlier the example of the fertilizer agent.

The ACTING CHAIRMAN: Well, I wonder if that does not lead us to this thought, which is very important in farming today, I think. I believe it is a real challenge, as I said in the Senate the other day, to the provincial depart-

ments of agriculture to secure sufficient officers in farm management, men with experience, men with background, men with good judgment, that the farmers will accept as helpers to advise them regarding their farming operations. I think a lot of our farmers could be greatly helped if our departments of agriculture could rise to that challenge and get such farm management officials who could go out and give practical advise to our farmers; I think that is what a lot of them need.

Mr. HOUDE: As one who is engaged in other fields as well, I feel that the basic problem is a question of education. First, Mr. Chairman. If you educate the farmers properly they will realize the importance of the problem with the result that they will make better use of their land, and will certainly be able to increase yields per unit of surface, obtain a higher profit from fewer acres. That is what I think we should aim at.

The ACTING CHAIRMAN: That would be your recommendation number one?

Mr. HOUDE: Yes.

The ACTING CHAIRMAN: And your second recommendation is the establishment of short term credit?

Mr. HOUDE: The establishment of short term credit guaranteed by Government—the bank or any other means.

The ACTING CHAIRMAN: Now, I wonder if we could summarize as briefly as possible. I do not want to prevent you from saying anything you think is important, but I know that many of the members of this committee are waiting to go on another committee. Is there anything else you would like to say?

Mr. HOUDE: My third recommendation is: As a temporary measure, for an educational purpose, and to more rapidly enable the farmer to produce at a lower cost, a substantial subsidy for use of fertilizers.

When I say "to more rapidly enable the farmer to produce at a lower cost", what I have in mind there is Government schemes of farm prices support. If we can bring the farmer to produce at a lower cost it may make it less imperative to have what I call a temporary measure of farm prices support. I would think it would be also a logical way to solve the problem. If I were a farmer I would feel much more proud if I could produce enough to make a decent living with what I would suggest a measure of Government support of my prices. I think there again results would be better in the use of our land potentially.

Senator TAYLOR (*Westmorland*): May I ask this question on short term loans? What in your opinion should be the maximum?

Mr. HOUDE: I would say one year. Of course, if there is a bad crop I presume the bank will carry on; but one year, I would say. For instance, in Quebec we have a quite a lot of farmers growing vegetables for canning companies; they are growing sugar beets for the sugar beet factories; they have crops in July, August and September, and are paid back in November, and sometimes December, but it may be a very important crop which requires a lot of fertilizer, such as peas, tomatoes, and so on. They have to invest all the way through, and they don't get the money back from the canning company until December sometimes. Many of the farmers ask the fertilizer company for credit, which they can hardly grant because they have to purchase materials and pay for labour, and so on, and so need the money and are not in the position to do so. It is not our fault, as in the case of the bank or credit union. Many farmers say, "I cannot afford to pay you." So we say, "Well, go to the bank." The farmer replies, "Well, I will go, but I am already in debt for my tractor", and so on. They don't like to do it. So I come to the last paragraph of my brief, in which I say that Government subsidies presently exist in many countries. I have here specimens of policies, which I am not



going to go into today, but maybe I can send this material to your committee later on. There is a program of subsidies in practically every country in the world. In Germany, for instance, there is a subsidy which represents about 20 per cent of the value of the fertilizer. In England it is about one-third. In some countries it goes to 50 per cent. Yesterday, before I left, I received some information about subsidies by the United States Government for fertilizers when used according to the Soil Conservation Act. There is no direct fertilizer subsidy as such, but when a farmer enters this scheme, he is recommended under the scheme to use fertilizer for the soil, to put it in grass, and so on, and the subsidies are very substantial. I have information as to soil subsidies for Orleans county, Vermont, and in the national soil conservation bulletin. I will just quote a couple of figures. The federal cost share is  $3\frac{1}{4}$  cents per pound of available phosphorus. Fertilizers will contain 20 per cent of P<sub>2</sub>O<sub>5</sub>, equalling 400 pounds per ton; multiplying 400 by 3.25 will be \$13 a ton, which is approximately one-third of the cost of the fertilizer. Then,  $2\frac{1}{2}$  cents per pound of available potash, and \$1.05 per hundredweight of contract 020—20 furnished by government. There again it represents anywhere between 25 and 30 per cent. I have customers along the border, and we sell in Vermont, and I know farmers who are buying, and they are bringing back cheques from the Government. They receive hundreds of dollars a year under this soil conservation program provision for fertilizer.

Senator SYDNEY J. SMITH (*Kamloops*): To what extent are farmers in Quebec who are selling their products to tobacco companies or canning companies getting the assistance that we are worried about here, from the companies to whom they contract to sell their products?

Mr. HOUDE: Specially products like tobacco, tomatoes and sugar beets are all sold to companies and are paid for in November and December.

Senator SMITH (*Kamloops*): But do they not get advances for fertilizer?

Mr. HOUDE: Not that I know of.

Senator BOIS: Sometimes they will supply seed, but not fertilizers, or for spraying, for getting rid of pests in seeds.

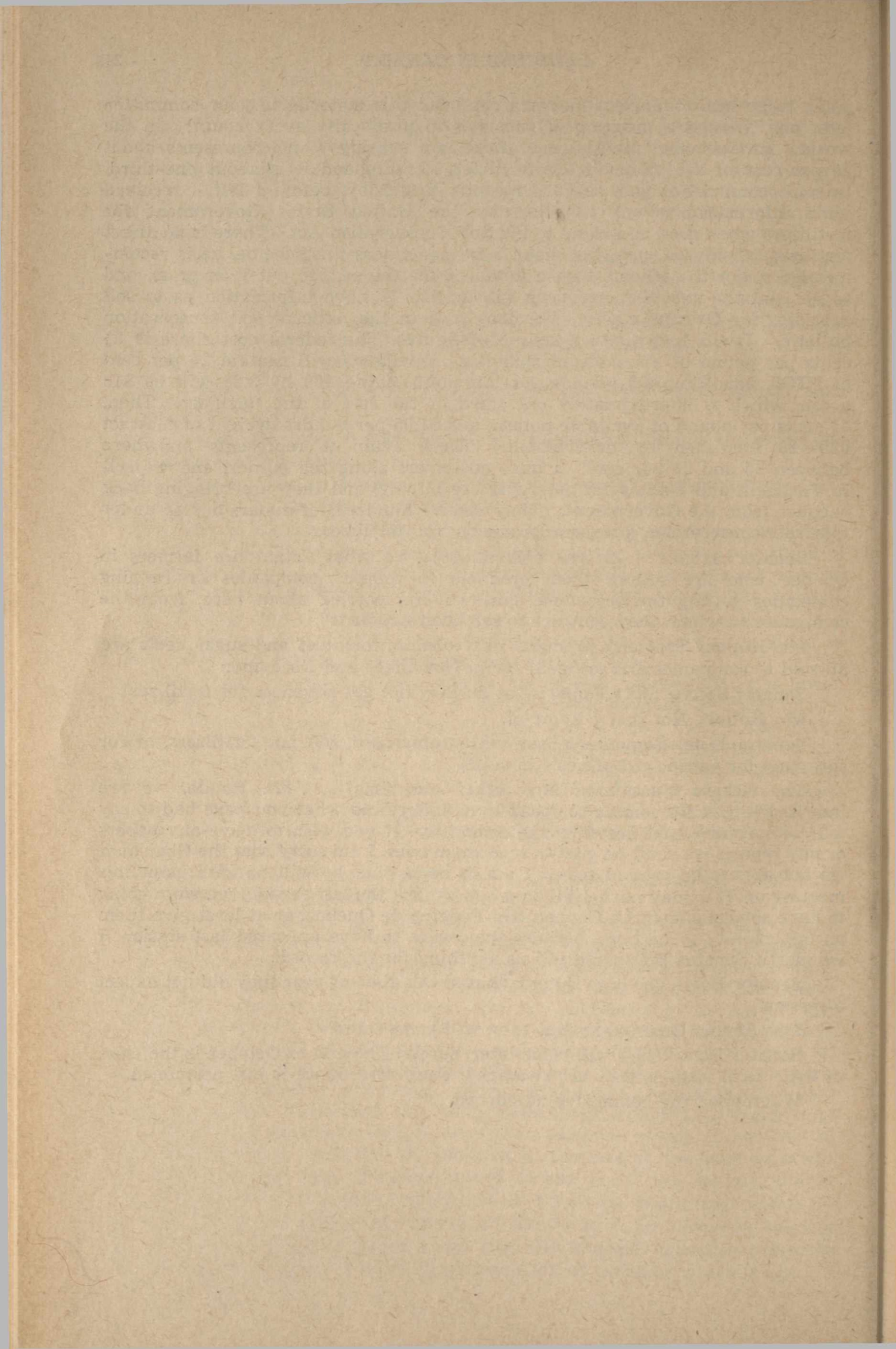
The ACTING CHAIRMAN: Any other questions? . . . Mr. Houde, we are indebted to you for coming to speak to us today, and what you have had to say will be carefully considered by the committee. If you wish to leave any papers or any reports we shall be glad to read them over. I am sorry that the Chairman we not able to be present today. I am in hopes that he will be with us at the meeting on Thursday next. I think, when we left the last session, we were going to have someone from La Cooperative Fédérée de Québec, or at least give them an opportunity to be here, because they were to have appeared last session. I wonder if Senator Bois could tell us anything for the record.

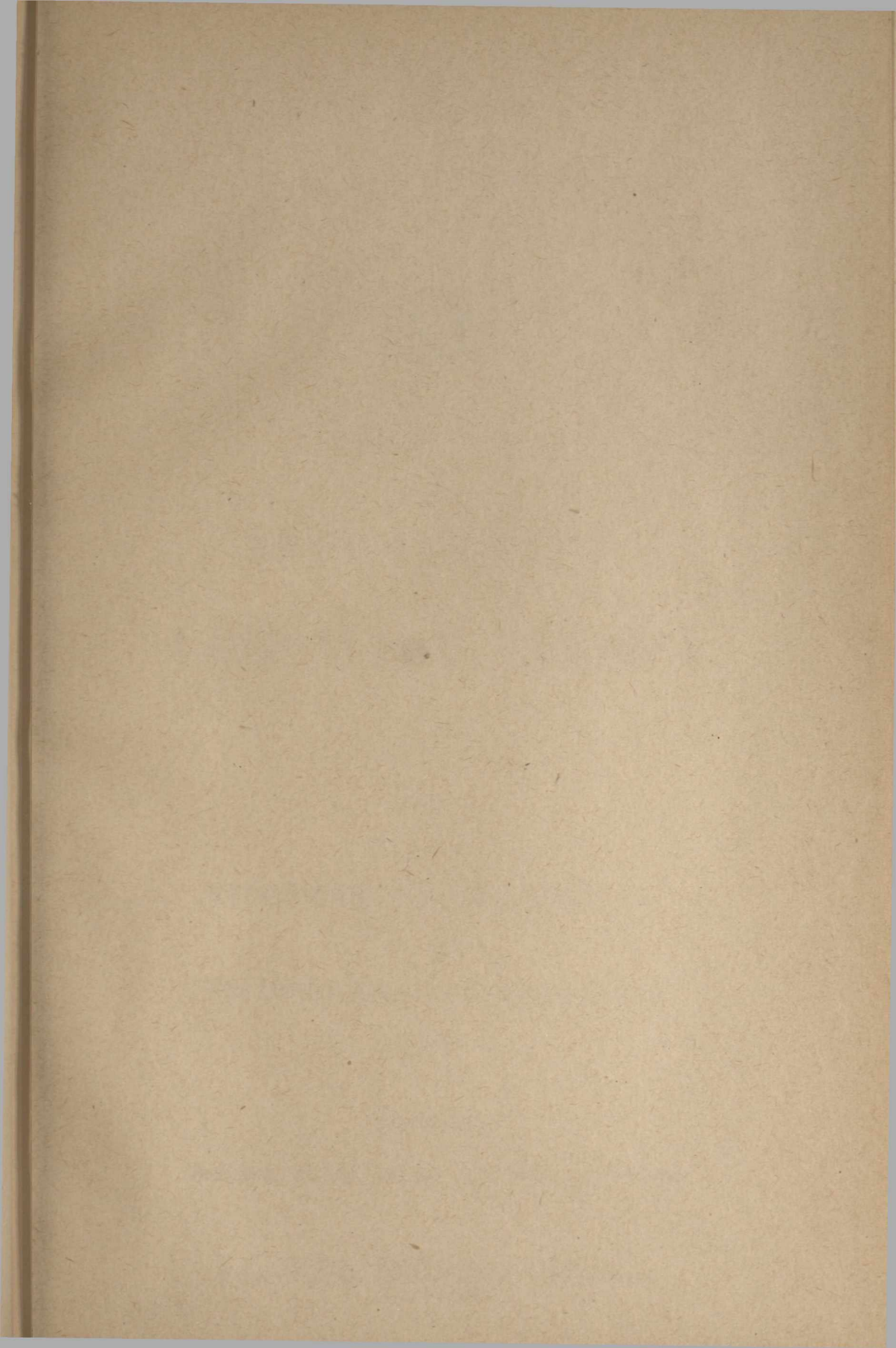
Senator BOIS: The only thing is that at this time of year they did not expect a session.

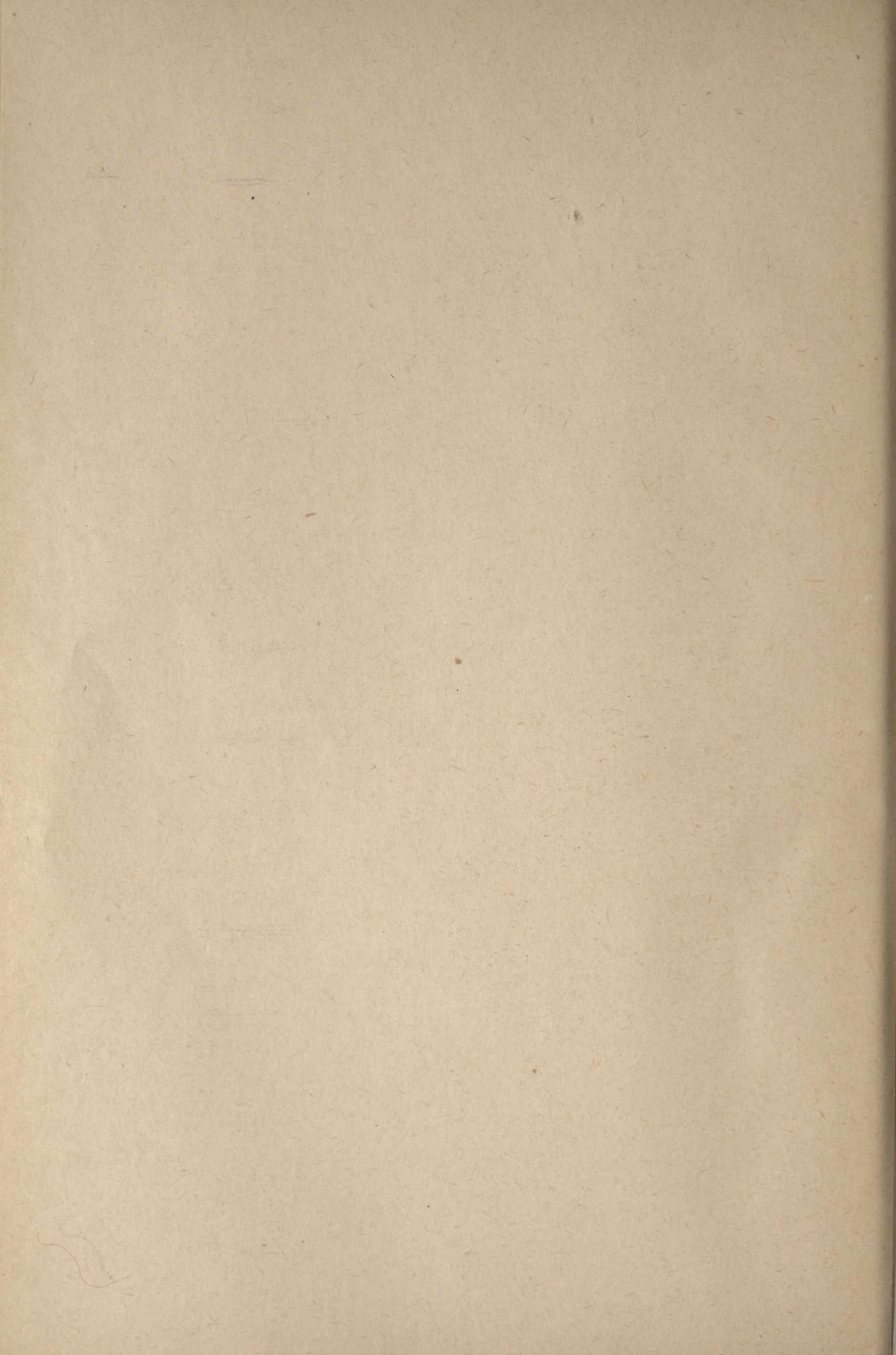
The ACTING CHAIRMAN: But they will come later?

Senator BOIS: They will come later, surely. The end of October is the close of their fiscal year, so they are swamped. Their attendance is just postponed.

Whereupon the committee adjourned.

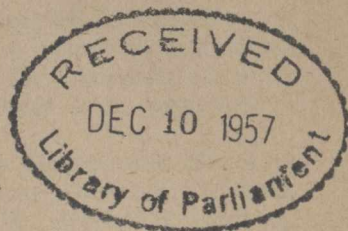






1957 Second Session

THE SENATE OF CANADA



PROCEEDINGS

OF THE

SPECIAL COMMITTEE ON

# LAND USE IN CANADA

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No. 2

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THURSDAY, NOVEMBER 28, 1957

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The Honourable C. G. Power, Chairman

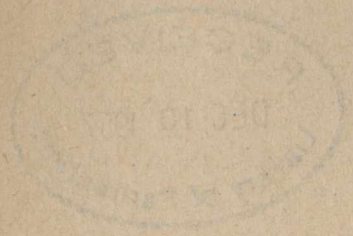
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WITNESS

Professor Donald Baillie, University of Toronto

EDMOND CLOUTIER, C.M.G., O.A., D.S.P.  
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY  
OTTAWA, 1957.

THE SENATE OF CANADA



1957 Second Session

SPECIAL COMMITTEE ON LAND USE IN CANADA

The Honourable C. G. Powers, *Chairman*

- |          |          |                               |
|----------|----------|-------------------------------|
| Barbour  | Hawkins  | Power                         |
| Basha    | Horner   | Smith ( <i>Kamloops</i> )     |
| Boucher  | Inman    | Stambaugh                     |
| Bois     | Leger    | Taylor ( <i>Norfolk</i> )     |
| Bradette | Leonard  | Taylor ( <i>Westmorland</i> ) |
| Cameron  | McDonald | Turgeon                       |
| Crerar   | McGrand  | Vaillancourt                  |
| Emerson  | Molson   | Wall                          |
| Golding  | Pearson  | White                         |

27 Members      Quorum 7

THE HONOURABLE C. G. POWERS, CHAIRMAN

THE HONOURABLE C. G. POWERS, CHAIRMAN

WITNESSE

PROFESSOR DONALD BAKER, UNIVERSITY OF TORONTO

PROFESSOR DONALD BAKER, UNIVERSITY OF TORONTO

## ORDER OF REFERENCE

Extract from the Minutes of the Proceedings of the Senate

TUESDAY, October 29, 1957.

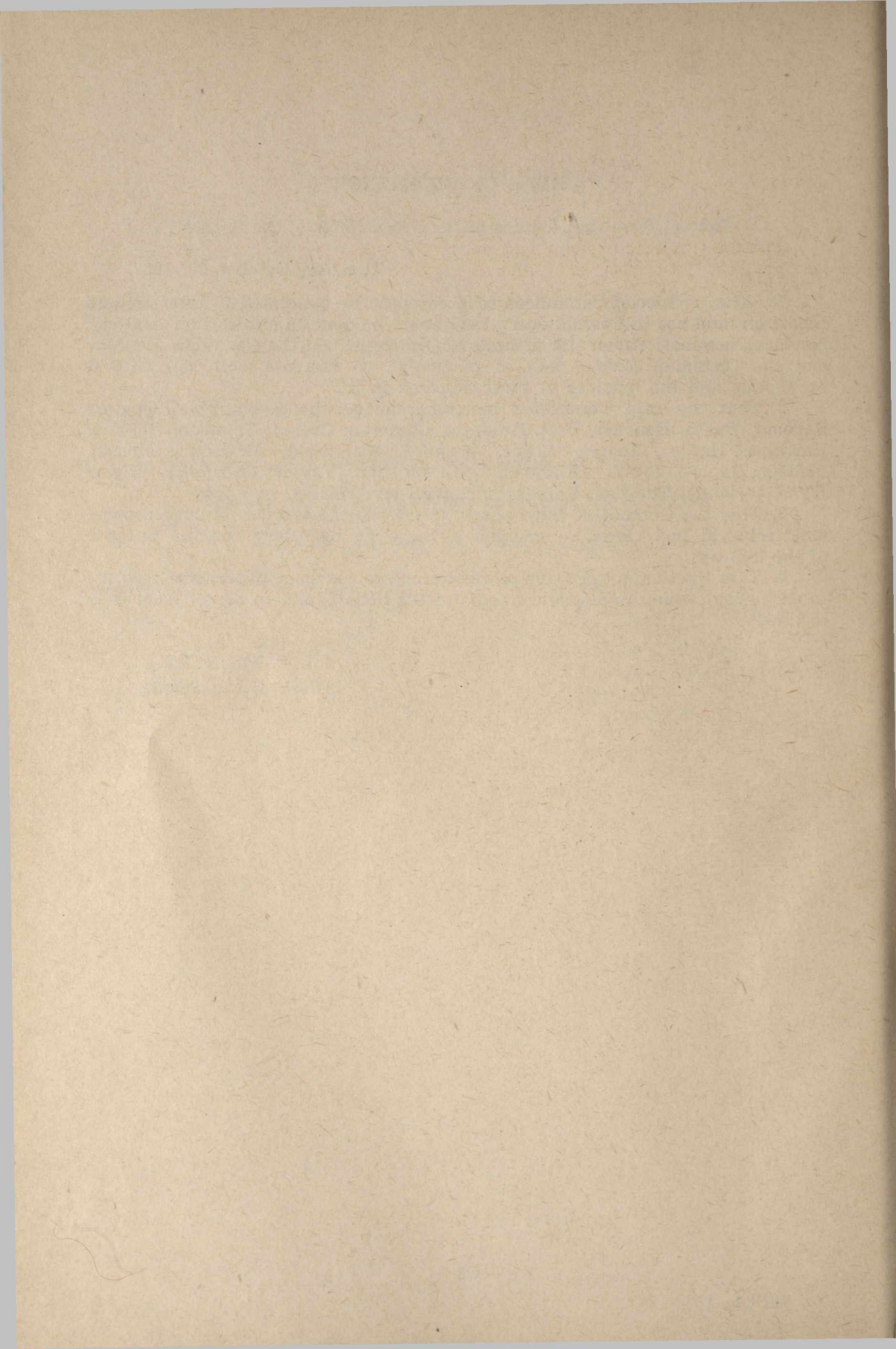
"1. That a Special Committee of the Senate be appointed to consider and report on land use in Canada and what should be done to ensure that our land resources are most effectively utilized for the benefit of the Canadian economy and the Canadian people and, in particular, to increase both agricultural production and the incomes of those engaged in it;

2. That the said Committee be composed of the Honourable Senators Barbour, Basha, Boucher, Bois, Bradette, Cameron, Crerar, Emerson, Golding, Hawkins, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Pearson, Power, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Turgeon, Vaillancourt, Wall and White;

3. That the Committee have power to engage the services of such counsel and technical and clerical personnel as may be necessary for the purpose of the inquiry;

4. That the Committee have power to send for persons, papers and records; to sit during sittings and adjournments of the Senate, and to report from time to time".

J. F. MACNEILL,  
*Clerk of the Senate.*





## MINUTES OF PROCEEDINGS

THURSDAY, November 28, 1957.

Pursuant to adjournment and notice the Special Committee on Land Use in Canada met this day at 10.00 a.m.

*Present:* The Honourable Senators: Power, *Chairman*; Barbour, Basha, Bois, Cameron, Golding, Inman, Leger, McGrand, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Turgeon and Wall.—15.

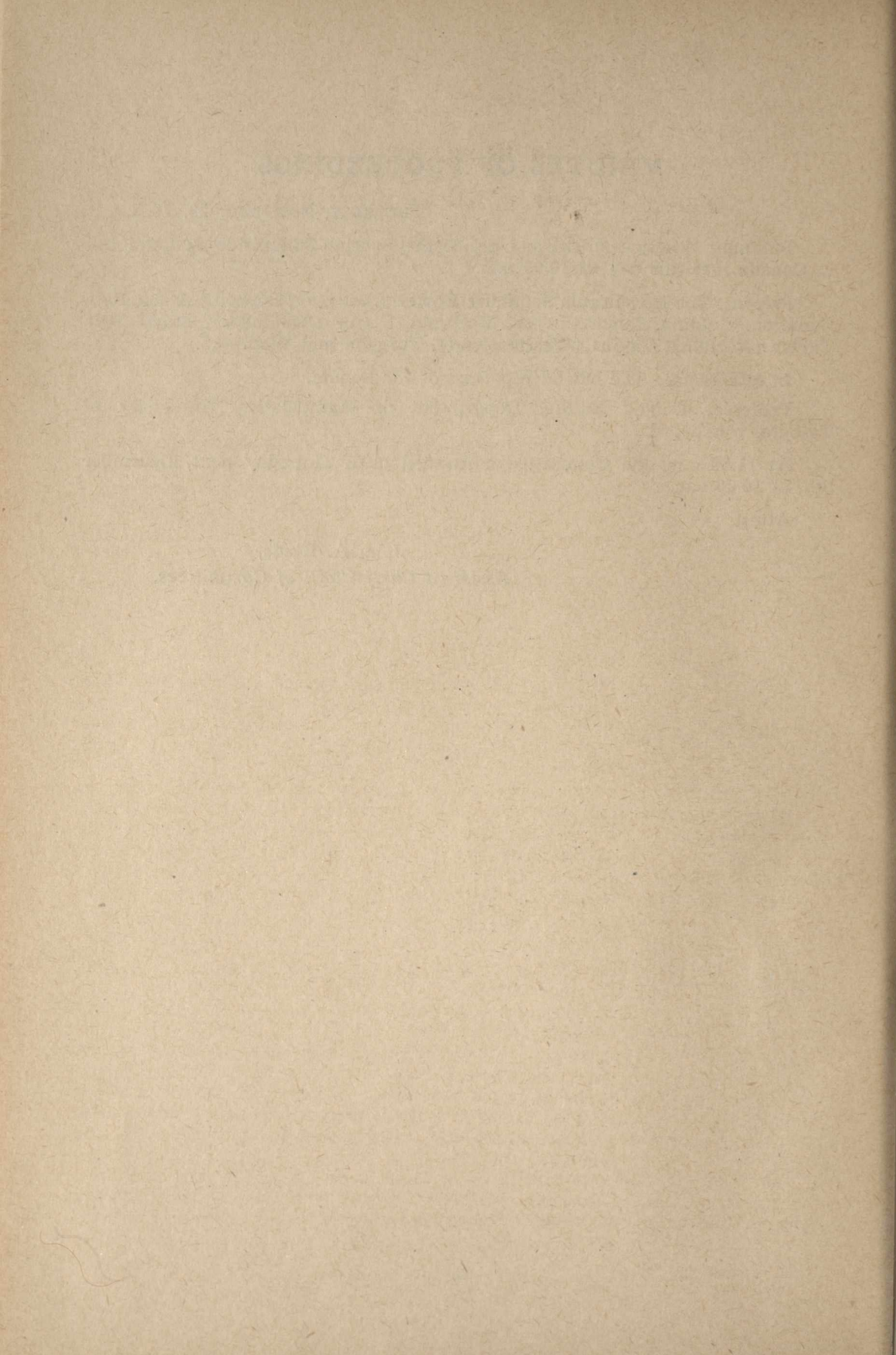
*In attendance:* The official reporters of the Senate.

Professor Donald Baillie, Department of Mathematics, University of Toronto, was heard.

At 11.50 a.m. the Committee adjourned until Thursday next, December 5th, at 10.00 a.m.

Attest.

John A. Hinds,  
*Assistant Chief Clerk of Committees.*



## THE SENATE

### SPECIAL COMMITTEE ON LAND USE IN CANADA

OTTAWA, Thursday, November 28, 1957.

#### EVIDENCE

The Special Committee on land use in Canada met this day at 10.00 a.m. Senator Power in the Chair.

The CHAIRMAN: Honourable senators, we have with us today Professor Donald Baillie. Professor Baillie, will you state your profession?

Professor DONALD BAILLIE: I am an Assistant Professor in the Department of Mathematics at the University of Toronto, specializing in actuarial science.

The CHAIRMAN: What is your connection with conservation generally in Canada?

Prof. BAILLIE: My connection is purely amateur. I am just an interested citizen, concerned about the welfare of his country.

The CHAIRMAN: And you have written a number of articles on conservation in Canada?

Prof. BAILLIE: Yes.

The CHAIRMAN: Go ahead.

Prof. BAILLIE: Mr. Chairman, I was asked by the editors of the Canadian banker's journal,—*The Canadian Banker*—, to write an article on conservation, particularly of our forests, which is my primary interest. It soon became apparent that a limit of 3,000 words would not cover the subject, as no doubt it has become apparent to you ladies and gentlemen here. So, we decided to divide the subject into four parts: The first part dealt with conservation of non-renewable resources, and also with the problem of water; the second part dealt with the soil problem; the third part, which is in the galleys at present, and will, I hope, appear this winter, deals with trees and forests. Eventually, I hope to have a fourth part on wild-life and recreation.

I understand that it was the appearance of these articles in print which led to my being asked to come here.

The CHAIRMAN: That is right.

Prof. BAILLIE: I should also state that my presence here is as a private citizen only. I have been connected with organizations such as "Men of the Trees", in Ontario, which may be a new name to you. But I am not here in any official capacity presenting any official views; and also, I don't pretend to be an expert in any of these subjects. Therefore, especially in view of the excellent record of factual evidence which you have taken,—and which I may say has proved a mine of information to me personally—in view of all that, I think it would be more honest for me to confine the greater part of my remarks to things with which I do have a more or less first-hand acquaintance, which is largely in the field of amateur reforestation.

However, perhaps I should first say something about the title you have chosen, "Land Use". I am sure you are beginning to realize, or have already realized, that those two simple monosyllables embrace a tremendous area of

activity. In fact if you want to stretch the word "land", to include all the physical environment surrounding us, you have, in effect, entered upon a full discussion of man's activities in the physical realm in Canada. I think we all agree that this is far too much for any one man, or any one group of men, to comprehend in one picture at one time.

I have tried to give in this article here my own ideas of what is meant by the closely related word, "conservation". Possibly I should read the introduction to this article to you, if I may, and it could be printed in your record. It reads, in part:

"The words conserve, conservative, and conservation, all have different meanings for different people. In the life insurance business, conservation means keeping as many policies as possible from lapsing or otherwise losing their full effectiveness. In social, political and economic life, the conservative is one who cherishes traditional ways of doing things. Like the conservatory of music, he is daily practising a form of conservation.

These forms of conservation are mainly concerned with preserving non-material resources such as insurance protection, social modes of behaviour, political freedom, legal rights of all kinds, cultural and educational values.

It is obvious, however, that few of these non-material resources are of much consequence to a man who is on the brink of death by starvation or freezing. The whole fascinating structure of non-material resources that man has so skilfully and painfully built up over the ages would soon collapse if he could not use the material resources of the earth, and the air, and the sea, to enable him to eat, drink, breathe, and protect himself from the weather.

Besides these elementary but vital functions, the three basic resources worked on by the sun, provide our economy with the material and labour for *all* our consumer goods and *all* our forms of physical capital."

And I conclude that paragraph by saying:

So the ancient Greek philosophers had a simpler—and clearer—view of life than most of us Western city-dwellers when they divided everything into earth, air, fire, and water.

If you extend land to include air, and water, and if you also include what is under the land, that is, what is in the rocks, you have pretty well exhausted our physical environment. What we are going to do with it is the question that is before the committee.

There is one other preliminary thing I should like to say. This is one thing that I feel rather strongly about: the phrase, "the wise use of land". If you ask anyone what conservation is the answer you will get from many people, including professional Conservationists is, "wise use of our resources; wise use of our land."

One does not have to look into it very deeply to see that this easy answer side-steps the real question: "Wise for whom?"

I made that point in this second article, on the problem of soil conservation; and I think the illustration that comes to mind at once is the history of the pioneer on this continent.

It is pointless for us who have inherited worn-out farm lands to criticize the men who wore them out. Rapidly decreasing soil fertility was taken for granted. Sheet erosion washing away the top-soil was—and still is—by no means obvious to the naked eye. Even when erosion reached the obvious disaster stage of gullying, the pioneer could do little to halt it.

May I interpose here and say that if one is looking for pictures of soil erosion to publish, one has to use drastic pictures, showing tremendous loss of top soil, and even subsoil, to make erosion evident to the casual eye. This picture was taken in Oxford County; this one shows an area in the Caledon Hills which is very heavily gullied. We have to do this because the ordinary man is not going to notice the much more prevalent and costly form of sheet erosion. It goes on continuously but he doesn't see it.

Senator STAMBAUGH: When you speak of sheet erosion, do you mean erosion from the wind?

Prof. BAILLIE: No, mild water erosion, on mildly sloping land. If a man sees a big gully he knows that that is erosion, but even the farmer on his own land may not have any idea of how much top soil has been eroded away by sheet erosion.

Senator STAMBAUGH: Is there any erosion from wind in Ontario?

Prof. BAILLIE: Yes, I believe I could show you that from my own direct experience. The whole of the Oak Ridge moraine, which extends roughly due east from Orangeville to Peterborough and Cobourg, is subject in places to heavy wind erosion. You can see examples in the Uxbridge area, where roads are blocked with sand.

Here is a picture of such an impassable road, but in western Ontario, near the Ausable River, blowing into Lake Huron.

Senator STAMBAUGH: Have you seen any effects of wind erosion in western Canada?

Prof. BAILLIE: It is twenty years since I traversed western Canada, and I was not conscious of the problem at that time.

I have, however, seen sand blowing through an area 30 miles north of Toronto, and I must say that was a literally shocking sight, to see a hillside blowing away in front of one.

This picture shows two stumps in the Uxbridge area, and you can see where the original soil was perhaps 2½ feet above the present sand. Here is another example: there is the original pine stump; that was the level of the land. And there is some reforestation. There is quite a lot of that land, relatively, in old Ontario.

I did just want to finish my remarks about this pioneer:

In general the early farmer, unassisted, could spare neither the time nor the energy needed to maintain his soil, even if he had known how to do it, and even if he had wanted to do it. Acting in pure self-interest, the wise thing for him to do was to give up the old and take up the new—especially if the new land was free!

What was economically wise for him was bound, however, to be hard on succeeding generations. We think that the loss of one third of our top-soil has been very unwise. But we continue to "mine" many of our present resources with equally scant concern for the generations who will succeed us. It should be clear by now that the easy definition of conservation as the wise use of resources begs the whole question.

*Wise for whom?*

That brings me to the third point I should like to emphasize, and one which we in Canada are not prone to bring out in the open. I believe the people of this country have a very high standard of ethics, public and private, but they generally do not like to discuss ethics in public. But you will find that the problem of conservation hinges on central issue, and that central issue is a moral issue. If we were content to exploit this country to the maximum, for our own satisfaction, during our own lives—which from the economic point of view would be perfectly sensible—we would be entirely

wise economically; so the whole problem becomes really an ethical problem. Are we concerned about the position of our children, our grandchildren, and their children?

The CHAIRMAN: You say the present system of exploitation is defensible from the economic point of view?

Prof. BAILLIE: I should simply say this, that in many cases the conservationist calls for a program which may cost a great deal of money to the present generation, and a moral decision has to be made as to why should anyone do that?

Senator CAMERON: Would you repeat that statement?

Prof. BAILLIE: I should say that as to the conservation program, many conservationists—

Senator CAMERON: No, the one before that, when you said that the selfish use of land was economically defensible.

Prof. BAILLIE: Perhaps we should strike that from the record.

The CHAIRMAN: No, go ahead.

Prof. BAILLIE: What I meant to suggest was that if I were 65 years old, and my days were numbered on this earth—and as an actuarial specialist I am very conscious of the limitations of longevity—and someone came to me and advocated that I do thus and so to conserve my land, and if I were completely self-centred, I would say, "What is that to me?"

I can give you a personal illustration. I have a small farm property, badly eroded land which I am putting into trees. My neighbour is eeking out a living on similar land; he also works as a general handyman, and is very good-hearted. He is now cutting nearly the last of the firewood off his property. I said, "That woodlot is getting pretty low." He said, "It will last me and my wife our lifetime." That, to me, is a concrete illustration of the ethical problem. And you cannot say that that man is unusually selfish; he is not preserving his woodlot so that anyone who comes after him will have wood to burn, but it may be said that he is morally defensible; he has no personal ties with succeeding generations so far as his hand is concerned.

Senator CAMERON: I do not think he is "morally defensible".

Prof. BAILLIE: I did not mean to say morally, but economically. As a matter of pure enlightened self-interest, if he is a 19th century "economic man", he pursues his own interests to the best of his ability.

Senator CAMERON: Let us be clear. If we accept the thesis that everybody can do as he likes, it would ruin the country. You cannot accept that thesis.

Prof. BAILLIE: He may not ruin it in his own lifetime.

The CHAIRMAN: May I interrupt? The senator says you cannot accept it either morally or economically.

Senator CAMERON: That is right.

The CHAIRMAN: That is your view?

Prof. BAILLIE: I believe it depends on whose lifetime you are considering.

The CHAIRMAN: But nationally, on a national basis, it is not defensible at all, if I understand you.

Prof. BAILLIE: Well, put it this way. National survival is a moral problem. At any period in the history of a nation it can, if it likes, cut off its future. Babylon, Greece, Rome, all did so, probably quite unwittingly.

Senator McGRAND: There is another matter very closely related to what Prof. Baillie has discussed, and I think I can explain it best by referring to a news item of a few weeks ago about an orchardist in the Niagara Valley who was

dissatisfied with the peach market; he was pulling out all his trees and taking off the topsoil, and creating a dust bowl. It was blowing off the land and interfering with his neighbours' land. Is there any protection against that sort of thing at this time, or is it something which should be faced, with the idea of protecting the rights of others? We have been pretty lenient as regards permitting a fellow the freedom of doing what he likes with what is his, but in a case like that there is interference with the rights of others; and in the interests of conservation is that a problem which deserves attention?

Prof. BAILLIE: Very much, indeed, sir. You will excuse me if I continue to read little items. I have covered a number of these topics in writing and I feel that these writings express my views much better than I could do extemporaneously.

Sod-stripping is not a crime in Canada. Under our traditional *laissez-faire* concept of ownership, a man may do what he likes with his own land, ruining it for future generations—and helping to destroy his neighbour's land while he is at it. Curiously, however, he is not allowed to build whatever kind of home he likes on his own land.

I have a property 40 miles from the centre of Toronto, and I am not allowed to build whatever I want to. In fact, the only foundation I can build is a cement foundation, and the minimum area has recently been raised to 900 square feet, 30 x 30, for a one-floor building. 30 x 30 is a large place for a weekend retreat; it is difficult to build under \$12,000. The point is:

We accept building bylaws in rural townships; but we shudder at any suggestions of land-use bylaws! A poorly-built home hits us in the eye: we enact laws to prevent it. Poor land use is another matter; we say it is the farmer's own business.

Senator CAMERON: You know there is legislation in some provinces to prevent such neglect of your land as will damage your neighbour's.

Prof. BAILLIE: I am glad to hear that.

Senator CAMERON: For exemple, in southern Alberta there have been one or two lawsuits arising from cases where a man said, "No, I am not going to strip-cultivate my farm; this is my land and I shall do what I like with it". The man has been fined because he permitted his soil to drift over on his neighbour's farm. There are variations of that kind of legislation in other provinces.

Prof. BAILLIE: Personally I am glad to hear that, although one may say it strikes at our *laissez-faire* individualistic economy. But, quoting Prof. Spence-Sales of McGill, on page 111 of your Proceedings:

Does it (Canada) really (operate under free enterprise)?

There are counties in Ontario, it is true, where trees may not be cut below a certain diameter limit.

The CHAIRMAN: You mean trees on private land?

Prof. BAILLIE: Yes, on southern Ontario land.

Senator McGRAND: May I be permitted a question? Where top soil is removed on an area of 10 or 15 acres, say, what does it do towards lowering the water table in adjacent areas? Is there any work on that?

Prof. BAILLIE: There may be. There has certainly been work on the effect that removal of vegetative cover has on water retention. One could guess that here a great deal would depend on what kind of sub-soil was down in the next 5 or 10 feet. I do know that if you have rough land with

weeds and grass holding the snow in the winter, and land ploughed bare beside it—I can vouch from my own experience that the ploughed land is blowing over onto the rough land, and the ploughed land is not holding the snow.

Senator CAMERON: Do you know if there is any legislation in the east respecting the landscapers who go out and buy topsoil of six inches on a quarter section of land, or whatever area it may be, and haul that into the city? That is done on a large scale.

Prof. BAILLIE: It is done regularly in the Toronto area; I believe it is evident to the observer that that is going on. There has been concern about it in the Toronto papers, but no legislation to my knowledge.

May I revert to the moral issue? I shall quote from a book on land economics, written by two men at the University of Wisconsin, who are not unsympathetic to conservation—and this quotation seems to me to have some truth in it, although I don't agree with it entirely.

The test of the sincerity of a conservation crusader should be his willingness to pay more for exhaustible resources today in order that shadowy future generations may also have oil, coal, game, forest products, or natural gas.

They are speaking mainly of exhaustible resources, of course, which can last only so long. They suggest further that if the people of the United States are put to this test, "...the majority of our people will applaud Senator Howe of Wisconsin who said... in 1871... 'but when he (the Senator from Massachusetts) calls upon us to embark very heavily in the protection of generations yet unborn, I am very much inclined to reply that they have never done anything for me, and I do not want to sacrifice too much'."

But if one grants that there is a responsibility to look into the future, and to make capital outlays now, one asks at once, who is going to pay for it? As a man dealing every day with pension funds, many of which are thoroughly in the red from an actuarial point of view, the question of who is going to pay for it is constantly in my mind—how much is it going to cost, and who will foot the bill? In the press the other day it was stated, as I recall it, that only 27 per cent of the Canadian people are now living on farms. That means that presumably at least three-quarters of the taxes to pay for any national conservation programme must come from the non-farm population.

The effect on agriculture of metropolitan expansion is dealt with in this material relating to land use which was given to me by the Conservation Council of Ontario. They are preparing a comprehensive brief for the province of Ontario, and will, I expect, appear before this committee in due course. The first thing they emphasize in their leading article is the need for land use surveys. How can we speak about improving the use of anything if we do not know what and where it is, and if we do not know how it is being used at present? You have already heard expert testimony on soil surveys and forest resources. But I am referring to a land use survey for this whole country (it is now apparently a feasible project with the aid of aerial mapping) to show what each part is now being used for, and its capabilities. That is probably number one on the priority list before any intelligent action on a national basis can be taken. A land use survey records not only the quality of the soil, but also its past use, present use and potential use.

Land use is changing very rapidly. I have here what is to me a shocking statement. According to a recent study in the United States—*three times as much* arable land is annually removed from agriculture by conversion to other uses as is destroyed by erosion.



When I wrote an article a year or more ago I doubted that the first was as great as the second, but now I see it has been raised to three times as much. He is speaking chiefly of the rapid suburban growth, the explosion, as it were, going on all over this continent. There is a further point:

In terms of program priorities, this ratio is made even more significant by the fact that once farmland is converted to urban and urban-related uses, it is forever lost to agriculture, whereas all but the most severely eroded and depleted land can be reclaimed.

Once land goes under the roof it is not likely to come out again for a long time. I have here further figures from this particular paper, on the probable expansion of the United States population. I have reduced it to as simple terms as I can. Over the next twenty years the population growth will be as follows:

Out of every eight additional people, five will be living in the suburbs, one in the central cities, and two in the rural areas.

That is roughly what the percentages come to. That means that more than half the people who will be added to the United States population in the next 20 years will be living in suburban areas. As the author points out,

Besides the loss of soil that is buried in the suburbs, we could note that:

Top-soil is buried under water nearly every time a dam is filled. The St. Lawrence Seaway will flood some 20,000 acres of land, much of it good pasture land. Our governments seem to have little intention of saving this top-soil by stock-piling it for distribution in areas of eastern Ontario where it is badly needed. "Too expensive"—for the present generation, that is. Future generations may be thankful for the Seaway power and trade, but they will be sorry that we were short-sighted and greedy about our land.

The CHAIRMAN: Do I understand it is your prediction, so to speak, that 5 out of every 8 persons in the entire population of the United States—

Prof. BAILLIE: No. In the next 20 years 61 per cent of the total population increase will settle in the suburbs. That would be based on a continuation of the trend of the past 15 years. That means of the recent generation, you might say.

Senator CAMERON: Is there not a comparable figure with respect to Canada, that in the next 20 years some 2 million acres will be taken out of production to take care of suburban building?

Prof. BAILLIE: I am not sure if I can answer that offhand. I can well believe it. You mention acres. I think perhaps this is a good time to bring that subject up. What is an acre to the three-quarters of the people of Canada who do not live on farms? The more I have looked into this subject the more I have become confused by the use of "acres", and as a mathematician I do not expect to be more confused by acres than any one else. If I may be permitted to draw a picture on this blackboard here, I can indicate what I mean. If you take a square a mile and a quarter each way, which is the concession system in what is now the city of Toronto, you get 1,000 acres. For those who know Toronto I might say that you can take St. Clair, Bloor, Bathurst and Yonge. I have used this plan to illustrate to new Canadians what an acre is, for many of them have no idea what it is. Taking it ten times each way, you have  $12\frac{1}{2}$  miles by  $12\frac{1}{2}$  miles, containing 100,000 acres.

If you want to go into a million acres you have to go into some higher mathematics and take the square root of ten. It comes to roughly 40 miles square. That is, 40 by 40 giving you 1 million acres. Going on to the exact figure of 10 million acres, it would be 125 miles by 125 miles. Now, how much arable land is there in Canada? Here is a fascinating study by Professor Pleva

of the University of Western Ontario. He takes the percentage of total land surface at 100. Then he shows percentages for factors which affect the suitability of land for agriculture, and combinations of these factors. For instance, the percentage with adequate and reliable rainfall is 47 per cent in relation to the total land area of approximately  $3\frac{1}{2}$  million square miles. Then you have adequate and reliable rainfall, and favourable temperature. The figure is only 10 per cent. It is coming down markedly. Then you have adequate and reliable rainfall and favourable temperature, and favourable topography, land suitable for tractors, say, and we are down to 7 per cent. If you have all this, and finally have suitable soil for agriculture, you are down to 3 per cent, which is 110,000 square miles, or about 70 million acres. If you take 100 million acres you will get a square about 400 miles by 400 as probably the top figure in the foreseeable future for Canadian agriculture. You can put this another way. Take the width of the country as roughly 3,000 miles. Then we have a strip averaging 50 to 60 miles wide extending from sea to sea, on which we have to feed our future population. I mention this to you because to me it is a shocking thought. That 50 mile width is just the distance from Toronto to Lake Simcoe. I would ask one of our western senators "How far would your suitable arable strip run north of the 49th parallel?"

Senator CAMERON: It is 750 miles north and south, but there is a strip of 100 miles of swampland across the middle.

Prof. BAILLIE: There must be a lot of places in that 3,000 mile frontier where there is no arable land.

Senator McGRAND: I was thinking about some of the European countries; put in a strip of 50 miles wide running from coast to coast?

Prof. BAILLIE: According to my arithmetic.

Senator McGRAND: I was thinking about some of the European countries; I think France has 208,000 square miles and it feeds 40 million people.

Prof. BAILLIE: If you study a soil map of Canada you will see that there is a lot of rock in this country.

Senator CAMERON: Some soil scientists conducted a survey about 10 years ago and they came up with a figure of 40 million acres which was supposed to be the amount of land still available and suitable for cultivation. There is another 40 million on top of what we have.

The CHAIRMAN: Not on this basis of 3 per cent for the so-called arable land.

Prof. BAILLIE: It is something of the order of 150,000 square miles. In the words of an eminent parliamentarian "What's a million?"—or even ten million?—when it's measured in acres. In other words, it is 3,000 by 50 and not 3,000 by 500. That is the way the mathematician thinks of large numbers, in multiples of ten.

My purpose in drawing this chart on the blackboard is to indicate that acreage means very little to the city man. If you tell him 350,000 acres of Ontario forest burned in 1955, what does it mean to him? What would it be if you converted it to square miles? For 100,000 it is  $12\frac{1}{2}$  miles each way. For 350,000 you have about 23 miles each way, a picture he can grasp. Better still, a strip about 2 miles wide from Toronto to Temagami.

I should therefore submit one very modest suggestion, which would do quite a bit of good in all these discussions as far as urban population goes, and that is that figures be given wherever possible in square miles and, further, for those who do not like doing mental multiplication, give it in terms of rectangles, so many miles wide and so many miles long. The city man can then grasp what you are talking about.

One other way of reducing these things to comprehension, and what I personally do with all large national figures, whether they be budgets or appropriations for the army or whatever, is to divide the sum by 16 million, to see what it means per capita, or divide it by maybe 3 million to see what it means per family. That is the only way to get a picture of what a budget item of say, \$100 million, means. Otherwise, the ordinary citizen cannot comprehend it.

So if you take the figure of roughly 100 million acres, for example, and divide it by 16 million, you come up with a figure of six acres per capita. That I believe is on the high side: The generally accepted figure was nearer five, when we had a smaller population. But five or six acres per capita is still twice what is needed to support our twentieth century western standard of living. The obvious implication is, without an increase in food productivity, or additional food from the sea, the population of Canada appears to have a potential of the order of only 30 million or 40 million people; that is, assuming that all the agricultural land is used in mixed farming; in other words, you produce mixed food on our western acres rather than single-crop farming. I think those are serious considerations.

In my article, Part two, "The Soil Problem", I say:

The whole earth has some three billion acres of this precious material. If it were divided evenly amongst our  $2\frac{1}{2}$  billion humans, each person would be trying to live off a little more than one acre, about one half the  $2\frac{1}{2}$  acres minimum needed for a reasonable standard of living. Tremendous disparities exist, of course. A Canadian enjoys more than five acres, a citizen of the U.S.A. nearly three.

This is a matter we in Canada ought to bear in mind. Many of us grow up here, wondering in a naive way why we cannot be like the United States. Well, we may be equal or superior to them in quality, but we have to face the fact that we will never have the population they have, unless we get food from another part of the world.

Japan, for instance, has one-quarter acre per capita. But you will note that Britain and Japan pull a lot of their food out of the sea—the alternative, especially in wartime, is starvation. China has two-fifths acres per capita, and is always familiar with famine.

I do not wish to dwell too long on that phase of the problem, because you are not here concerned with the world situation except indirectly. However, Canada itself, within the next two or three generations, will have a food problem. At the present time the people of Ontario already eat and drink nearly all their land produces.

Cheese and tobacco are the only agricultural surpluses for export from Ontario.

I would not like you to think, honourable senators, that my interest is entirely in soil. I was raised with the average city man's lack of interest in soil. My interest started with wild life and then extended to trees, and I have since been trying to get some comprehension of the entire land use problem.

With respect to trees and forests, the chairman tells me this is an area with which he is personally familiar. My personal land use experience has been confined almost entirely to the growing of trees as a hobby.

As an example of the present statistics on land use, I might offer this information—though, let me say, it is no reflection on your Ottawa civil servants: I believe it is the result of improved methods of assessment. However, the fact is that the Forestry Branch in 1952 estimated our total forest area to be something of the order of 1,300,000 square miles; in 1953 the estimate had risen to about 1,500,000; and by 1956, it was something like 1,600,000 square miles, nearly 46 per cent of our present land area. Common sense

suggests that our actual forested land can hardly be advancing by such prodigious leaps as to gain in one year nearly two-thirds of the land area of the province of Alberta. The increase from 1952 to 1956 appears to be mostly in the non-productive forest classification, which has risen from an estimated 556,000 square miles to 782,000 square miles in that time, an increase comparable to the whole land area of the province of Saskatchewan.

I presume that these remarkable upward revisions are a measure of the improved accuracy of our estimates.

Senator PEARSON: Has there not been recently a tremendous increase in the use of aerial survey methods?

Prof. BAILLIE: I think so.

Senator LEGER: Could we grow trees on this eroded soil?

Prof. BAILLIE: Trees are about all you can grow on it, and then only a limited variety. For instance, in this picture of moraine land, you will note they are growing Scotch pines, which have been planted by hand, and even that is a struggle. In so doing, you are trying to beat the natural cycle, which calls for mosses and lichens first. The point is that land such as this should never have been cleared; it has not more than two or three inches of top soil at best. For instance, you can go through many parts of Albion township and kick the duff, or litter, under the trees in the uncleared woods and find only an inch or two of top-soil.

Senator STAMBAUGH: Is that chiefly because of erosion or was the top-soil never there?

Prof. BAILLIE: There was enough top-soil there to support trees, but it would only support one or two generations of humans. That land was settled very early for Ontario, that is by about 1830. It supported only one generation properly and by 1860 they were getting out; shortly after Confederation, wheat was coming in from the west, which killed their exports to Britain, but they could grow wheat for only another 20 or 30 years in any case. It is an extreme example, but that is the way the land is there. It is a very picturesque area, and people from Toronto are now trying to grow trees there.

Senator McGRAND: In what county is Albion township?

Prof. BAILLIE: In northern Peel county.

Senator STAMBAUGH: Is the subsoil sandy?

Prof. BAILLIE: Yes sir, it is nothing but sand, it is a pile of sand and gravel several hundred feet deep, I believe. There is a lot of that moraine land in Ontario. Almost one-third of the land south of Georgian Bay is classified as morainic. Some of it is being farmed fairly well where the moraine is in whalebacks or drumlins, as they are called. Some of it makes fair pasture. But in any case one-third of old Ontario south of Georgian Bay is classified as that. Another one-tenth is sand plains, so that there are more than 10,000 square miles in that part of southern Ontario with serious erosion problems. That is quite a belt, equivalent to an area of 100 x 100 miles, and that is all in southern Ontario.

Senator STAMBAUGH: How does that compare with land across Lake Erie and Lake Ontario in New York and Ohio? It is the same formation.

Prof. BAILLIE: That is a hard question to answer, Senator. I have travelled on the upper New York highways and seen moraine hills but have not travelled much in Ohio.

The CHAIRMAN: Professor Baillie, have you anything to say about what we should do about all this? You have told us that it will not be long before we are faced with a problem of feeding ourselves. You told us a lot about erosion and land that is no longer fit for cultivation. What will we do about it?

Prof. BAILLIE: I do not know, Mr. Chairman. I think that this is a problem to which the best brains of the country could very well lend their talents. I certainly have no simple panacea.

The CHAIRMAN: You strongly suggest that the first thing to be done is to make a survey of land use in Canada.

Prof. BAILLIE: Yes.

The CHAIRMAN: To determine where we are. We have been talking up to now more or less in theory.

Prof. BAILLIE: Yes.

The CHAIRMAN: What is next after that?

Prof. BAILLIE: Well, these are purely my personal opinions. I think that, whatever instruments are adopted on a national or provincial basis, the man who foots the bill is increasingly going to be a city-dweller, that is, if you grant that the farmers cannot foot the bill themselves. And that city-dweller, or suburbanite, will need a great deal of educating.

Senator WALL: Would it be fair to say that the average Canadian, especially the urban-dweller, is not conservation conscious?

Prof. BAILLIE: Thank you very much for that question. I was hoping somebody would ask me that. I think he is becoming increasingly conservation conscious, but mainly about wildlife.

Senator WALL: I am asking you that question purposely because for many years I was engaged in educational activities and we often talked about conservation and the need of courses for the children and so on. The definition of conservation, I will grant you, is somewhat limited when you talk in terms of public school work for instance.

Prof. BAILLIE: I have had some experience of that through a private competition we ran among the school children dealing with trees. The problem of making the city man aware of what is going on is very acute. Even the most enlightened city man is apt to consider only fishing and hunting, where he can see his game supplies disappearing and his holiday activities reduced. As I say, it takes an enlightened man even to realize that this is a conservation problem. But as to the broader problems, they do not hit him in his own activities and he has to be a dedicated person even to think about them.

Senator LEGER: What do you think is the cause of all our forest fires?

Prof. BAILLIE: I do not fully know, sir. There are statistics which show the various causes.

Senator LEGER: Can any of them have been started by broken bottles that are left on the leaves, so that when the sun strikes the bottles combustion is set up?

Prof. BAILLIE: That has been suggested, I believe, in some of the United States.

Senator LEGER: I have seen examples of what happens along those lines.

Prof. BAILLIE: It is considered a serious menace, but we are fortunate in Ontario that there is a price on beer bottles and it pays people to pick them up.

Senator LEGER: I know that when the sun strikes hard on a piece of glass lying on dry leaves a fire can be started.

Prof. BAILLIE: I think I have some figures on that, issued by the province of Ontario covering 1955, a bad year admittedly for forest fires. This is from a publication of the Department of Land and Forests of the province of Ontario. Figures are given as to the number of fires and the acreage burnt, by causes. Lightning is given as the greatest single cause of forest fires in that year—

about 40% of the fires and two thirds of the acreage. But human agencies were responsible for 60% of the fires. Human agencies of course, are split up into different categories. Humans burn more of our forests than lightning does, in some years seven or eight times as much. For example lightning caused only 12% of the fires in all Canada in 1950, a year in which 2½ million acres were burnt in all Canada, and a fairly representative year, I think.

Senator INMAN: Why is conservation still not a subject in the school curriculum? I remember when I went to school—of course I came from an agricultural community—from grades 5 or 6 we were all made conscious of land conservation and forest conservation. That was a subject. If the children were taught something about that, would it not make them conscious? Or would it?

Prof. BAILLIE: The children in Toronto are getting some material of that sort, at, I believe, grades 6 to 8. This is an innovation since the war. Of course, as an educator, I believe that this is one of the most important things that we citizens can do. It is very difficult to change a person's thinking after he is 30 or 40 years old. It is different if you can catch him when he is 10.

Senator INMAN: I know that in our province this teaching has been dropped, and I wonder why.

Prof. BAILLIE: One can hazard a guess that the urban view is that these were only luxuries to the city man, that the city boy was going to be interested in these things only from the point of view of a hobby. After all, the farmer is the man who is using the land. Don't you think that is the usual attitude? The city newspapers have editorials about conservation, but very often the discussion closes off with the comment; "This is largely the farmer's responsibility."

Senator CAMERON: There is a figure that is bothering me. Did you say that, according to the figures you have in the estimates, there is just 100 million acres of usable agricultural land?

Prof. BAILLIE: Well, sir, that thing puzzles me. I have all kinds of figures; they range in area from 70 and 80 million up to 100 million. I am not an agriculturalist, and frankly I don't know what is meant by "arable" land. I have an idea of what is crop land.

Senator CAMERON: The words are interchangeable.

Prof. BAILLIE: Are they interchangeable? Your western prairie rangeland, is that arable? Is land that will grow beef and not crops arable? As I say, I don't know. That obviously affects this kind of argument. If you include ranch land you get one answer; if you include crop land only, you get another.

Senator CAMERON: Ranch land is arable. I believe there are about 25 million acres under cultivation in Alberta, about 50 million in Saskatchewan, and about 12 million in Ontario; and my friend Senator Bois says there are 11 million in Quebec. That gives us 98 million.

Prof. BAILLIE: I am glad you raised that question again. Here is an authoritative article by J. H. Ellis, the Professor of Soils at the University of Manitoba. "Soil Erosion in Western Canada", from "The Use and Conservation of Canada's Farmlands", reprinted by the Ontario Department of Planning and Development. He states that: Of the 96.8 million acres of cultivated farm land in Canada—I presume that is crop land—

Senator STAMBAUGH: That is right.

Prof. BAILLIE: 71.8 million acres is located in the provinces of Manitoba, Saskatchewan and Alberta. That is virtually three-fourths of the land. That is why the Westerner may have a very different view of these matters from

the citizens of Ontario or Quebec. One-seventh of this cultivated western land can support a total population of two and half millions living in these three provinces. One-seventh of 71.8 million acres is roughly 10 million acres. He states that that can support two and a half million people. He is giving them 4 acres per capita.

Senator CAMERON: One hundred million acres of cultivated land? But there is a potential of another 40 million acres suitable for agriculture, according to the soil men.

Prof. BAILLIE: I am not too much concerned whether it is 100 or 150 million acres. Dr. Pleva's figure reduced it to 70 million by the time he had applied all his criteria: adequate and reliable rainfall, favourable temperature, and favourable topography. In other words, he is getting down to what you might call land which is genuinely suitable for agriculture, and he reduces it to 70 million. That would, I should think, not include range land. I do not suppose that in his view range land would have adequate and reliable rainfall.

Senator BOIS: Why do they not use the word "tillable" land?

Prof. BAILLIE: Well, that is a very good word. They use different words, and life is too short for me to have sorted them all out. There is an expressive French word, I believe.

Senator BOIS: "Cultivable."

Prof. BAILLIE: I may mention that I have here a Laval book entitled "Conservation des Richesses Naturelles Renouvelables", published in 1953. It records a symposium organized by the Comité du Centenaire et l'Association Canadienne-Française pour l'Avancement des Sciences and held at Laval University. I have found this a very good source-book. There are speeches in both English and French. French-speaking experts from France and Belgium were also present. I am very pleased to see such a work emanating from Laval University. This book and Doctor McConkie's book on Conservation in Canada, have been two of my chief sources on the subject.

Senator STAMBAUGH: What I wanted to say with regard to the general definition of arable land is that when we are making an assessment—may I say that I am from western Canada—for arable land, that is, for land that could be cultivated, with soil on which you can raise a crop, and the topography is all right, we could have cultivable land that could be called arable land, but not very good land which could easily be put into pasture; and with regard to cultivated land, any land that has been cultivated at any time, even if it is seeded back to pasture is still called cultivated land. If it is wild grass and has never been cultivated then it is not termed as cultivated land.

Prof. BAILLIE: Thank you, very much, sir. As I said, I have been pretty well confused by these different figures.

Senator STAMBAUGH: That explains it, I think.

Prof. BAILLIE: I think that would explain some the discrepancies that one finds.

Senator STAMBAUGH: Well, I would think the amount of land would have a good deal to do with our future growth. In the west, for instance, the top-soil sometimes is four and five feet deep.

Prof. BAILLIE: Yes, sir.

Senator STAMBAUGH: And that will grow crops for years and years and years without any fertilizer, or anything else, whereas we have other soil that is only a few inches, which we have already cultivated—land up in the Peace River district, for around ten years, and you cannot raise wheat any more but you can raise clover, and those things.

Prof. BAILLIE: Yes, sir. I believe that those remarks illustrate the tremendous necessity for a complete land use survey, coupled with a soil survey, not only as to present use, but past use, because a great deal can be learned from what has happened in the past in any area.

Senator STAMBAUGH: Well, if we cannot learn from our mistakes, then it is too bad for us.

Prof. BAILLIE: Would anyone care to discuss forestry? This is really the thing with which I am most deeply concerned.

Senator STAMBAUGH: It is certainly part of our business, I think.

The CHAIRMAN: Certainly. Have you anything to say with respect to our lack of wisdom and prudence in taking out forest land, large areas, and calling them fit for agriculture? That is the term that was used, I know, in Quebec, *propre à agriculture*—fit for agriculture, and taken out of the forest domain and given over to settlement and settlers, sometimes with consequences that I think were disastrous? Have you anything to say on that subject?

Prof. BAILLIE: I don't know, sir. I presume that has happened. I think that it was historically unavoidable. Had we known about the west, had we known we were going to have this prairie soil, which everyone knows is tremendously richer than our Eastern soils here under the forests, then our pioneers would have pushed right up past Lake Superior and got right at it, but they didn't know it.

That again has to do with private rights—coercion of the individual. How are you to stop a man taking up poor land? As someone pointed out in one of these hearings, you might simply advise him that it is poor land, and not to take it, in his own interest.

There was no way of giving him that advice in colonial days, and he simply took a parcel and took his chances on it. Oddly enough, in southern Ontario the Scotsmen and Irishmen headed for the hills, but those hills, it turned out, were the worst places they could have gone to farm. The pioneer looked upon the good level land in Peel country as just a swamp where there were to many mosquitoes, and he wanted to get past it as fast as he could.

Senator McGRAND: Was there not a tendency to clear land where it was most easily cleared in those days? There were certain tracts to be easily cleared, and they made for that rather than cut down the heavy trees.

Prof. BAILLIE: Also, they would have a tendency to clear first the species which had the best market, which in Ontario was the white pine. It was growing on probably the worst agricultural land, light sandy soil, and rather acid.

Senator TAYLOR (*Westmorland*): I think: Mr. Chairman, governments have been a good deal to blame for that by reason of the fact that they have established colonization schemes and people were thinking primarily when they went in there of cutting, without any thought given to the land, with the result that in our province we have had vast and still have vast areas colonized where the wood was all cut off and the settlers disappeared.

Senator McGRAND: You are thinking of the depression?

Senator TAYLOR: I am thinking of before the depression.

The CHAIRMAN: During the First World War—I am speaking of the south shore of the St. Lawrence when the price of pulpwood went up to \$40 a cord, that was a great incentive to so-called settlers to take out lots, and there was considerable pressure of governments to declare lands fit for cultivation, lands which from appearances now were never fit to put a plow into—just rocks, and that took up—I have no idea of the acreage—very large sections of the south shore of the St. Lawrence and the north shore in the Abitibi district, lands



which in the view of a good many of us should have been allowed to remain under forest cover. I imagine the same thing exists in New Brunswick, and to some extent in Nova Scotia—I am not sure.

Senator McGRAND: I am anxious to know what period is being dealt with.

Senator TAYLOR: I am thinking in terms of seven or eight years ago. Between Chatham and Gloucester county area are a number of very distinctive areas. I am thinking of the road from Chatham to what they called the Portage Road, and you will recall, or should recall, that the men went in there one winter and started to cut a road without any authority at all; they were going to cut this road right through the forest and join these two roads, and the government had to go in and stop them, in fact, they put police in.

Senator McGRAND: That would amount to a very small area in the period that I am referring to; that is the period of the depression.

Senator TAYLOR: That is not a small area, that is a vast area, I suppose it is 20 odd miles through there; it is a settlement on both sides, or at least it has been started.

The CHAIRMAN: Have you anything to say on this problem of forest lands, which should have been allowed to remain forest lands?

Prof. BAILLIE: Mr. Chairman, I think on this subject there is a need for educating the city man. I do not know what the composition of those governments would have been in terms of agricultural men and city men but I can easily see a city man putting a ruler on a map and saying, "Let's open up this piece of land or that piece of land."

Senator TAYLOR (*Westmorland*): I think that was true years ago, but I don't know about now. The soil survey carried on by the provincial governments in co-operation with the federal Government has changed some thinking. I may say in answer to your question or somebody else's question that I believe there are areas that are under cultivation today which should not be under cultivation and should be allowed to go back into forests. I know of one or two in our own province that are suitable for agricultural land which could be well developed for agriculture. I do not think you can give any hard or fast rule with respect to that question.

Prof. BAILLIE: I have here in my hand Bulletin 106 put out recently by the Department of Northern Affairs and Natural Resources, with relation to forest products statistics. On page 7 they give land classification by provinces, forested land and non-forested land. As a layman what alarms me in the forested land is that almost half is classified as non-productive. Frankly, I am not sure what that means. Here are some of the classifications. There is accessible productive forest land. That, I take it, is standing timber which it is economically feasible to attack now. This is subdivided into softwood, merchantable and young growth. Then there is mixedwood, merchantable and young growth. Then there is hardwood, merchantable and young growth. I take it that merchantable is standing timber large enough to be ready for the axe. The total accessible productive land runs to about 411 million acres for Canada. The total potentially accessible land runs to about 126 million. The total productive figure is thus 537 million acres. The non-productive figure is just over 500 million acres. What that classification is, I am not sure, but the growth in that category in four years has exceeded the area of the whole province of Saskatchewan.

Senator CAMERON: Would that not be swamp, tundra and rock?

Prof. BAILLIE: It is likely part of the great Boreal forest which, from a layman's point of view, is coniferous land extending from Newfoundland in a big belt right to Alaska. You have a total land area in our ten provinces of just over 2 million square miles, of which nearly two-thirds is classified as

forested, 64 per cent. I believe in that forested classification there is a great deal of wasteland, burnt-over land, and so on. Anyone who knows Ontario, for example, could see a great swath of non-productive forest from Georgian Bay right through to the Ottawa Valley. With few exceptions the mass of that Parry Sound-Muskoka-Haliburton country is growing only scrub oak, poor maple, white birch and poplars, with patches of swamp spruce here and there, and a few scraggy white pine trying to make a comeback on the drier land. My personal hobby is trying to grow trees and I am quite concerned with their regeneration. I refer in this article to the \$64 billion question and that is: "just what is growing on the lands that have been cut over, and how fast is this growth?" To me that is one of the big questions that this land use survey will try to answer. It is a very complicated question. The whole problem of natural regeneration, which is a tremendous one, is going to command more and more of our attention.

The CHAIRMAN: What do you mean by natural regeneration?

Prof. BAILLIE: It is natural restoration from parent trees, which we must count on in the light of our present rate of nursery production. It is what we will have to count on for a long time to come to restore our Canadian forests, as opposed to regeneration by planting trees. There is a considerable debate in forestry circles as to the circumstances where natural regeneration will suffice and where it will not, and where you will have to plant trees. The numbers needed are huge; in southern Ontario you plant 1,000 trees to an acre. In northern Ontario you probably could not stick them in that close because of the rock formation but you still want to plant 400 or 600 or something of that order. Thus the planting of a million trees does not go too far against what is being cut.

Natural regeneration, depends on a great many conditions, and you cannot give a simple recipe to cover everything. In the Maritimes the land will fill up naturally with spruce. Ontario however will not regenerate the conifers so easily because of lack of moisture. White pine has not come back in Ontario generally, although it has come back to some extent in the Ottawa Valley.

Taking the whole of Ontario, the white pine has not come back anything like it has in the Maritimes or in New England.

Senator LEGER: Do pests destroy many of our trees?

Prof. BAILLIE: Yes. The history of the white pine cutting and the destruction of the remnants by weevils and blister rust is one of our great tragedies. White pine built the Ottawa valley—it probably built this city, and it created a lot of prosperity in southern Ontario. One does not hear much about our white pine forests today, because it is not polite to talk about our blunders. With the spruce forests, we might do better. We know that in Ontario the white pine has gone, and it is not going to come back in the near future. In New Hampshire for instance, every gooseberry and every currant bush is being torn up because they carry the blister rust. That would be a tremendous undertaking in Ontario; nevertheless, they are trying to do it in the States.

We have so many problems in this field, that the matter of regeneration is a lifetime study in itself. The spruce problem is a national problem and a world problem from the standpoint of the world demand for newsprint, which will be soaring as Asians and Africans learn to read commonly.

The CHAIRMAN: They are facing this regeneration problem in British Columbia by forest management?

— Prof. BAILLIE: Yes. There are management plans in Ontario and Quebec also. With respect to this question I should like to quote some words of Mr. MacMillan, head of the huge MacMillan and Bloedel Company in British

Columbia, about the matter of natural regeneration of forests. Mr. MacMillan, in the company's annual report for 1954 said:

"The company over several years has planted Douglas fir where, due chiefly to the effect of fires, the process of natural reforestation would be too slow. It will be necessary to continue such planting to re-establish a crop on many thousands of acres of company land from which has been removed as heavy a crop of Douglas fir as has existed anywhere in British Columbia. It has been very disappointing to observe that these plantations are growing much more slowly than the natural forest preceding them. Such slow growth is of extreme importance, particularly to Vancouver Island, the chief Douglas fir region, in which the greatest areas of planting will be necessary. We are now engaged in expert study to discover, if possible, the cause and the remedies."

That is a statement by a man who is a professional forester and knows as much about the B.C. forests from the practical and theoretical sides, as anyone does. He is one of Canada's great businessmen because of what he has done in creating lumber export markets the world over.

This sobering evidence, drawn from actual experience of planned reforestation, may be contrasted with the optimistic advertisements about natural regeneration of our spruce and balsam forest which the pulp and paper industry has recently been publishing. Their general theme is, "We are in business to stay; we will see to it for our own sake that our supply of raw materials does not run out."

Anyone who has dipped into the problem even briefly may be pardoned if he does not entirely share that optimism; for it is often based on uncertain methods of estimation and speculation. These advertisements are very soothing. The public needs arousing, not soothing, on conservation matters.

Well, that may bring upon my head the wrath of the forester.

Senator LEGER: Professor Baillie, would you have any idea as to how much it would cost per acre to plant trees?

Prof. BAILLIE: I planted most of my own trees with the aid of friends and volunteers from the West Toronto Game and Fish Club. They are dedicated to this type of work. But to hire men or machinery to plant trees it does cost money, as much as \$20 an acre, I believe, including the cost of the trees at about \$10 an acre.

Senator LEGER: Do you think that eventually it would be a paying proposition?

Prof. BAILLIE: I myself am not convince of that, except maybe for Christmas trees.

Senator LEGER: Does it cost too much?

Prof. BAILLIE: For the small land-owner, with less than 1,000 acres of woods, I cannot see him making much out of it. I can see him making a subsistence living, but I cannot see the city man earning a salary of \$5,000 a year giving that up and taking to tree-farming. After taxes and interest he would be lucky if he could clear \$3 or \$4 an acre.

Senator McGRAND: What about the growing of Christmas trees?

Prof. BAILLIE: Well, in that business there is many a slip betwixt the cup and the lip. It looks much better than it really is.

Senator McGRAND: Have you any idea what his income would be from that enterprise?

Prof. BAILLIE: It could amount to something if he were in the right market. Some men in Ontario do live off it, I believe. But it's very uncertain and hazardous.

Senator McGRAND: If some were to take a piece of land with nothing on it at the present time and plant trees, what would be his expectations?

Prof. BAILLIE: That man would have to be prepared to wait 50 years for a decent return on his capital. It would really be an investment for his grand-children.

Senator LEGER: I suppose it would be more profitable if he were to start off with 1,000 acres of bushland and develop that along scientific lines?

Prof. BAILLIE: He would have to have trees in many age classes, and of desirable species. A hardwood bush would be the easier to manage. If you have the right soil for natural regeneration and enough shade trees you do not need to plant hardwood. As a matter of fact, it is very hard to grow sugar maple trees by planting; they grow quite easily under proper conditions of shade and moisture and protection from browsing but if you plant them in the open you will find that it is very difficult to grow our national tree.

Senator LEGER: What about planting and growing trees in an area that has been burnt over by a forest fire?

Prof. BAILLIE: Well, that is one of the great problems. You have there a prospect of natural regeneration that is fairly good after one clear cutting of certain species; but if the residual slash is burnt in an uncontrolled fire, then you are going to be a long time getting anything back. If the fire is extensive enough to wipe out all the seed trees in the area there is a hard road ahead, excepting maybe jackpine, whose cones require heat to open. It is going to be a long time before any natural regeneration will restore the area and it would not pay any individual to invest money in a development like that.

I can go to the Muskoka district that once supported a whitepine forest, and buy 1,000 acres of land at what appears to be a ridiculous price, \$10 an acre. But that land at \$10 an acre is not going to grow as many trees per dollar as land in southern Ontario at \$100 an acre, because it is mostly rock, and you have to plant the trees in little patches here and there, and the soil is limited to cracks in the rock. So that area is a governmental proposition, and a Government is the only authority which can justifiably invest any money in it. An individual or a company would not be justified in doing so.

Mr. Chairman, I have a final remark to make on Government policy. Research is the only area in which the Dominion Government is prepared to spend national money, it seems. Arguing that the forests belong to the provinces, the Dominion shirks any really large-scale reforestation, which is so badly needed for our national survival. Yet it is the Dominion Government that collects the huge income tax from our forest industries, collecting four times as much as the provinces are able to collect from rentals and stumpage. Admittedly, some of this money leaks back to the provinces through their tax rental agreements. But surely our welfare as a nation demands that the federal Government should earmark the income tax paid by forest industries, and use this vast sum to co-operate with the provinces in maintaining our national treasure.

Senator LEGER: A certain amount should go towards maintaining highways too.

Prof. BAILLIE: Mr. Chairman, I would like to close my remarks by reading some thoughts which were handed to me by Professor A. F. Coventry, who is

now retired and who has done as much as any man in Ontario to instil the idea of conservation in the public mind. Here is Professor Coventry's observation:

Finally, would you consider a paragraph—a sort of peroration—on the need for our developing a feeling of regard for the land and its products, almost indeed a reverence, such as in fact pervades the thinking of some peoples, especially Scandinavians. But perhaps you do not want to moralize too obviously, even though Aldo Leopold once wrote to the effect that a plan for conservation which did not take into account ethical values was not even properly conceived.

And that brings me back to my starting point. In the report of the Select Committee of the Ontario Legislature on Conservation, one section of the report is concluded with the following remark made by a Nigerian chief:

I conceive that the land belongs to a vast family, of which many are dead, *few are living*, and *countless numbers are still unborn*.

If a person does not accept that concept I do not think he has any concern about conservation or land use.

Thank you very much, Mr. Chairman.

The CHAIRMAN: Thank you, Professor Baillie.

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The CHAIRMAN: May I say to the members of the committee that we had made tentative arrangements for the president of the Canadian International Paper Company to come to talk to us on forestry next week. He told me only yesterday that it will be impossible for him to come until after the holidays. At the moment therefore, there is only one thing before us, and that would be to take advantage of the invitation extended to this committee by the Department of Lands and Forests to go and have a look at their office and the maps that they have indicating what has been done in the way of land surveys in Canada and so on. So we might make arrangements to go there at the next meeting, if it is agreeable.

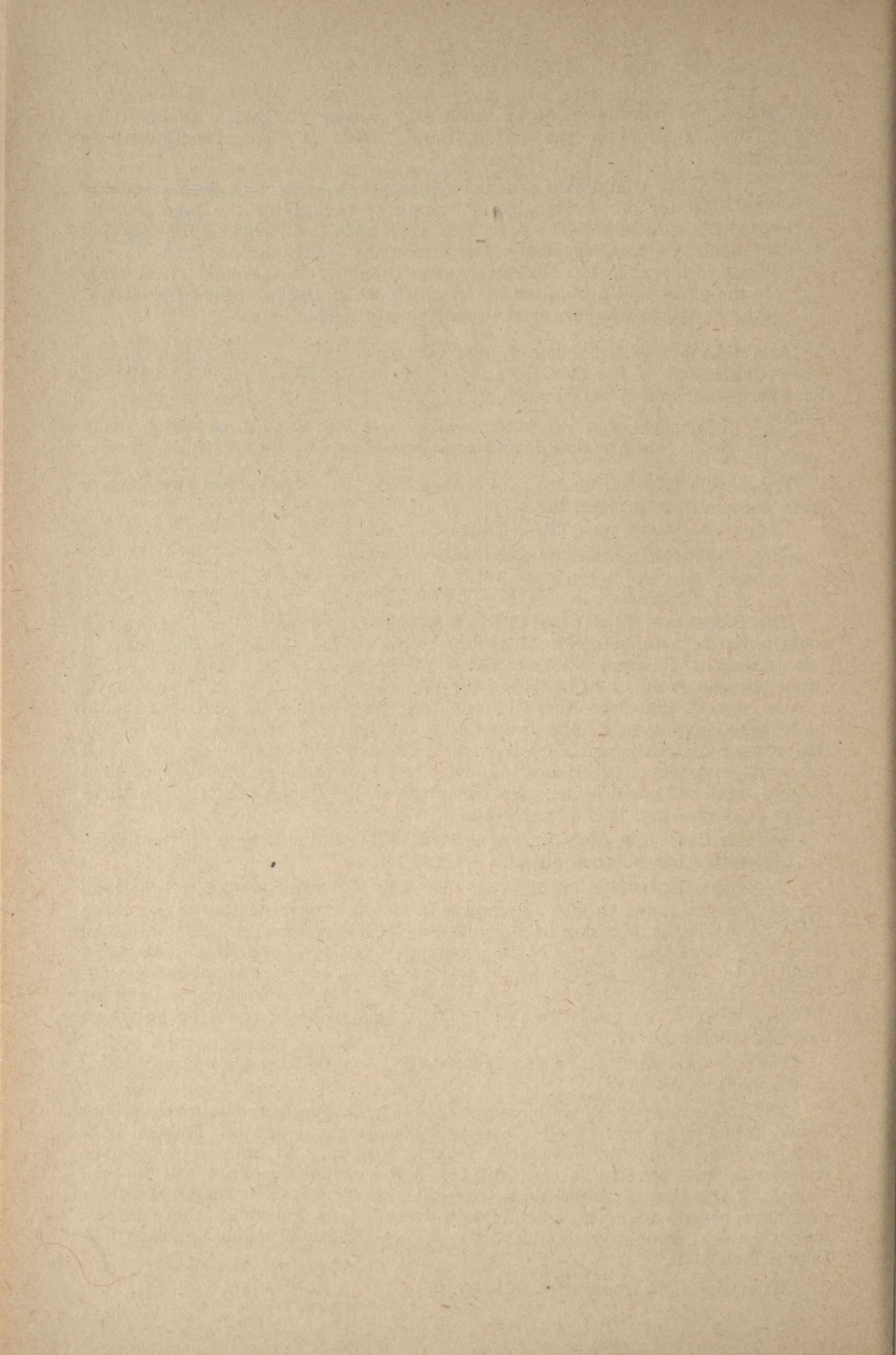
Senator CAMERON: Mr. Chairman, I would like to know how far the Steering Committee has planned ahead.

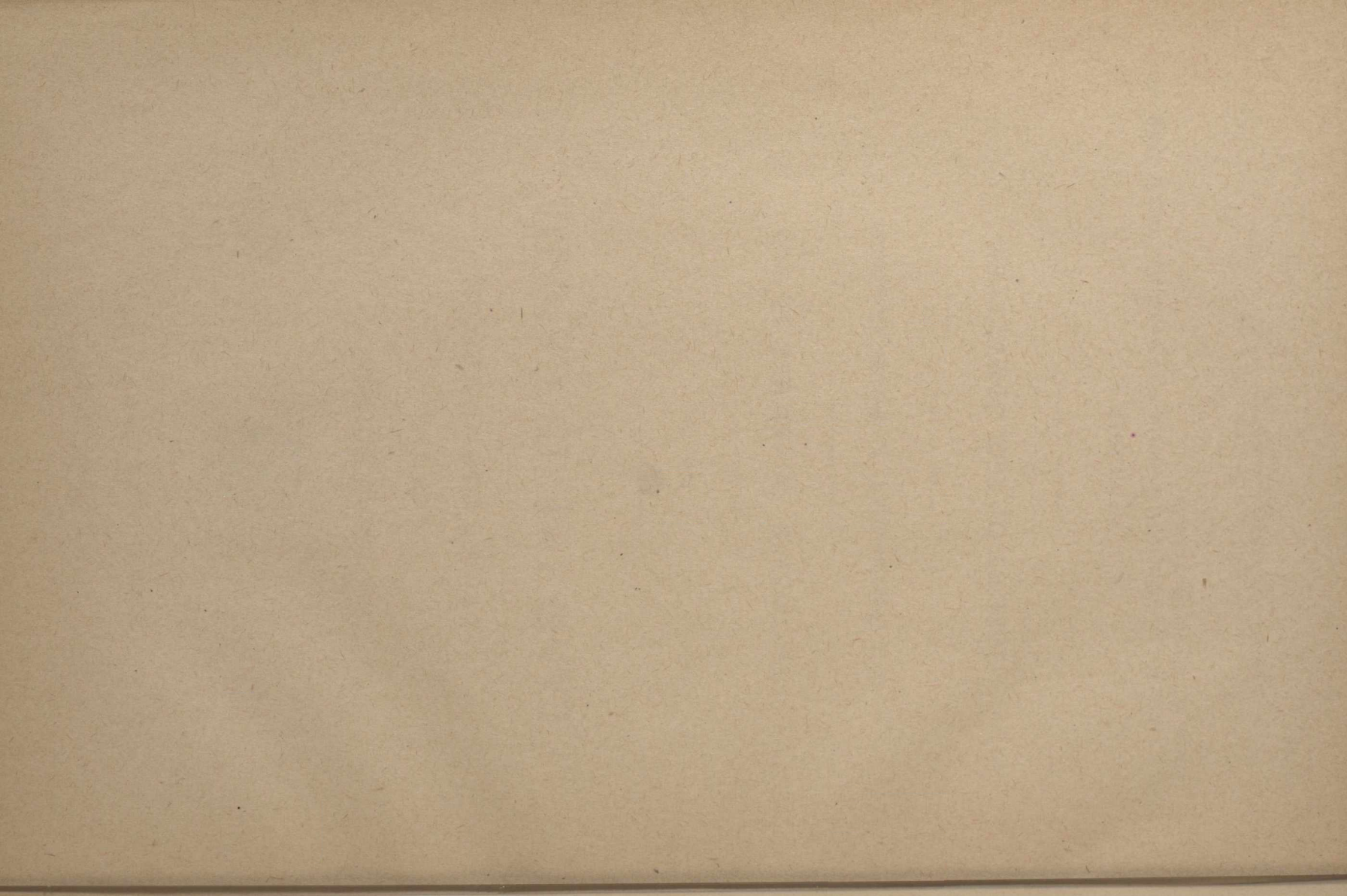
The CHAIRMAN: That is all. Our difficulty is we did not know how long this session was going to last. I suppose it would have been the proper thing to do to invite the Minister of Agriculture of Prince Edward Island to come here, as well as those of the other provinces. But as I said, there was some doubt as to when the session would end and so no action was taken on that. At the present time, although I do not know what is intended, it looks as though we would go until the 17th or 18th, so that there could be only two more meetings anyway.

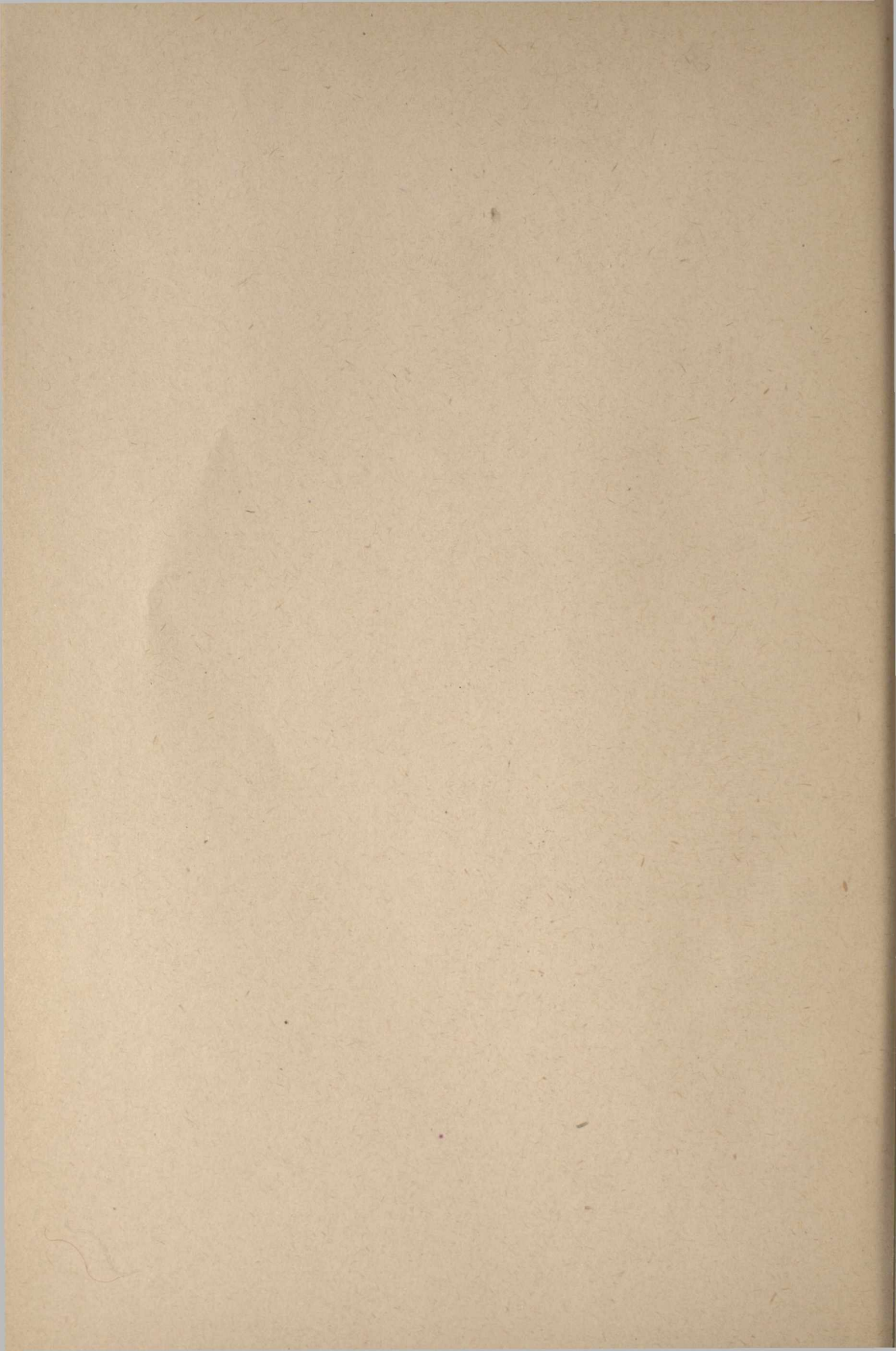
Senator CAMERON: Have you thought of the committee visiting any areas in the next year?

The CHAIRMAN: Well, we have a standing invitation from the International Paper Company to go to their place near Hawkesbury; and had it been possible perhaps we would have done so this autumn. At another session, of course, we shall have to be reconstituted, and I cannot say what will happen. I think, if this thing is to continue, we will have to divide into subcommittees and have certain members visit certain areas. I do not think there is any doubt but that somebody should go up to that Palliser Triangle out west and take a look at it.

Whereupon the committee adjourned.









1957 Second Session

THE SENATE OF CANADA



PROCEEDINGS  
OF THE  
SPECIAL COMMITTEE ON  
**LAND USE IN CANADA**

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No. 3

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THURSDAY, DECEMBER 12, 1957

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The Honourable C. G. Power, Chairman

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REPORT OF THE COMMITTEE

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APPENDIX A

Brief by Dr. N. L. Nicholson, Director, Geographical Branch, Dept. of  
Mines & Technical Surveys.

EDMOND CLOUTIER, C.M.G., O.A., D.S.P.  
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY  
OTTAWA, 1957.

1957 Second Session

SPECIAL COMMITTEE ON LAND USE IN CANADA

The Honourable C. G. Power, *Chairman*

Barbour	Hawkins	Power
Basha	Horner	Smith ( <i>Kamloops</i> )
Boucher	Inman	Stambaugh
Bois	Leger	Taylor ( <i>Norfolk</i> )
Bradette	Leonard	Taylor ( <i>Westmorland</i> )
Cameron	McDonald	Turgeon
Crerar	McGrand	Vaillancourt
Emerson	Molson	Wall
Golding	Pearson	White

27 Members      Quorum 7

## ORDER OF REFERENCE

Extract from the Minutes of the Proceedings of the Senate

TUESDAY, October 29, 1957.

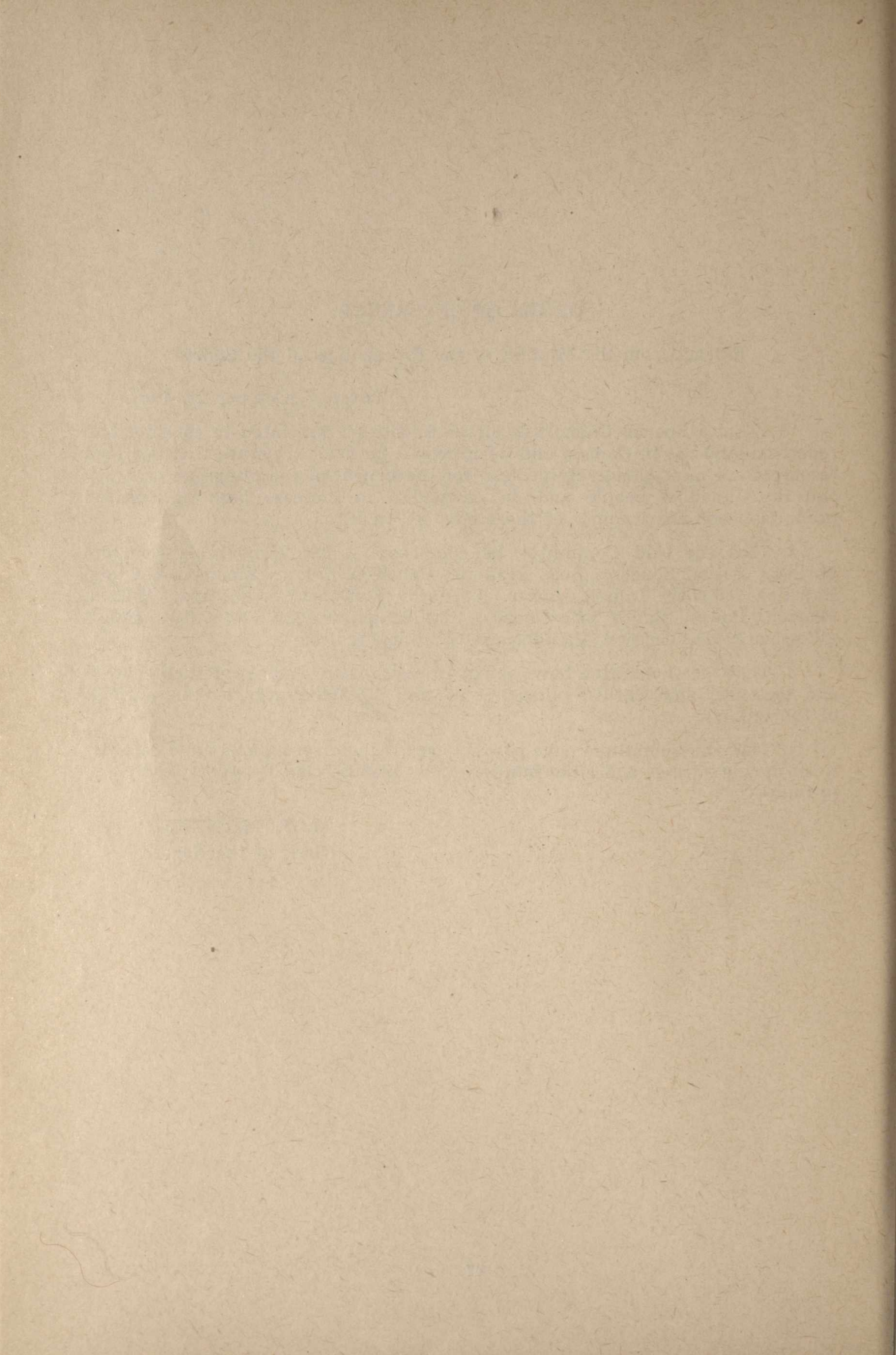
"1. That a Special Committee of the Senate be appointed to consider and report on land use in Canada and what should be done to ensure that our land resources are most effectively utilized for the benefit of the Canadian economy and the Canadian people and, in particular, to increase both agricultural production and the incomes of those engaged in it;

2. That the said Committee be composed of the Honourable Senators Barbour, Basha, Boucher, Bois, Bradette, Cameron, Crerar, Emerson, Golding, Hawkins, Horner, Inman, Leger, Leonard, McDonald, McGrand, Molson, Pearson, Power, Smith (*Kamloops*), Stambaugh, Taylor (*Norfolk*), Taylor (*Westmorland*), Turgeon, Vaillancourt, Wall and White;

3. That the Committee have power to engage the services of such counsel and technical and clerical personnel as may be necessary for the purpose of the inquiry;

4. That the Committee have power to send for persons, papers and records; to sit during sittings and adjournments of the Senate, and to report from time to time".

J. F. MACNEILL,  
*Clerk of the Senate.*



## MINUTES OF THE PROCEEDINGS

THURSDAY, December 12, 1957.

Pursuant to adjournment and notice the Special Committee on Land Use in Canada met this day at 11.30 a.m.

*Present:* The Honourable Senators Power, *Chairman*, Boucher, Bois, Golding, Horner, Inman, Leonard, McDonald, McGrand, Pearson, Smith (*Kamloops*), Taylor (*Norfolk*), Taylor (*Westmorland*), Turgeon and Wall—15.

The Chairman made reference to the Committee's tour of the Geographical Branch, Dept. of Mines and Technical Surveys, on Thursday last.

Following discussion it was ordered that the brief submitted by Dr. N. L. Nicholson, Director, Geographical Branch, be printed as an appendix to these proceedings. (*See Appendix A*)

The matter of payment of honoraria to witnesses appearing voluntarily before the Committee was considered. After discussion it was resolved that further consideration be postponed.

A draft Report, submitted by the Chairman, was read and approved.

Consideration of the order of reference was concluded.

At 11.45 a.m. the Committee adjourned.

Attest.

John A. Hinds,  
*Assistant Chief Clerk of Committees.*

REPORT OF THE COMMITTEE

THURSDAY, December 12, 1957.

The Special Senate Committee on Land Use in Canada make their second Report, as follows:—

Your Committee, having studied the subject matter of the order of reference of October 29th, 1957, report progress, and recommend the inquiry be continued at the next session of Parliament.

All which is respectfully submitted.

C. G. POWER,  
*Chairman.*

## APPENDIX "A"

Brief submitted by Dr. N. L. Nicholson, Director, Geographical Branch,  
Department of Mines and Technical Surveys:

### LAND USE MAPPING SURVEYS

#### *Objectives*

The first objective of land use surveys is to inventory our major economic resource by recording the *present* use of land on maps using a uniform system of classification and notation and a scale most appropriate to secure accuracy.

#### *Reasons and Approach*

Many countries collect statistics of land use sometimes in very considerable detail. We are aware also of varied plans for soil surveys. We do not consider, however, that these plans in any way invalidate the need for land use mapping to which statistical material is complementary. The main emphasis is on maps because there is no other way of showing *actual* location and distribution of the varying types of land use and any changes proposed will involve changes in the pattern of distribution shown on the map. These maps are based essentially on field work together with the interpretation of such material as air photographs. Of the many types of maps which are produced by various agencies, some are purely factual and based on actual observations or survey; others are concerned with the interpretation of development of ideas, that is to say they are subjective. We think it is most important to keep these two types separate and we are positive that the first must precede the second. We are convinced that land use maps can and will be used for a great variety of purposes provided the basic survey is accurate and records facts, not merely opinions. An interpretation of each map is made in an explanatory text at which time use is made of any existing soil surveys and vegetation, climatological and demographic studies.

Land use maps show the location, extent, and kind of land uses. These are not generally known or accurately recorded, particularly in conjunction with other records of resources.

They also show the pattern of use, that is, whether a particular category of use is extensive or very limited or whether it occurs in patches or over a wide area or whether it is confined to a particular district and so on. Thus land use maps also show the relation between various land uses.

#### *The Uses of Land Use Surveys*

Since all development and redevelopment must start from the present position, land use surveys are considered to be fundamental to all development programmes. Being factual and objective, land use maps have many purposes some of which may not even appear at first sight.

Their obvious use is that they help to determine the explanation of why land is used in the way that it is but they also are an invaluable aid in solving the problem of the optimum use of land. Several users may be in competition for the same resource, particularly when one piece of land is in demand for both urban and agricultural purposes; or the holdings of one operator may be

fragmentary and it may be better and possible to consolidate them; or it may be necessary to establish a better balance among different users of land in a given area.

The detailed survey of the United Kingdom, for example, indicated both ploughed land and land used for "rough grazing". It was later used to indicate areas for the expansion of ploughed land "into rough grazing" and for the expansion of industry and housing in such a way as to cause the least disturbance to the existing economy. Also, anomalies in land use—i.e., tracts of land underdeveloped as compared with neighbouring tracts—immediately stand out in contrasting colours on the map and call attention both to the problems and the areas needing detailed investigation.

Unless the present use of land is known and understood, development schemes may cut across the existing economic structure in such a way as to do more harm than good. In making these statements we have in mind surveys of this type which have already been carried out in several parts of the world and the use which has been made of them.

#### *Land Use Surveys in Other Parts of the World*

To our knowledge, land use surveys are being carried out or planned in at least 50 different countries of the world. Some features of the best or most significant to these are as follows:

*Australia.* Land use mapping and land use studies have been carried out in Australia by the Federal Government and State Departments. The principal work has been carried out by geographers in the Commonwealth Scientific and Industrial Organization. The examples shown here are the maps entitled: "Land Use Groups, Townsville, Bowen Region, Queensland", scale 4 miles to 1 inch, and "Land Utilization in the Australian Capital Territory", 2 miles to 1 inch.

*Ceylon.* The example shown here is one of four sheets produced on a scale of 1/4 mile to 1 inch.

*Costa Rica.* Most of the work on land use in Costa Rica has been done by geographers in collaboration with the Pan-American Institute of Geography and History. The example shown here is "Land Utilization—Paraiso Area 1952", scale 1/2 mile to 1 inch.

*Great Britain.* The land utilization survey of Britain was the pioneer group in surveys of the type described. The work began in 1930 and most of the field work was carried out before the outbreak of World War II. It was pioneered and carried out by Dr. Stamp, Professor of Geography in the University of London, and his colleagues. The field survey was made on the scale of 6 inches to 1 mile and the results were reduced to 1 inch to 1 mile for publication. The work was fully described in a series of 92 reports. In addition, the published 1-inch maps were generalized to the scale of approximately 10 miles to 1 inch, and a summary volume of the entire work was published in 1950. The examples shown here are "Norwich and Great Yarmouth Land Utilization", scale 1 mile to 1 inch, and "Great Britain Land Utilization—South Sheet", scale 10 miles to 1 inch.

*Hong Kong.* Another excellent land use map is this sheet entitled: "Hong Kong and the New Territories—Land Utilization", scale approximately 1 mile to 1 inch, produced by the Department of Geography of the University of Hong Kong.



*India.* A land utilization survey of India is planned as one of the main activities of the Government Committee guiding the work of the National Atlas of India.

*Japan.* No other country in the world has undertaken such a complete record of land use and their series of maps on a scale of approximately 1 mile to 1 inch is the finest technically as well as being the most comprehensive. They, too, have generalized their detailed maps to a scale of approximately 10 miles to 1 inch. The work is done under special legislation passed in 1951 by the Geographical Survey Institute of the Government. I had the privilege of visiting this organization recently and was most impressed with their thoroughness and the quality of their mapping.

*Pakistan.* The need for a land use survey in Pakistan was necessary because of the existence of cultivable land now abandoned as well as the need for land where extension of cultivation is possible. The Government commissioned a private company to carry out aerial photography and to produce land use maps and a report. The company chosen was the Photographic Survey Corporation Limited of Toronto and the work was primarily carried out by Canadian geographers.

*Sweden.* Sweden has an excellent set of land use maps on a scale of 1 mile to 6 inches. The maps are so detailed that even individual boulders in the cropland or grassland are indicated. Up to December 1, 1955, 4,000 sheets had been completed.

*Switzerland.* Land use mapping has played a very significant role in Switzerland since the First World War. In 1946 this economic map of the country was published on a scale of approximately 4 miles to 1 inch which includes land utilization.

*Taiwan.* A large amount of important work in land use mapping is being carried out by the Department of Geography of the National Taiwan University. The whole island has been covered on 22 sheets on scales ranging from 1/10 mile to 1 inch to 1½ miles to 1 inch. One of these sheets is shown here. It is planned also to generalize this detailed information on a map of the whole island which will be published in colour on a scale of 4 miles to 1 inch.

*United States of America.* There is a long history of the development of land use surveys by professional geographers in the United States. The most outstanding of their contributions of the past were the maps produced by the geographers of the Tennessee Valley Authority as a basis for the land planning activities of the Authority. There is no national systematic programme of land use mapping, however, although this generalized map of the major land uses in the United States, on a scale of approximately 80 miles to 1 inch, has been published.

#### *Land Use Mapping Surveys in Canada*

It is true to say that almost all geographers in Canada have, at some time or another, carried out land use surveys of some kind, as this work is part of their training programme at university. Indeed, to many people land use survey is *geographical* survey because only the geographer deals with *all* uses of the land—urban and rural—and their relationships with one another. Canada has many specialists who can get one thing out of aerial photographs—forest inventory is an example—but such specialists never complete the surface cover map. We are convinced that such completed maps are essential for our national progress. The geographers have the tools, the ideas, the training, and the will to do this.

The most significant land use surveys in Canada have been carried out either by Government agencies or under their aegis to meet special problems. Some land use mapping has been done by geographers in provincial governments examples being the "Land Use Map of the Terrace Area", published by the British Columbia Department of Lands and Forests, on a scale of 1 mile to 1 inch, and the "Land Use Map of the Don Watershed", published by the Ontario Department of Planning and Development, on a scale of  $\frac{1}{2}$  mile to 1 inch. Other provinces are proceeding with such work in collaboration with this Branch. We have, for instance, produced several maps (in manuscript form) in co-operation with the Nova Scotia Research Foundation. This is one example—part of Halifax County, Nova Scotia, on a scale of 1 mile to 1 inch. We have also done some work in the upper Saint John valley of New Brunswick which has been partly supported financially by the Province. This example is a portion of Madawaska County. We have done a great deal of land use mapping in collaboration with the Newfoundland Department of Lands and Forests. These are examples of such work done this summer as part of a long-range programme to cover the whole of the island of Newfoundland within the next few years. Earlier, we made some 20 land use surveys in the vicinity of certain fishing settlements in collaboration with the Newfoundland Fisheries Development Authority. This is an example of one of them—the settlement of Garnish.

The Geographical Branch has also carried out land use mapping exclusively for some federal agencies. This is an example of our work on Winnipeg which was done for the Department of National Health and Welfare on a working scale of 1000 feet to 1 inch. This and similar data for other cities was later reduced to a scale of approximately 1 mile to 1 inch and was also used for the ATLAS OF CANADA which this Branch has almost completed.

In all of the above cases the work also served as a basis for testing techniques and field methods which is of use to the Commission on World Land Use of the International Geographical Union and the Committee on Land Classification and Land Use Surveys of the Pan-American Institute of Geography and History. Canada is a member of the International Geographical Union and has also appointed an official representative to the Commission on Geography of the Pan-American Institute of Geography and History. We are also associated with one other organization concerned with land use in that I am a member of the Land Use Committee of the Conservation Council of Ontario. Consequently, the Geographical Branch has carried out some land use mapping on its own initiative.

In the Ottawa area we applied the classification suggested by the International Geographical Union by stereoscopically examining aerial photographs in the office. We checked doubtful cases in the field and then transferred the information to maps such as the example here. In the Avalon Peninsula of Newfoundland we mapped land use in the field according to three different systems of classification—one proposed by the International Geographical Union, one used by the United States of America in the Tennessee Valley and one used by the Ontario Department of Planning and Development. A report on this work has been published including a land use map of the Avalon Peninsula on a scale of approximately 16 miles to 1 inch. In Alberta land use data was obtained in the field also by direct observation and plotted on aerial photographs.

In those areas of Canada which are devoid of widespread human activity we have carried out similar surveys but this really amounts to Nature's use of land rather than man's. The principles involved and the uses of the maps are, however, broadly the same in both cases. We have completed 14 sheets in

Northern Canada on a scale of 8 miles to 1 inch. In this work we are collaborating with McGill University who produced this more generalized map of Northern Quebec from their more detailed maps.

### *Conclusion*

But the work that we have done so far has nearly all been carried out on an ad hoc basis. We are convinced that it would be in the national interest to plan this work on a country-wide basis so that we will build up a geographical series of land use maps similar to the series of soils, forestry, geologic and topographical maps now in existence. We have proposed that the land use series should be on scales similar to these other series varying from approximately 1 mile to 1 inch to 4 miles to 1 inch in Southern Canada and 8 miles to 1 inch in Northern Canada. Such a programme would not only be of service to the people of Canada but would also be of benefit to those who are concerned with the total world picture and who are endeavouring to encourage the individual countries to produce such records.

Following the reading of the foregoing by Dr. Nicholson, the Chairman (*Hon. Senator Power*) said:—

Dr. Boyer and Dr. Nicholson, I have been around Ottawa for over forty years now and I must say that I had no idea that work of the type we have heard described this morning was being carried on in this department. I am sure all the members of this Committee are greatly pleased by the attention that has been paid to this problem by the Geographical Branch of the Dept. of Mines and Technical Surveys. I wish to thank you both most sincerely for the informative presentation made today to this Committee.

